



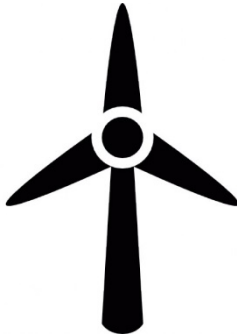
*Environmental Science & Policy  
Capstone ('20)*

*presents:*

**THE ANAHEIM  
DUCKS &  
HONDA CENTER  
SUSTAINABILITY  
AUDIT**



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Cover Art by Jacy Sera.

# Executive Summary

Chapman University's Environmental Capstone class conducted an environmental audit of the Anaheim Ducks and their arena, the Honda Center, throughout the course of the spring 2020 semester. This audit sought to find as much information as possible on sustainability practices conducted by the organizations in fields such as procurement, waste management, energy, and more. The authors of the audit provided background historical information, conducted assessments of current practices, identified opportunities for improvement, and made focused recommendations on the specific topics that were examined. The following are summaries of the seven chapters included in this report.

## Chapter 1: Procurement

*Alison Cargile, Galileo Pacioni, and Jacy Sera*

Procurement is the act of obtaining goods or services. Thus, when trying to implement sustainability initiatives for a business operation, using procurement as a starting point is recommended as purchasing sustainably may inevitably help avoid later environmental issues of concern. By identifying current practices by the Anaheim Ducks and best practices within the sports industry, the procurement section of the audit aims to:

- Provide a potential guide and resources to implement a Sustainable Purchasing Policy
- Provide a sustainable procurement checklist to determine which products or services show the least environmental impact
- Recommend low-cost and/or effort, medium cost and/or effort, and high-cost and/or effort, sustainable procurement initiatives

## Chapter 2: Food and Beer

*Sydney Cheung and Lauren Dvonch*

Food and alcohol are a major component of sports culture. Incorporating sustainable practices into food at the Honda Center can have a positive environmental impact. By examining current practices of the Anaheim Ducks and best practices of other professional sports teams, the food and beer section of the audit aims to:

- Provide metrics to track the environmental impact of existing food practices and minimize them where possible
- Recommend new food options that will decrease the Ducks' carbon footprint

## Chapter 3: Recycling and Waste Management

*Luis Anaya, Ona Bene, and Daisy Torres*

Waste generation rates are rising on a global scale, which has serious implications for the environment and human health. Despite recent efforts to improve sustainability and reduce

waste, approximately half of all waste sent to landfills in the U.S. is made of recyclable material. After a thorough examination of the current practices at the Honda Center, the recycling and waste management chapter of this audit aims to:

- Identify the areas for improvement both at the Honda Center facility and for the Anaheim Ducks team;
- Identify solutions to reduce waste, such as eliminating single-use plastics;
- Recommend the installation of recycling/compost bins at the Honda Center;
- Recommend the adoption of an interactive recycling program that will increase recycling rates, engage fans, and provide incentives for participants.

## **Chapter 4: Water**

*Lyndie Duich, Jarod Matteoni, and Michaela Montgomery*

Water is an integral part to hosting large events, such as the Anaheim Ducks games, and keeping the Honda Center running smoothly. Located in Southern California, an area prone to drought, the issue of water sustainability and conservation is magnified. Through understanding the steps the Anaheim Ducks have already taken and researching best practices from the greater sports industry, the water section of the audit aims to:

- Recommend high and low cost strategies to lower water use in the arena
- Plan for future water use analysis and goal setting

## **Chapter 5: Energy**

*Julia Boronski and Matthew Mead*

It is imperative to reduce the usage of nonrenewable energy sources to mitigate the impacts of climate change and protect the future of the hockey industry. Implementing renewable energy sources and energy-saving technologies are integral to becoming environmentally sustainable. Through examining the best energy-saving practices and technologies, the energy section of the audit aims to:

- Identify energy data the Honda Center should track
- Recommend the most energy-efficient and cost-effective technologies and changes for the Honda Center to implement into the arena.

## **Chapter 6: Transportation**

*Emily Ghods, Elliott O'Brien, and Chad Sloggett*

Huge amounts of fans converge on the Honda Center for their events throughout the year, generating greenhouse gas emissions. Additionally, team and staff travel contribute to the environmental impact of transportation. This section of the audit will provide guidance for data collection and analysis to determine the best actions for both the Honda Center and the Ducks to reduce their collective transportation impact in terms of:

- Fan vehicle traffic

- Public transit
- Employee transit
- Team travel

## **Chapter 7: Engagement**

*Maddie Milla and Rachel Sison*

Engagement is about directing change through leveraging the power of sports to drive meaningful impact. Promoting sustainable practices among the Anaheim Ducks and Honda Center stakeholders will play a large role in lessening the detrimental effects of sports on climate change. The engagement section of the toolkit aims to:

- Identify best practices in and out of sports
- Recommend low and medium cost initiatives to improve upon current engagement with fans, stakeholders, and employees
- Provide background on the importance/effects of engagement on fans, stakeholders, and employees

# Chapter 1: Sustainable Procurement

Jacy M. Sera, Galileo L. Pacioni, and Alison B. Cargile

## COVID-19 Update

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Due to COVID-19, the National Hockey League (NHL) temporarily closed for business on March 12, 2020. Companies who typically provide goods and services for these events have to rethink their business strategy. For example, Bauer Hockey, a hockey equipment manufacturing company said that “the night the NHL closed, our business went from super-successful to zero” (O'Connor, 2020). The Bauer factories normally produce hockey skates, helmets and face shields, but due to the pandemic, are now focusing all efforts to produce medical-grade face masks for health care workers on the frontline. The company is charging six dollars a shield, however, any profits accrued from sales will be given to charity. Bauer has also posted its face mask design specifications online for other manufacturers to use as a resource due to their inability to meet what has become a global demand. Once production reaches full-capacity, the goal is to produce 30,000 units per day. The Bauer management has said the company will continue this project “until every need has been met” (O'Connor, 2020). This current situation was kept in mind during this sustainability audit, but continued to conduct it using normal business affairs data.

## 1.1 Introduction

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### 1.1.1 Overview

Procurement is “the act of obtaining goods or services, typically for business purposes” (Young, 2019). Sustainable procurement is “Procurement that has the most positive environmental, social and economic impacts possible over the entire life cycle” (International Olympic Committee, n.d.). The supply chain is important to understand when determining how to purchase more sustainably. A supply chain is “a network between a company and its suppliers to produce and distribute a specific product to the final buyer” (Kenton, 2020). A supply chain typically involves suppliers, manufacturers, distributors, retailers and consumers. Thus, each entity’s operations and the connections between each other should be analyzed to understand sustainable procurement.

On the global scale, sustainable procurement is important because some of the major global issues society is facing today such as climate change, economic inequality and social injustice are problems rooted from overexploitation of our natural resources. A key idea surrounding sustainable procurement is the ability to “vote with your dollar”. In other words, where you spend and invest your money is a powerful way of supporting specific industries and companies. Sustainable procurement encourages sourcing that has the most positive impact in respect to the environment, the people, and the economy. This can take the form of decreasing purchases in general or purchasing products that are more sustainable, for example, products or services that are fair-trade, made of recycled materials, or wrapped in minimal packing (International Olympic Committee, n.d.).

The Anaheim Ducks are a professional ice hockey team based in Anaheim, California. Ice hockey is one of the sports most connected to the natural environment. A majority of professional ice hockey players first began their hockey careers on frozen ponds. The NHL expressed that “Hockey was born on

frozen ponds – climate change is impacting access to our sport outdoors” (Chow, 2018). These outdoor ice rinks will not survive in warmer climates. Climate change is one of the biggest threats to this professional sport. With global temperatures on the rise, these outdoor rinks will see a decline in the number of rinks and the average length of skating seasons. The NHL noted, “the average length of the skating season may shrink by one-third in eastern Canada and by 20 percent in western Canada due to rising global temperatures” (Chow, 2018). Climate change is threatening professional ice hockey as the next generation of future players are on the line. The purpose of this report will be to inform the Anaheim Ducks on suggestions to improve sustainable procurement at their facilities to avoid a future in which ice hockey is not possible.

## 1.2 History of Procurement with the Honda Center and the Anaheim Ducks

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### 1.2.1 Past Accomplishments

Because a cool climate is essential to the sport of ice hockey, the NHL has been working hard to improve the league’s sustainability and reduce its impact on climate change. As a part of the NHL, the Anaheim Ducks and the Honda Center have also been striving to be more sustainable. However, in regard to sustainable procurement there is limited information about what the Ducks and Honda Center have accomplished. One noteworthy achievement is the vinyl tote bags sold during NHL Green week in 2017. These vinyl tote bags were “made from up-cycled vinyl event banners” and “kept nearly 2000 square feet (200 lbs.) of material out of local landfills” (NHL Green, 2018; Chapman University, 2020). These bags were made using minimal water and only mild, environmentally friendly soaps for cleaning. Although this is an important effort to reduce the environmental impact of merchandise, recycled vinyl tote bags have not been made a part of their permanent merchandise collection. Companies such as Alchemy Goods do this as a part of their regular inventory, so it is possible to continually sell up-cycled bags in the fan store (Alchemy Goods, n.d.). For other areas of procurement there is not a long history of efforts to improve their sustainability. Because there is limited information about the Ducks and the Honda Center’s practices, suppliers, and past accomplishments, the extent and success of past sustainable procurement efforts is largely unknown.

### 1.2.2 Sustainable Procurement and NHL Green

NHL Green is the National Hockey League’s sustainability program and is focused on ensuring that the sport of hockey thrives for future generations by implementing initiatives to conserve water, reduce emissions, minimize waste, and more (NHL Green, 2018). NHL Green has worked with the National Resource Defense Council “to incorporate green practices and procurement into numerous league events, including the 2010 NHL Draft, the 2011 Winter Classic, the 2011 All-Star Game, and the 2011 Stanley Cup Final” (Henley et al., 2012). However, the details and extent of the green procurement practices were not discussed, so it is unknown how comprehensive or effective these efforts were.

NHL Green is a partner of the Green Sports Alliance which, among other goals, encourages sustainable procurement. The Green Sports Alliance works with teams and sports facilities to promote environmentally friendly purchases and provides resources such as their Greener Cleaning Playbook, Paper Use Playbook and other procurement tools (Crawford, 2019). It is assumed that NHL Green has access to these resources, however reports of a comprehensive program targeting sustainable procurement at the NHL specifically were not found. These resources from the Green Sports Alliance

provide valuable strategies and tips for venues to reduce their environmental impact. The Greener Cleaning Playbook is an extensive guide on how to make cleaning a sports venue more sustainable. It includes recommendations at three different levels- gold, silver, and bronze- depending on an organization's progress and costs. Their section on selecting greener products is especially valuable because it lists specific qualities and certifications for sustainability across a wide range of products from cleaning chemicals to recycling container liners (Green Sports Alliance, 2019). The Green Sports Alliance Paper Use Playbook is another resource that is "designed to help your sports and entertainment facility operations achieve efficient and responsible paper use" (Green Sports Alliance, 2019). Not only does the Paper Use Playbook explain practices to reduce paper waste, but it also details procurement strategies for choosing paper resources. The Paper Use and Greener Cleaning Playbooks are valuable resources provided by the Green Sports Alliance that could potentially be used by NHL Green and the Anaheim Ducks to make their procurement more sustainable.

## 1.3 Current Status of Sustainable Procurement

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### 1.3.1 Current Sustainable Procurement Practices

The Anaheim Ducks and the Honda Center do not currently have a sustainable purchasing policy. It is unknown whether the current purchasing policy has any environmental cost factor when procuring products or services. The main goal of this chapter of the audit is to show the impacts of purchasing certified green products as well as implementing a company-wide sustainable purchasing policy that every department must follow when making purchases of any goods, services, or materials used within the Anaheim Ducks organization.

#### 1.3.1.1 Food supplies

The Honda center currently utilizes "compostable plates, trays, bowls, napkins (also recycled), forks, knives and spoons throughout concessions, in-seat, suite and a majority of catering operations" (Honda Center, n.d.). The straws provided are also paper, making their food supplies all technically compostable and recyclable. However, whether or not they are all actually composted and recycled is unknown.

#### 1.3.1.2 Green cleaning products

The Anaheim and Ducks Honda Center currently use green cleaning products (NHL Green, 2018). However, which specific products they use and whether or not they have any kind of green product certifications are unknown.

### 1.3.2 Best Practices

Some of the best practices in professional sports for sustainable procurement include:

1. **Seattle Mariners** - Compostable and recyclable food and beverage packaging and service ware
2. **NHL teams** - Tap water transformed into effective cleaner
3. **Boston Red Sox** - XLERATOR hand dryers
4. **Atlanta's Premium Sports Facility** - Lithium ion battery powered blowers
5. **Los Angeles Dodgers** - Recycled plastic can liners & certified cleaning chemicals



#### **1.3.2.1 Compostable and Recyclable Food and Beverage Packaging and Service ware**

In 2006, the Seattle Mariners struggled with waste management with a landfill diversion rate of only 12 percent. In 2009, after “increasing recycling containers, training staff, and sorting post-collection” it brought them to a 38 percent landfill diversion rate. Finally, Scott Jenkins, Vice President of Ballpark Operations, decided to switch food and beverage packaging and service ware entirely to compostable or recyclable products, and eliminate garbage bins entirely (Henley et al., 2012).

For the Mariners, the key was controlling operations from the supply side. Purchasing service ware that was compostable reduced the amount of single-use products from the start. “After making the switch to compostable products, the Mariners’ diversion rate quickly jumped to more than 70 percent” (Henley et al., 2012). By 2011, the diversion rate was 81 percent after working directly with vendors to solve problems such as Pepsi cups lined with plastic and pizza boxes containing cellophane windows. Their goal then became to hit a 90 percent diversion rate. Jenkins emphasized that switching to compostable was initially fairly expensive because of the limited supply of compostable products. However, as people started to buy more of these products, the marketplace reacted, and more suppliers arose, resulting in more compostable product options, and costs declined. He said eventually purchasing a compostable product will be equal to the cost of a petroleum-based product (Henley et al., 2012).

#### **1.3.2.2 Tap water transformed into effective cleaner**

In March 2016, the first-ever NHL Green Week was held, showcasing its greening programs and initiatives (NHL.com, 2016). Some NHL arenas, including the Verizon Center in Washington, Air Canada Centre in Toronto, and Wells Fargo Center in Philadelphia are using a new device that effectively turns regular tap water into a highly efficient cleaner. This cleaner has been used to scrub concourses and clean glass and mirrored surfaces using sodium-enriched water charged with electricity. Due to the lack of chemicals, the new system leaves a streak-free surface (NHL Green, 2012).

#### **1.3.2.3 XLERATOR Hand Dryers**

Fenway Park, home to the Boston Red Sox, holds over 37,000 fans and 2,000 staff members. Fenway originally had paper towel dispensers and were spending nearly \$57,000 each year refilling paper towel dispensaries, plus the cost of maintenance and waste removal. Since the installation, “the park has saved over \$83,000 annually – a 97% savings over paper towels – and they have had a full return on their investment in just over 12 months, including installation costs.” Other benefits included less congested restrooms and clogged toilets due to improper disposal of paper towels. The Senior Custodial Manager at Fenway Park, Roy Contreras, said “Now that paper towels have been eliminated from the restrooms, plumbing problems are almost nonexistent” (Ashkin, n.d.). In addition, “their hand drying carbon footprint was reduced by 82%” (Ashkin, n.d.). This switch from paper towels to hand dryers was economically and environmentally beneficial for the facility.

#### **1.3.2.4 Lithium-Ion Battery Powered Blowers**

Atlanta’s Premium Sports Facility featured gas-powered cleaning equipment. However, this was harmful for employees because of the emissions and noise. The lithium-ion battery

powered blowers are offering “a gas-equivalent power and run-time with less noise, no emissions, and reduced fatigue for workers” (Ashkin, n.d.). The sports facility extrapolated their data on savings per event, to predict a saving of approximately half a million dollars in operation costs for 2019. “Over the course of a calendar year of events, facilities will save up to 95% in fuel costs” (Ashkin, n.d.).

#### **1.3.2.5 Recycled Plastic Can Liners & Certified Cleaning Chemicals**

The Dodger Stadium home to the Los Angeles Dodgers has shown excellence in sustainability. The Dodgers worked closely with their supplier and manufacturer of plastic liners, Royal Paper and Revolution Bag, to convert their liners made from “virgin plastic resin” to liners that are made from “100% post-consumer recycled resin” (Ashkin, n.d.). As a result of their efforts, 60,000 pounds of plastic is being removed from the waste stream per year. In addition, the Dodgers took steps to purchase Georgia Pacific paper products which contain at least 40% post-consumer recycled fiber (Ashkin, n.d.). Hand towels are also being provided on large rolls versus multi-fold towels which reduces consumption and waste, therefore reducing the environmental impact. Another sustainability initiative taken by the Dodgers was purchasing cleaning supplies that were certified by third-party organizations such as Ecologo/Underwriters Laboratories. They also take measures to concentrate the products to reduce packaging waste and then properly dilute the cleaning products after it’s supplied by the vendor (Ashkin, n.d.).

### **1.4 Concluding Assessments about Sustainable Procurement**

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#### **1.4.1 Areas of Progress**

The Anaheim Ducks have made progress in environmental sustainability by installing fuel cells for energy, installing LED lights throughout the facility, procuring local food to ensure low transportation costs on the environment and promote community businesses, and using various green cleaning products within the Honda Center.

#### **1.4.2 Areas in Which to Improve**

Purchasing decisions for the Anaheim Ducks are made by each department head and they do not have a purchasing policy to follow. To improve sustainable procurement, they could implement a sustainable purchasing policy and also develop a Procurement Department to manage this. The policy could prioritize purchasing of government or third party certified products such as Green Seal (green certification of products, services, restaurants and hotels), Green Label (sustainability measurement for food and consumer products), B-corps (corporations and businesses that meet the highest standards of verified social and environmental performance), Fair Trade (producers in developing countries achieve better trading and working conditions), and Energy Star (promotes energy efficiency) for example. Along with this, using a cost benefit analysis along with life cycle cost information to determine what products, materials and services to use would help ensure the most environmental, economic, and socially optimal choices

#### **1.4.3 Knowledge Gaps**

Because procurement is such an expansive area and little has been done to publish the Anaheim Ducks and the Honda Center’s efforts to improve procurement, there are significant gaps in our

knowledge. The largest knowledge gap is the supply chain of essentially every procurement product. A supply chain is the “series of activities and processes performed by a business in order to produce its particular product or service” and can be expanded to look upstream and downstream from the company itself (Farver, 2013). For all the goods procured we lack information on the raw materials used to make them (and where they are sourced from), who their supplier is, who manufactures the goods, and who is the distributor. The Ducks management have even mentioned that “understanding the sustainable practices of the suppliers” is one of the biggest challenges for sustainable procurement. However, understanding the supply chain of even a few items from their largest procurement purchase categories, including merchandise, cleaning supplies, and photo copier paper, could illuminate areas where sustainability could be improved. Knowing who their supplier is could especially help since, if the Ducks and Honda Center do not want to build a relationship with a new supplier, we can explore the sustainable options that they offer.

Another knowledge gap that stands out is the current status of procurement and sustainability within the organization. We know only of a few concentrated efforts- like the tote bags or paper straws- but less of their overall practices. For example, for sustainable procurement of office supplies and furniture we would need to know if they need new furniture so that we can offer sustainable options, or how much of their office uses paper vs electronics. We also do not know which green cleaning products they are using, and therefore cannot assess how sustainable they are or provide any recommendations.

## 1.5 Recommendations

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### 1.5.1 Potential Anaheim Ducks Sustainable Purchasing Policy

Consistent with the sustainability goals of NHL Green and the Green Sports Alliance, a Sustainable Purchasing Policy for the Anaheim Ducks would establish a customary interpretation of what sustainable procurement is and set a standard of sustainable and environmentally preferable procurement. Below is a potential guide to implement a Sustainable Purchasing Policy for the Anaheim Ducks:

The Sustainable Purchasing Policy goals are to:

- Effectively communicate the Anaheim Ducks sustainability goals when it comes to procurement to employees, vendors and community.
- Maintain consistency with the overall mission of the Anaheim Ducks.
- Demonstrate the Anaheim Ducks’ commitment to environmental, economic and social stewardship through sustainable procurement.
- Reduce the environmental impact of the purchases made by the Anaheim Ducks including conserving natural resources, reducing the use of water and energy, reducing pollution in the supply chain, reducing materials placed into the landfill, and increase the use of Environmentally Preferred Products.
- Ensure performance and quality of products while reducing impacts on the environment.

Guidelines:

- All Anaheim Ducks personnel should purchase Environmentally Preferred Products and services when they can be acquired at a similar quality and total value.

- The Anaheim Ducks Procurement Department will secure contracts with suppliers that offer government or third party certified Environmentally Preferred Products.
- The Procurement Department should purchase Environmentally Preferred Products and services using criteria certified by governmental, or widely-recognized authorities or certifications.

#### Responsibilities of the Procurement Department:

The Procurement Department, in conjunction with all departments of the Anaheim Ducks organization, should use the information in this policy to promote the use of Environmentally Preferred Products and services through the following activities:

- Consult with all departments to identify current and new Environmentally Preferable Products and services, as well as industry standards that may impact the environment.
- Review contracts, nodes and specifications for goods and services to ensure that they are changed to provide use of Environmentally Preferable Products when practical and economical.
- Purchase from suppliers that are government or third party environmentally certified or provide Environmentally Preferable Products.
- Seek new suppliers or encourage existing suppliers to review the packaging of goods.
- Seek new suppliers that are local, and support local and diverse businesses.
- Utilize the Sustainable Procurement Checklist (see below) for use in purchasing for the Anaheim Ducks.
- Participate in employee training for implementing and improving procurement of environmentally friendly products in all departments throughout the Anaheim Ducks organization.
- Make suppliers aware of the Anaheim Ducks Sustainable Procurement Policy and Guidelines.
- Use Life Cycle Cost and cost-benefit analysis tools to ensure best practices in sourcing – ensure that it remains environmentally, economically, and socially sound while upholding the mission of the Anaheim Ducks.
- Ensure the tracking and transparency of all goals and accomplishments throughout the procurement process.

#### **1.5.1.1 Sustainable procurement checklist**

The product with the least environmental impact will usually be one that is not purchased at all. The following should be the checklist that the procurement department must go through and ask these questions prior to making any sort of purchase.

<b>REDUCE</b> <ul style="list-style-type: none"> <li>• Is the product absolutely necessary?</li> <li>• Is there a substitute that is already being used?</li> </ul>	<b>TRANSPORTATION</b> <ul style="list-style-type: none"> <li>• Can the required products be obtained from local sources?</li> </ul>
<b>WASTE</b> <ul style="list-style-type: none"> <li>• Is the product reusable and/or recyclable?</li> <li>• Is the product compostable?</li> <li>• Will the product biodegrade over time?</li> </ul>	<b>ENERGY</b> <ul style="list-style-type: none"> <li>• Is the product energy efficient compared to competitive products?</li> <li>• Are Energy Star rated products available?</li> <li>• Can the product run on renewable fuels?</li> <li>• Does the product require less energy to manufacture than competing products?</li> </ul>
<b>MATERIALS SOURCE</b> <ul style="list-style-type: none"> <li>• Are recycled materials used in the product (if so, what percentage)?</li> <li>• If wood is used, how was it harvested?</li> </ul>	<b>WATER</b> <ul style="list-style-type: none"> <li>• Does the product require less water to manufacture than competing products?</li> </ul>
<b>PACKAGING</b> <ul style="list-style-type: none"> <li>• Is minimal packaging used?</li> <li>• Is the packaging reusable and/or recyclable?</li> <li>• Are recycled materials used to produce the packaging?</li> <li>• Is the packaging compostable?</li> </ul>	<b>SUPPLIER</b> <ul style="list-style-type: none"> <li>• Is the supplier producing the product in compliance with all environmental laws and regulations?</li> <li>• Can the supplier verify all environmental claims? Does the manufacturer/supplier have a company sustainability policy?</li> <li>• Has the company conducted an environmental or waste audit?</li> <li>• Has an environmental life-cycle analysis of the product (and the packaging) been conducted by a certified testing organization, such as Green Seal?</li> </ul>

### 1.5.1.2 Examples and Resources

#### Examples of Environmentally Preferred Products

- LEDs ([EnergyStar](#))
- Made of recycled materials, maximizing post-consumer content ([LooptWorks](#))
- Durable, as opposed to single use of disposable items ([Aluminum Cups](#))
- Non-toxic or biodegradable products ([ECOS](#), [GreenPaperProducts](#))
- 30-100% recycled paper ([PrintWorks](#))
- Energy Star rated appliance ([EnergyStar](#))
- Office Supplies market with environmental sign on catalog ([Office Solutions](#))

- Waste reduces and waste saving products ([Aluminum Cups](#))

See appendix A for examples of EnergyStar certified LEDs and appliances, Looptworks upcycled merchandise, Ball aluminum stadium cups, ECOS cleaning supplies, and PrintWorks recycled paper.

\*Environmentally Preferred Products are not limited to the above examples\*

#### Environmentally Preferred Purchasing Resources

- EPA's Comprehensive Procurement Guidelines (<http://www.epa.gov/cpg/>)
- EPA's EPP Website ([www.epa.gov/oppt/epp](http://www.epa.gov/oppt/epp))
- EPPNet ([www.nerc.org/eppnet.html](http://www.nerc.org/eppnet.html))
- Green Seal ([www.greenseal.org](http://www.greenseal.org))
- EnergyStar ([www.energystar.gov](http://www.energystar.gov))
- Office of the Federal Environmental Executive ([www.ofee.gov](http://www.ofee.gov))

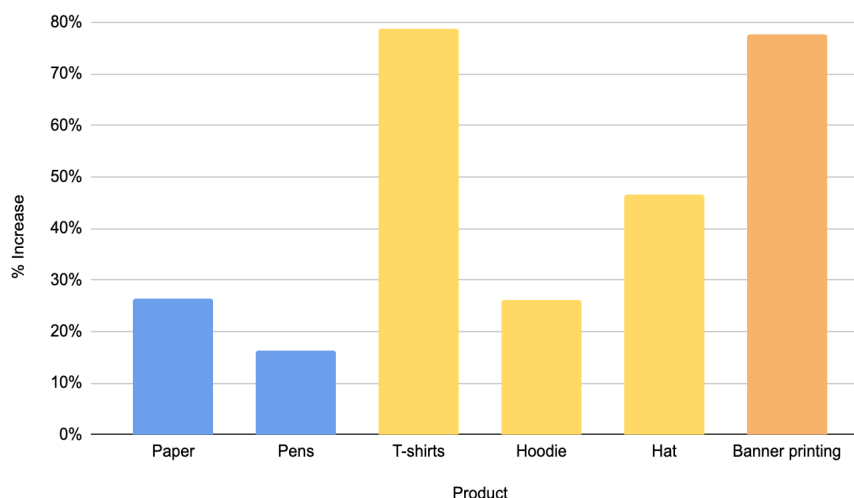
#### Examples of a Sustainable Purchasing Policy

- [Green Sports Alliance](#) (pg. 13-18)
- [City of Sacramento](#)
- [City of Raleigh](#)
- [Lehigh University](#)
- [Aegon](#)
- [Example Template](#)

See appendix B for examples of a Sustainable Purchasing Policy from the Green Sports Alliance and Aegon - a multinational life insurance, pensions and asset management company headquartered in Netherlands.

### 1.5.2 Cost Comparison of Environmentally Preferred / Sustainable Products and Traditional

Percent Cost Increase for Sustainable Goods



A cost comparison between environmentally preferred products and traditional products illuminates the difference in prices for these goods, and how sustainable goods can be affordable. This comparison is across three different categories: office (blue), merchandise (yellow), and other (orange). Prices for three to nine different individual items within each category were averaged. It should be noted that the prices were found through the public websites of retailers, however many companies

only offered wholesale pricing through contact or submitting an official form, so their prices are not listed. In the spreadsheet (see Appendix C), links to each website as well as information on how sustainable each “sustainable” product is, can be found. This comparison reveals that the percent increase in the cost for sustainable goods varies depending on the good. Office supplies are among the cheaper items, therefore transitioning to sustainably sourced office supplies would be a recommended place to start sustainable procurement since the costs are not much higher.

### **1.5.3 Additional Recommendations**

#### **1.5.3.1 Low Cost and/or Effort**

- Green cleaning supplies from brands like ECOS focused on minimizing environmental impact
- Buying sustainable office supplies such as recycled paper products and pens made from recycled plastic
- Implement a Sustainable Purchasing Policy consistent with the company mission statement
- Print banners without dates or years to be reused for repeated events or events that run continually

#### **1.5.3.2 Medium Cost and/or Effort**

- Using fewer paper products and reducing resource consumption by turning the administrative offices into paperless offices.
- Office furniture rental through CORT (unsure of cost, have to get quote through website)
- Purchasing promotional merchandise through a company like Ethical Swag, which is not a certified B corporation but offers cheaper alternatives from suppliers that have passed strict audits related to “social compliance, environmental impact, product safety, supply chain security and product quality” (Ethical Swag, n.d.).

#### **1.5.3.3 High Cost and/or Effort**

- Printing banners, signs, and more using companies Greenerprinter that source sustainable materials and do not use harsh chemicals. However, these companies are more expensive:
  - Greenerprinter cost for 2.5 x 6 PVC free banner - \$95.73 (Greenerprinter, 2019)
  - Vistaprint cost for 2.5 x 6 vinyl banner - \$39.89 (Vistaprint, 2019)
- Working with NHL Green to improve the sustainability of merchandise for the entire league, especially if the Duck’s merchandise is sourced through the NHL rather than through the team’s own source.
- Purchasing promotional merchandise through Fairware or other sustainable Certified B Corporations (unable to get prices, but assuming it will be more expensive). Fairware sources ethically produced and sustainable products while meeting “rigorous standards of social and environmental performance, accountability and transparency” through their B Corp certification (Fairware, n.d.). We were unable to find their pricing, but because they are a more transparent and reliable company we are assuming their products will be more expensive than other alternatives. We can contact the company through their website to get a quote later on.
- Using more sustainable materials for hockey equipment. This could include renewable alternatives for constructing hockey sticks and goals made from recycled metal, however this equipment is likely standard across the whole league so this change would have to be implemented on a large scale and therefore be more costly.

- By 2022, 15% of all purchases made by the Anaheim Ducks come from a sustainable source.
- By 2025, 50% of all purchases made by the Anaheim Ducks come from a sustainable source.

#### 1.5.4 Future Areas of Research

There are several areas of research that should be pursued in order to fill in knowledge gaps and provide feasible and well-informed recommendations. Because the supply chain of goods used and sold at the Honda Center is such a large unknown variable, analyzing the life cycles of a few key products is a good starting point. Conducting a cradle to grave analysis of all of the environmental and social impacts of a product can reveal areas for improvement as well as strengths that the Honda Center and Anaheim Ducks already have. Moreover, if other products have a similar life cycle then the findings can be applied across several areas to make larger scale improvements. Beginning by compiling a list of the Honda Center's vendors would help further research into the supply chain and life cycles of a few key products. The next step is selecting a few key products that are, for example, a large portion of the procurement budget or purchased in large quantities. Contacting the vendors of these products and inquiring about their suppliers, distributors, and sources is the final step in beginning to analyze the life cycles of these products. Afterwards, additional action could be taken to look further into the supply chain, depending on what information the vendors provide, and examine the use and disposal of the products by customers.

Looking into what other local stadiums are doing to improve the sustainability of their procurement could provide valuable insight and reveal opportunities for collaboration. For example, if Angels Stadium and the Honda Center both use the same supplier for some good, we could reduce the carbon footprint of that good by scheduling the deliveries for the same day so that the driver only has to make one trip instead of two. Since procurement is mostly an internal sector, there are no plans to survey the fans or the public.

## 1.6 Contacts

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 Kris Loomis, Director of Integrated Projects and Programming, Anaheim Ducks

## 1.7 References

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Alchemy Goods. (n.d.). Ad Bag Upcycled Banner Tote. Alchemy Goods. Retrieved April 8, 2020, from <https://www.alchemygoods.com/products/ad-bag>

Ashkin, S. (n.d.). [2]. Retrieved from [https://greensportsalliance.org/wp-content/uploads/2019/11/GSA-Greener-Cleaning-Playbook-V2\\_2019\\_web-FINAL.pdf](https://greensportsalliance.org/wp-content/uploads/2019/11/GSA-Greener-Cleaning-Playbook-V2_2019_web-FINAL.pdf)

Chapman University. (2020). Ducks Scope of Work and Communication Draft.

Chow, L. (2018, March 29). NHL Goes Green 'to Ensure Hockey Thrives for Future Generations'. Retrieved from <https://www.ecowatch.com/nhl-climate-change-ice-sustainability-2554505394.html>

City of Sacramento. (2010). Sustainable Purchasing Policy. Retrieved from [https://www.naspo.org/green/City\\_of\\_Sacramento.pdf](https://www.naspo.org/green/City_of_Sacramento.pdf)

Crawford, J. (2019). Clean Like the Pros at the 2019 ISSA Show. Green Sports Alliance. <https://greensportsalliance.org/clean-like-the-pros-at-the-2019-issa-show/>



Ethical Swag. (n.d.). Ethical Swag | Sustainable Promotional Products—About. Retrieved March 4, 2020, from <https://www.ethicalswag.com/aboutf.htm>

Fairware. (n.d.). B Corp | Social Enterprise | We Use Business For Good. Fairware Promotional Products. Retrieved March 4, 2020, from <https://fairware.com/sustainability/b-corporation/>

Farver, S. (2013). *Mainstreaming Corporate Sustainability*. Cotati, CA: Greenfix.

Greenerprinter. (2020). Environmentally Friendly Indoor banners Printing—Greenerprinter. “GreenerPrinter.” <https://www.greenerprinter.com/>

Green Sports Alliance. (2019). Greener Cleaning Playbook. [https://greensportsalliance.org/wp-content/uploads/2019/11/GSA-Greener-Cleaning-Playbook-V2\\_2019\\_web-FINAL.pdf](https://greensportsalliance.org/wp-content/uploads/2019/11/GSA-Greener-Cleaning-Playbook-V2_2019_web-FINAL.pdf)

Green Sports Alliance. (2019). Paper Use Playbook. <https://greensportsalliance.org/wp-content/uploads/2019/02/GreenSportsAlliance-PaperPlaybook.pdf>

Henley, A., Hershkowitz, A., & Hoover, D. (2012). *Game Changer: How the Sports Industry is Saving the Environment*. National Resources Defense Council. Retrieved from <https://www.nrdc.org/resources/game-changer-how-sports-industry-saving-environment>

Honda Center. (n.d.). Green Sports Alliance | Honda Center. Retrieved March 4, 2020, from <https://www.hondacenter.com/arena-info/green-sports-alliance/>

Hoppel, KC. (2018). Sustainable Purchasing Policy, Chapman University. Retrieved from [https://www.chapman.edu/campus-services/sustainability/\\_files/capstone-ch1-2018.pdf](https://www.chapman.edu/campus-services/sustainability/_files/capstone-ch1-2018.pdf)

International Olympic Committee. (n.d.) Sustainability Essentials: A series of practical guides for the olympic movement.

Kenton, W. (2020, February 10). How Supply Chains Work. Retrieved from <https://www.investopedia.com/terms/s/supplychain.asp>

Lehigh University. (2017). Sustainable purchasing policy. Retrieved from <https://financeadmin.lehigh.edu/sites/financeadmin.lehigh.edu/files/offices/ubs/purchasing/docs/Sustainable%20Purchasing%20Policy.pdf>

NHL Green. (2012, November 1). Maple Leafs turn waste into water. Retrieved from <https://www.nhl.com/news/maple-leafs-turn-waste-into-water/c-11864>

NHL Green. (2018). Play It Forward: Hockey for the Next Generation. NHL.Com. <http://sustainability.nhl.com/report/>

NHL.com. (2016, March 17). Green cleaning supplies help the environment. Retrieved from <https://www.nhl.com/news/nhl-green-tip-of-the-day/c-279612548>

O'Connor, J. (2020, April 1). Heroes of the pandemic: How COVID-19 pivoted Bauer Hockey from skate-maker to medical face shield manufacturer. Retrieved from <https://nationalpost.com/news/canada/game-on-how-covid-19-crisis-pivoted-bauer-hockey-from-skate-maker-to-medical-face-shield-manufacturer>

Responsible Purchasing Network for the Urban Sustainability Directors Network. (2018). Draft Sustainable Purchasing Policy. Retrieved from [https://assets.website-files.com/5c3215317569f58d17fcf990/5c33c16795aba2b5bae41979\\_USDN\\_Sustainable%20Purchasing%20Policy%20Template.pdf](https://assets.website-files.com/5c3215317569f58d17fcf990/5c33c16795aba2b5bae41979_USDN_Sustainable%20Purchasing%20Policy%20Template.pdf)

Vistaprint. (2020). Custom Vinyl Banners, Vinyl Banner Printing | Vistaprint. Retrieved March 4, 2020, from <https://www.vistaprint.com/signs-posters/vinyl-banners>

Young, J. (2019, July 5). Procurement. Retrieved from <https://www.investopedia.com/terms/p/procurement.asp>

## 1.8 Appendices

### A. Examples of Environmentally Preferred Products



#### ENERGY STAR CERTIFIED Light Fixtures

##### Feit - MMR-SL41555AEJ01 : SHOP/2X4/840/MOT

###### Specifications

ENERGY STAR Partner:	Feit Electric
Brand Name:	Feit
Model Name:	MMR-SL41555AEJ01
Model Number:	SHOP/2X4/840/MOT
Indoor/Outdoor:	Indoor
Fixture Type:	Close to Ceiling Mount
Technology:	LED
Total Light Output (lumens):	0
Appearance/Correlated Color Temperature (K):	4000/4100K
Total Input Power (Watts):	58.0
Color Quality (CRI):	85
Power Factor:	1.0
Light Source Life (hrs):	50000
Special Features:	Non-Dimmable
Light Source Connection/Base Type:	N/A
Date Available On Market:	2018-10-15
Date Certified:	2018-09-27
Markets:	United States
ENERGY STAR Certified:	Yes

###### Additional Model Information

Captured On:  
05/07/2020

## Pioneering the end of waste

### CONSERVING WATER AND AIR VIA UPCYCLING

**Looptworks** [ looped works ] noun. A Portland, Oregon based business that re-purposes and upcycles abandoned, pre-consumer and post-consumer materials into limited edition products.

At Looptworks, the only thing we scrap is the typical way of doing business. We're a design brand on a mission: to use only what already exists.

All the materials used to create Looptworks products at one time were headed to the landfill, or worse. We intercept and utilize these industry excess materials, transforming them into new, useful products — a process known as upcycling. Our sustainable, eco-friendly products are made in limited editions, and in the process save materials from landfills or incinerators.

Choosing to support upcycled goods over products made using virgin materials, keeps quality excess from being disposed of. In the process, limited natural resources are conserved and carbon emissions



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## THE NEW BALL ALUMINUM CUP

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HOME SOLUTIONS PACKAGING CAPABILITIES ALUMINUM CUPS THE NEW BALL ALUMINUM CUP

### THE INFINITELY RECYCLABLE BALL ALUMINUM CUP

At Ball, we're constantly innovating to bring cutting-edge, sustainable beverage packaging to our customers and the people they serve. The infinitely recyclable, lightweight yet sturdy Ball Aluminum Cup for cold beverages is the latest innovation we're bringing to market.

In late 2019, we kicked off a successful U.S. pilot, distributing millions of cups to select indoor and outdoor venues across the country. To answer growing demand, we're building our first dedicated aluminum cups manufacturing facility and expect to ramp up production in the fourth quarter of 2020.

We're also planning to introduce additional sizes to round out the cups portfolio and intend to expand cups adoption to drinking establishments, parks and recreational facilities, colleges, restaurants, the hospitality industry and more.

**CENTERPLATE, BALL AND BUD LIGHT TO PRESENT INFINITELY RECYCLABLE ALUMINUM CUPS AT SUPER BOWL LIV**

Ball's infinitely recyclable aluminum cups are going to the big game



**BALL AND CU BOULDER INTRODUCE GAME-CHANGING ALUMINUM CUP TO COLLEGIATE SPORTS FANS**

Ball's infinitely recyclable aluminum cup introduced to collegiate football fans at CU's Folsom Field



**BALL AND KROENKE INTRODUCE INNOVATIVE ALUMINUM CUP TO PEPSI CENTER FANS**

The cups to debut during the Denver Nuggets' home opener against the Phoenix Suns



## All Purpose Cleaners



Cream Cleanser - Lemon



OxoBrite® Multi-Purpose Stain Remover - Free & Clear



All Purpose Cleaners - Orange Plus



All Purpose Cleaners - Parsley



All Purpose Cleaners - Ginger Plus



Mother & Child™ All-Purpose Cleaner Orange Plus® Refill Kit - Orange Plus

amazonbasics

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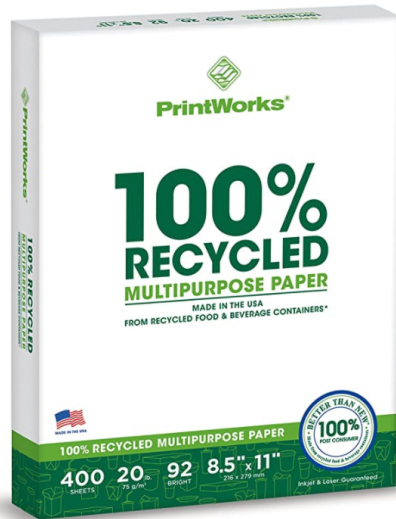
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VIDEO



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### Printworks 100 Percent Recycled Multipurpose Paper, 20 Pound, 92 Bright, 8.5 x 11 Inches, 400 sheets (00018)

by PrintWorks

★★★★★ 237 ratings | 13 answered questions

Amazon's Choice for "printer paper recycled"

Was: \$13.97

Price: **\$11.99** ✓prime & FREE Returns

You Save: \$1.98 (14%)

Size: 1 Ream: 400 Sheets

<b>1 Ream: 400 Sheets</b> <b>\$11.99</b> ✓prime	<b>3 Reams: 1200 Sheets</b> <b>\$24.99</b> ✓prime
<b>6 Reams: 2400 Sheets</b> <b>\$30.95</b> ✓prime	<b>480 Reams: 192,000 Sheets</b> <b>\$2,199.99</b>

- 100 percent post-consumer recycled printer paper for everyday use at an affordable price
- Made in the USA from recycled food and beverage containers and other paper-based printed materials
- 20 lb., 92 bright white for better contrast and color reproduction
- Guaranteed for use with laser/inkjet printers, copiers and multi-function devices
- Perfect for printing reports, presentations, manuals, school projects and more
- Premium PrintWorks quality since 1964. Satisfaction guaranteed.

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## B. Sustainable Purchasing Policy Examples

### a. Green Sports Alliance

13 Green Sports Alliance Operations Roadmap



## ENVIRONMENTALLY PREFERABLE PURCHASING POLICY

### Introduction

Provide an introduction that details the intentions of your building's establishment of an environmentally preferable purchasing policy. Include a summary of the benefits of the policy for building users, operations staff and the environment.

### Site and Building Description

Include a general description of the building and property site. For areas outside of the property manager's control, list the areas and describe how the policy will be enforced (i.e. State Law).

### Scope

Include what purchasing categories are identified in the policy and within the property management's control, i.e.: ongoing consumables, durable goods, facility alterations and additions, mercury containing lamps and food.

### Procedure and Strategies

Encourage a high level of sustainable purchasing efforts by building occupants through the following strategies:

- **Ongoing Consumables:** Purchases must contain recycled content, rapidly renewable material, regional material or rechargeable batteries.
- **Durable Goods:** Electronic equipment and appliances must be ENERGY STAR qualified or Electronic Product Environmental Assessment Tools (EPEAT) Bronze level products or higher.
- **Durable Goods:** Furniture must contain recycled content, salvaged or re-used material, rapidly renewable material, regional material or FSC wood.
- **Facility Alterations and Additions:** Construction purchases must contain recycled content, salvaged or re-used material, rapidly renewable material, regional material or FSC wood. Adhesives, sealants, paints and coatings must not exceed the VOC content limits of South Coast Air Quality Management District (SCAQMD) rules. Carpets and carpet pads must meet the requirements of the CRI Green Label Plus Carpet Testing Program. Composite wood and agrifiber products must contain no added urea-formaldehyde.
- **Reduced Mercury in Lamp Purchases:** Establish and follow a lamp-purchasing program that sets a maximum level of mercury content and minimum life for all mercury-containing lamp types. Work with suppliers to specify these requirements for all future purchases.

### Performance Metric

Describe how often and by what method performance will be tracked (i.e. invoices) to calculate environmentally preferable purchasing performance on a cost basis. Provide calculations showing how the amount of sustainable

14 Green Sports Alliance Operations Roadmap



products versus non sustainable cleaning products will be calculated for ongoing consumables, durable goods, facility alterations and additions, and mercury containing lamps.

### Goals

Establish quantifiable targets that the policy is intended to meet for all waste streams, i.e. 60% of all ongoing consumables purchased will meet or exceed sustainable criteria.

### Quality Control / Quality Assurance

Establish how quality control/quality assurance will be performed to ensure the policy is being implemented and that goals and performance metrics are being met.

### Responsible Party

Include the contact information for the individual responsible for the implementation, oversight, and quality assurance of this policy.

### Time Period

Define the effective date for the policy and specify that it shall be reviewed on an annual basis.

### Relevant Definitions

Include any relevant definitions used in the policy.

## *b. Aegon*



### Introduction

Aegon N.V., through its operating subsidiaries, is a leading provider of life insurance, pensions and asset management. The company is also active in accident, supplemental health, general insurance, and some banking products and services. Aegon's main markets are the United States, the Netherlands and the United Kingdom. The company is present in more than 20 countries in the Americas, Europe and Asia, employing approximately 24,000 people. Its core purpose is to help people take responsibility for their financial future.

Aegon recognizes that its activities are not typically associated with significant supply chain risks. Because of its size and geographical scope however, Aegon is still an important purchaser of goods and services – mainly in the following categories:

- **Professional services:** business and administrative support from specialized advisors, consultants, actuarial and accounting services;
- **ICT:** purchasing and leasing of servers, computers and hand-held devices, software and associated support services, IT infrastructure and IT application development;
- **Human resources:** temporary and long-term provision of insurance and investment professionals, business support staff and other personnel; and car leasing, travel services and other personnel-related products and services;
- **Facilities:** building services, catering services, energy, paper, coffee, drinking water and other office supplies;
- **Outsourcing of business processes:** purchase of data, research and analytical services, systems and administrative processing, call centers and other processes.

### Purpose

Aegon is committed to high standards of business conduct as reflected in the Aegon Code of Conduct. Aegon expects all its suppliers to adhere to similar good working standards and business ethics. Moreover, the aim of this policy is to enable Aegon to identify and manage the most material business conduct, social and environmental risks (also referred to as sustainability risks) associated with its procurement of goods and services, and to create a positive and constructive relationship between the company, its suppliers, and the societies in which they operate. This reinforces Aegon's broader aim – through its business activities – to contribute to wellbeing and sustainable economic development.

This policy establishes a company-wide sustainable procurement process applicable to all country, regional and Business Units (collectively termed "Business Units"), and departments co-ordinating Aegon's procurement throughout activities. It complements other Aegon policies relevant to procurement, including outsourcing, data quality, business disruption, and information security. The approach in this policy is aimed at setting out clear, transparent and non-discriminatory standards of conduct for the company's suppliers, and helping Aegon to identify areas of significant social and environmental risk and opportunity. Under this policy, Aegon's Business Units and procurement co-ordinators are responsible for engaging with suppliers to ensure these company-wide standards are upheld for its main suppliers and those presenting specific sustainability risks. Aegon companies seek to build long-term relationships with those business partners who share similar core values and business principles. Aegon seeks to do this based on open, honest and clear business principles and in particular through the business conduct standards set out in this policy.



## Scope

This policy applies to all wholly or majority-owned Aegon companies, where Aegon has management control. In cases where Aegon has an equity interest but no management control, the company will use its influence to apply the spirit of this policy.

The scope of this policy is defined by the following:

- Goods and services bought or contracted by Aegon in the course of the company's day-to-day business operations.
- All forms of procurement including – but not limited to – purchasing, leasing, contracting, franchising, licensing or sub-contracting.

This Policy does not apply to property leases, individuals who are acting in the role of independent contractors or to suppliers solely involved in carrying out asset management mandates, managing external funds, acting in the role of agent for offering and servicing clients with Aegon's products, or otherwise engaged in the distribution of Aegon's products and services. Such relationships are governed by dedicated policies and/or specific contractual agreements.

This general policy is based on Aegon's Code of Conduct and on a number of applicable international standards. Where there is no conflict with this policy, Business Units and departments co-ordinating procurement activities may adopt additional practices and standards to meet local regulatory or other stakeholder requirements.

## Application

Aegon's procurement activities cover a wide spectrum of products and services, ranging from large global IT services contracts to single transaction purchases of, for instance, catering and promotional products. They involve a wide variety of suppliers, including multinational companies, regional and national entities, as well as small local businesses and individuals. The application of this policy is aimed at taking account of this diversity, as well as the factors which affect Aegon's ability to address its suppliers on key business conduct, social and environmental issues.

In applying this policy, Aegon also recognises that its procurement of goods and services is one end of a number of supply chains involving a variety of different companies, organisations and individuals. Aegon seeks to use its purchasing power, organisational resources, and its influence to promote positive business conduct, social and environmental impacts along each of these supply chains. However a number of factors – for instance, the nature of the individual goods & services, the extent to which they are specifically tailored to Aegon's needs or are purchases of standard products, the organisation of the supply chain itself, and the availability of information – affect Aegon's ability to address its suppliers in any given situation. In some instances, Aegon may procure goods and services from a multinational company or a regional distributor and in some cases it may account for a very small proportion of the overall market for specific goods & services. No single approach is appropriate for all supply chains and each individual intervention needs to reflect the realities of the specific supply chain. As a result, Aegon does not target absolute objectives or guarantee improvement as a result of this policy, but commits to the endeavour of enhancing the sustainability of its procurement approach and among its suppliers.

Aegon has created a systematic approach to meeting its responsibility to choose business partners who are able to support the company's objectives on sustainability. This is the basis for transparent and non-discriminatory supplier pre-qualification, selection, contractual arrangements, or licensing and franchising arrangements.

All suppliers within the scope of this policy will be subject to a regular risk assessment to determine whether they are key suppliers. A key supplier is one where such factors as size, importance, and activities may indicate the potential for a higher level of sustainability risks, and for whom some additional management of these risks may be advisable. Further steps in applying this policy will be applied to these key suppliers. Specifically, Aegon will ask all key suppliers, including those with contracts with an aggregate value exceeding EUR 200,000 in a year, to sign a Supplier Sustainability Declaration either during the quotation process or when existing contracts are being renewed.

### Sustainable procurement standards

Aegon aims to ensure that its suppliers meet material standards with respect to both the conduct of their business and their management of social and environmental issues. Aegon's goal is for its suppliers to abide by the company's business conduct principles, including demonstrating business integrity and respecting the principle of free and fair competition. Therefore Aegon expects its Business Units to include the standards set out below in supplier contracts, with a particular focus on key suppliers.

These transparent and non-discriminatory conduct standards are based on Aegon's Code of Conduct and the company's Human Rights Policy. To develop this policy, Aegon has also referred to a number of other international initiatives and conventions, including:

- UN Declaration of Human Rights
- International Covenant on Civil & Political Rights
- International Covenant on Economic, Social and Cultural Rights
- The core standards of the International Labour Organization (ILO)
- OECD Guidelines for Multinational Enterprises and Principles of Corporate Governance.
- The UN Global Compact

Aegon expects its suppliers to comply with the following standards. Suppliers unable to meet these standards, or who subsequently discover that they fall short of one or more standards, are expected to inform Aegon of the fact and to undertake remedial action as soon as reasonably possible. Aegon retains the right to take appropriate measures in case of significant breach of laws and regulations, and in case of potential significant financial and/or reputational loss to Aegon.

#### (1) Complying with laws and regulations

All suppliers must comply with applicable laws and regulations. They are expected to honor applicable industry standards, international treaties, and internationally-accepted standards and agreements relevant to their activities.

#### (2) Suppliers' systems and controls

Suppliers are expected to understand the business conduct, social and environmental issues involved in their activities. They are expected to establish and maintain governance and control systems which are appropriate to the nature and scale of their activities, and the level of business conduct, social and environmental impacts and risks.

Suppliers are also expected to have established systems for managing their own suppliers, and for ensuring that appropriate standards of business conduct, social and environmental behaviour are applied in their own procurement decisions.



### (3) Business conduct

Suppliers will conduct their business with Aegon and other customers in a responsible manner, and abide by minimum standards of business integrity and applicable laws and regulations. These include, but are not limited to, standards on bribery and corruption, money laundering competition, fair payment, fair representation, conflicts of interest, and product safety.

#### *Bribery and corruption:*

Suppliers are strictly forbidden from offering any bribe (consisting of money or anything of value) to public officials, irrespective of their worth, its results, local custom, the tolerance of such payments by local authorities, or the alleged necessity of the payment in order to obtain or retain business or any other advantage. Suppliers are forbidden from seeking to obtain new business or any other improper commercial advantage by allowing undue payments to be made.

#### *Preventing money laundering:*

Suppliers shall not participate in any activity aimed at laundering money. In addition they must not provide assistance to any person or organization trying to benefit from proceeds of a criminal act or illegal activity or controlling funds invested for the benefit of a terrorist organization.

#### *Competition*

Suppliers shall refrain from directly or indirectly engaging in any discussion or activity that constitutes anti-competitive behavior or in any other way violates anti-trust provisions.

#### *Fair payment*

Suppliers are expected to acquire products and services in accordance with sound business practice, for legitimate commercial reasons, and will provide an appropriate remuneration and payment terms for goods and services rendered.

#### *Fair representation*

Suppliers are expected to fairly represent the benefits of their goods, products & services in ways that are fair, clear and meet with customers evolving long-term needs. They should not take unfair advantage through manipulation, concealment, abuse of privileged information, misrepresentation of material facts, or any other unfair dealing practice.

#### *Conflicts of interest*

Suppliers should avoid any actual or apparent conflict of interest. Suppliers are required to communicate potential conflicts of interest to their local Aegon counterparty.

#### *Product safety*

Suppliers are expected to provide goods & services that meet agreed or legally required standards for consumer health and safety, including those relating to health warnings and safety information.

### (4) Social

Suppliers are expected to recognize and either avoid or minimise any adverse impacts and risks of their activities on social well-being, particularly where they are directly involved in the provision of human resources or make use of a workforce, for instance in manufacturing or assembly:

*Eliminating forced or compulsory labor*

Suppliers should not use forced or compulsory labor practices, and must take steps to ensure they do not contribute to the use of forced or compulsory labor, in compliance with the core standards of the ILO.

*Effectively abolishing child labor*

Suppliers should not use child labor, and must take steps to ensure they do not contribute to the use of child labor, in compliance with the core standards of the ILO.

*Fair wages*

Suppliers should provide the wages, benefits and conditions of work, that represent just and fair remuneration with transparent payment terms within the framework of government policies and in compliance with the standards of the ILO. These wages, benefits and conditions should reflect the economic position of the supplier, but must also be sufficient to satisfy the basic needs of workers and their families. Suppliers are expected to provide all workers with written and understandable information about their terms and conditions of employment, including payment.

*Working hours*

Suppliers are expected to ensure that working hours comply with national legislation and applicable international guidelines.

*Respecting human rights*

Suppliers should uphold internationally recognized human rights, and are expected to be guided by Aegon's human rights policy and avoid complicity in the abuse or violation of internationally-proclaimed human rights standards.

*Non-discrimination*

Suppliers should refrain from any discriminatory practices either with regard to recruitment, promotion, pay or bonuses, or in their general conduct in the workplace. Company policies, procedures and practices should be applied fairly, should avoid negative impact on any specific group of employees or potential employees and, wherever possible, should promote diversity and non-discrimination, whether on the grounds of race, disability, religious belief, sexual orientation, age or gender.

*Safe and healthy working environments*

Suppliers are expected to provide a safe, hygienic and healthy working environment for employees, and provide adequate training to workers on these matters. Aegon companies are committed to providing employees with a safe working environment.

*Freedom of association, meetings and collective bargaining*

Suppliers should respect the rights of employees to associate freely, to join or not join labor unions and works councils, and seek representation in accordance with local laws. Where national law substantially restricts the formation and operation of workers' organizations, suppliers will not prevent workers from developing alternative mechanisms to express their grievances and protect their rights. In other cases, suppliers will not discourage workers from electing worker representatives, forming or joining workers' organizations of their choosing, or from bargaining collectively, and will not discriminate or retaliate against workers who seek to do so.

*Grievance procedures*

Suppliers are expected to enable employees to communicate openly with management regarding working conditions without fear of reprisals, intimidation or harassment. Suppliers should also have grievance mechanisms in place to allow complaints from other stakeholders to be heard, assessed, and – if necessary – remedied as expeditiously as possible.

#### *Contract workers*

With respect to contracted workers, suppliers are expected to ascertain that third parties engaging these workers are reputable and legitimate, and will regularly monitor the performance of these third parties against the standards of conduct outlined in this policy.

### **(5) Environment**

Suppliers should recognize and manage their environmental impact, and are expected to offer compensation to those affected by any damage they cause to the environment.

#### *Product or service development*

Suppliers are expected to take environmental concerns into consideration during each phase of production or service development and delivery. This includes developing products with no undue environmental impacts, are safe in their intended use, are efficient in consumption, and can be reused, recycled or disposed of safely.

#### *Resource use and waste*

Suppliers are expected to monitor, control and reduce the use of resources that are material to their business, including energy, water and other commodities.

#### *Responsible management of environmental impacts*

Suppliers are expected to avoid, or where unavoidable to minimise or mitigate, air emissions and water discharges, and to safely treat, store, transport, use and discharge or dispose of solid waste and by-products.

#### *Contingency plans*

Suppliers are expected to maintain contingency plans for preventing, mitigating and controlling serious environmental and health damage arising from their operations.

## **Procurement process**

With this policy, Aegon's aim is to establish a process that identifies risk, integrates business conduct, social and environmental standards into its procurement activities, and, where required, allows for engaging suppliers on improving their performance.

### **1. Sustainability assessment**

All of Aegon's country units and departments co-ordinating procurement activities will undertake an initial assessment, by January 2014, of their existing suppliers and procurement contracts to establish the business conduct, social and environmental risks associated with their procurement activities. This assessment will identify, for each Business Unit, suppliers that are to be classified as key suppliers. It will be reviewed and updated every two years.

### **2. Sustainability declaration**

Aegon requires all key suppliers, including suppliers with an aggregate of contracts of more than Euro 200,000 in a year to sign a separate Supplier Sustainability Declaration confirming that they meet the standards of conduct outlined in this policy. This Supplier Sustainability Declaration will form a part of the terms and conditions of all key procurement contracts and can be integrated into terms and conditions, or a separate document signed ahead of the contractual agreement. Suppliers unable to meet these standards are expected to inform Aegon of the fact. Suppliers who sign the declaration and subsequently discover that they fall short of one or more of the standards will inform Aegon immediately, and undertake remedial action as soon as possible.

The right of Aegon to use auditors and / or other external sources to verify responses given by key suppliers is included as part of the Supplier Sustainability Declaration.

### 3. Supplier engagement

Suppliers who are unable to meet the standards in this policy or who otherwise represent a potentially significant business conduct, social or environmental risk will be reviewed by Aegon for further engagement.

Aegon reserves the right to exclude suppliers whose practices, policies or procedures do not conform to the transparent and non-discriminatory conduct standards outlined in this policy. Aegon will make clear to any company that it chooses to exclude the reasons for this action.

Where relevant and applicable to the business environment, Aegon wishes to encourage an overall improvement in the way that suppliers manage social and environmental impacts. In some cases, this can be achieved in partnership with individual suppliers or in convening discussion among a number of suppliers of a particular issue. Aegon Business Units are encouraged to develop such engagement programs and approaches.

### 4. Contact point

In applying this policy, Aegon aims to be as transparent as possible with its suppliers. Suppliers are encouraged to contact the Aegon unit with which they contracted to provide products, goods or services should they have any questions on this policy or any suggestions that would help further Aegon's or the supplier's sustainability goals.

## Reporting

Aegon will report regularly on the implementation of this Sustainable Procurement Policy in its communications on sustainability, principally through the company's Annual Review, Sustainability Supplement and website ([www.aegon.com](http://www.aegon.com)). Aegon's reporting will take into account any future guidance issued by the Global Reporting Initiative on supply chain disclosure.

## Implementation

This policy has been adopted by the Aegon N.V. Management Board. The policy is subject to continuous review. All changes must be approved by the Aegon N.V. Management Board. All Aegon Business Units that fall within the scope of this policy are responsible for implementing the standards contained in it. These Aegon Business Units are also responsible for monitoring local procurement activities and for ensuring their compliance with the terms of this policy, as well as that of their suppliers. Business Units will refer to this policy in general procurement terms & conditions, where these exist, and ensure that the Supplier Sustainability Declaration is presented to all relevant suppliers.

In each location, the main Aegon signatory for vendor contracts shall be responsible for ensuring implementation. Managers overseeing procurement activities are responsible for overseeing implementation of this policy, and for reporting significant risks and violations. Compliance is integrated into the company's local and group-level systems for risk and compliance management. Local officers may escalate issues if they feel there is inadequate local management attention.

Aegon provides an internal toolkit to help Business Units to implement this policy, including carrying out risk assessments, using the Supplier Sustainability Declaration and engaging with suppliers.

## Developments

Aegon reserves the right to amend this policy in line with best practice in this area and its own experience with sustainable procurement. Aegon will communicate to key suppliers and other stakeholders any material changes as and when they occur. For further information about the company's approach to sustainable procurement, please contact:

Marc van Weede, Global Head of Sustainability  
[Marc.vanweede@aegon.com](mailto:Marc.vanweede@aegon.com)

### C. Cost Comparison of Sustainable and Traditional Items

Product	Avg Cost Reg	Avg Cost Sus	Price difference (Sus - Reg)	% Difference (vs reg)
Paper	\$48.18	\$60.94	\$12.76	26.5%
Pens	\$0.54	\$0.63	\$0.09	16.3%
T-shirts	\$3.07	\$5.49	\$2.42	78.8%
Hoodie	\$13.43	\$16.94	\$3.51	26.1%
Hat	\$4.21	\$6.17	\$1.96	46.5%
Banner printing	\$41.54	\$73.83	\$32.29	77.7%

See full spreadsheet with links to websites [Here](#)

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# Chapter 2: Food, Beer and Sustainability

Lauren N. Dvonch, Sydney Cheung

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## Disclaimer: Effects of COVID-19 on Sustainability Food and Beer Audit of the Anaheim Ducks

On March 12, 2020, the National Hockey League paused the remaining month of the 2019-2020 hockey season at the recommendation of medical experts and the Board of Governors due to the COVID-19 pandemic (Anaheim Ducks, 2020). All events at the Honda Center have been cancelled or postponed through at least May. Due to the widespread effects of COVID-19 and the temporary closure of the Honda Center, food and beverages are neither being purchased by the Honda Center nor sold to event attendees. Because of this, the information provided in this audit relies on historical data, past trends and information from previous seasons and events. However, food choices can have an impact on disease prevention and transmission. Although the main global focus in current times should be public health and safety, food can tie into this equation. Human health and the health of the earth are interconnected; therefore, environmentally-friendly food choices are beneficial for both the planet and the human population. When the Honda Center is able to safely host events again, the implementation of sustainable food and beverage practices can have a lasting effect on the well-being of the humans and the earth (WHO, FAO, and IEO, 2004).

## 2.1 Introduction to Food and Beer Sustainability

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### 2.1.1 Overview

Food and alcohol are a huge part of sports culture. Because sporting events have such large turnouts, the carbon footprint of sporting venues can be greatly altered by the food and beverage choices of event attendees. Implementing sustainable food options at sporting venues can influence attendees to make educated decisions about their consumption to mitigate climate change.

### 2.1.2 Food Production

Food production accounts for 83% of total greenhouse gas (GHG) emissions, the most environmentally intensive process in food systems (Heller, 2017). Animal protein requires 4.4 times more water than plant-based protein, such as tofu and legumes (Chai, 2019). Animal agriculture requires more land usage due clearing land (mostly forests) for livestock grazing and growing feed crops. Approximately  $\frac{3}{4}$  of the global soy production goes to animal feed (Bellantonio, n.d.). Raising livestock uses 70% of agricultural land and  $\frac{1}{3}$  of the arable land in the world. In Brazil, the world's largest exporter of beef, cattle ranching has been the leading cause of deforestation in the Amazon (Mackintosh, 2019). Meat and dairy, staple animal products in the American diet, are responsible for 60% of greenhouse gas emissions, but only provide 18% of calories and 37% of protein levels around the world (Petter, 2018). A diet based on animal products is the least environmentally sustainable diet due to the resources required in production compared to a plant-based diet (one that excludes any products from animal origin), which has the least environmental impact (Chai, 2019). Eating a plant-based diet for **one day** saves 1100 gallons of water, 40 pounds of grain, 20 pounds of carbon dioxide, and 30 square feet of forest (The Vegan Web Designer, n.d.).

### 2.1.3 Beer Production

Currently, about 75% of food and beverage sales at Honda Center are beer purchases. Sustainability and its role in the beer industry is a relatively new topic, but the main concern regarding the environmental impacts of beer brewing is water consumption. It takes about 20 gallons of water for each pint of beer, and in addition to this, the environmental footprint of beer increases when it is exported as a result of GHG emissions released by transport (Alter, 2009). However, many breweries are currently implementing broad sustainability initiatives and moving towards environmentally-friendly practices.

### 2.1.4 Food Transportation

Transportation from food to fork is not as environmentally damaging as many people believe; it produces 4% of GHG emissions, excluding indirect transportation which is approximately 7% (Heller, 2017). Although transportation plays a small role in the environmental impact of food systems, it is still worth minimizing to reduce emissions. A tool to help consumers realize how far food travels from farm to store is called "food miles." A study conducted in Chicago averaged 1,500 miles for food, which highlights the desire to support locally-sourced food (How Far Does Your Food Travel to Get to Your Plate?, 2018). However, food miles do not adequately assess the environmental impacts overall, because it doesn't take into account other factors.



One such factor is the type of transportation used, which could vary from air freight (which has the highest carbon footprint), ship, or truck. Additionally, field level production factors need to be considered (Heller, 2017). Even so, GHG emissions such as nitrous oxide are difficult to calculate because factors such as soil type, climate and management practices differ per region. As a result, local versus non-local food have different impacts depending on crop suitability per season.

### 2.1.5 Food Waste

Another food choice individuals make that has environmental implications is the amount of food lost. Food waste happens due to a number of reasons such as abnormal looking produce (which deviates from optimal appeal), foods close to the “best-before” date, and food that is thrown away in households and restaurants. Approximately  $\frac{1}{3}$  of global food production (1.3 billion tonnes) becomes food waste every year (FAO, 2019). If just  $\frac{1}{4}$  of food waste could be saved, that could feed 870 million people in the world. More specifically, sporting event attendees produce 39 millions pounds of trash annually (Held, 2019). The Seattle Mariners “estimated in 2011 that food and landscaping waste accounted for 51 percent of their overall stadium waste” (Hoover, 2014). There is also an environmental cost to food waste aside from food production. Rotting food in landfills releases methane, a potent GHG which has 21 times the warming effect of carbon dioxide (Simon, 2018).

### 2.1.6 Food Security

As the world population increases and temperatures rise, food scarcity becomes a major issue, making food production less efficient. The United Nations estimates that the world’s population will grow to 9.8 billion people by 2050 (Chai, 2019). Current global trends highlight the increased demands for animal products, specifically meat and dairy. This will pose a problem for the growing population, as food production for meat and dairy is unsustainable. 50% of grains in the world are fed to livestock, which in turn are fed to people. By limiting human consumption of livestock, energy could be directly transferred to humans by eating grains rather than being lost by feeding livestock.

### 2.1.7 Human Health

Zoonotic diseases such as the novel coronavirus are a threat to human health and are exacerbated through climate change and individual habits. The COVID-19 pandemic was traced back to a live market that sold exotic animals for means of consumption located in Wuhan,

China. In a report written by the World Health Organization (WHO), Food and Agriculture Organization of the United Nations (FAO), and the World Organization for Animal Health (OIE), risk factors of zoonotic diseases include an increased demand for animal protein and changing food preferences. In addition, climate change allows zoonotic diseases to spread more easily due to “[altered] vector distribution and abundance, migration patterns of birds and other wildlife, and the survival time of pathogens outside the host” (WHO, FAO, OIE, 2004). Climate change poses a risk to the spread of zoonotic diseases and is “is likely to contribute to the emergence of novel forms of disease and pathogens” more than any other factor (WHO, FAO, OIE, 2004). Animal agriculture contributes to both climate change and the transmission of zoonotic diseases.

## 2.2 Food and Beer Sustainability Practices

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The National Hockey League consists of 15 hockey teams, and founded the NHL Green Initiative in 2010 to improve sustainability measures. NHL Green was started as a result of protecting the future of hockey, as climate change poses a threat to maintaining the sport. In recent years, the Anaheim Ducks have furthered sustainability action through food and beverages.

### 2.2.1 History of NHL Food Sustainability

NHL Green is currently implementing practices throughout the league that relate to food sustainability. One practice is the diversion of trash to recycling centers instead of landfills. In 2016 the NHL achieved a 32% diversion rate (NHL Green, 2019). NHL arenas such as Montreal Canadiens and Vegas Golden Knights conduct on-site waste sorting, which contribute to higher diversion rates. About half of NHL arenas currently compost, and 12 arenas, including the Honda Center, utilize compostable silverware. Vendors that are contracted by arenas are taking steps to improve consumer forecasting, which will allow them to purchase only as much food as needed and reduce food waste. Additionally, the NHL Food Recovery Initiative diverts 100 tons of waste annually by donating untouched food to shelters. Through food donation programs, the “NHL reduces approximately 79 metric tons of carbon dioxide equivalent (MTCO2E) from the environment each year” (Hoover, 2014). Additionally, the NHL Green website tells visitors that there is a database for NHL teams to individually enter their utility data so the League can track that information (NHL Green, 2019). It is unknown what specific data is tracked besides Scope 3 emissions, which are all indirect emissions that occur in the value chain of the reporting company. NHL’s tracking is a voluntary program, but the NHL does seem to be taking steps to encourage more teams to enter their data.

### 2.2.2 Current Status of Anaheim Ducks Food Sustainability

The Anaheim Ducks are actively working towards a more sustainable food program. The majority of the following information regarding current status came directly from the Honda Center staff during an in-person meeting. About 80% of the Honda Center's disposable food-related products (cutlery, plates, etc) are made from biodegradable materials. The Honda Center is currently in the process of replacing those items with a polylactic acid (PLA) free alternative instead, such as ones made from marine biodegradable materials. All kitchen food waste goes into green bins, lined with compostable bags, which are then outsourced for composting. Back-of-house recycling and food waste are sorted by specialized teams to avoid contamination. There is not yet a compost or recycling system for front-of-house waste sorting. Additionally, cooking oil used in the kitchens is recycled via a program that converts oil into biofuel. In terms of food, some vendors within Honda Center have introduced mushroom-based meals as a vegetarian option, which have been well received by patrons. Starting in February 2020, the Anaheim Ducks partnered with Enterprise Rent-A-Car to host a weekly food drive which collected goods for the Second Harvest Food Bank of Orange County and incentivized fans to donate by offering raffle tickets to win prizes such as game tickets or signed jerseys.

### 2.2.3 Current Status of Anaheim Ducks Beer Sustainability

The Honda Center contracts at least three breweries, in addition to a number of vendors that sell other various types of beer. The breweries include Golden Road, Sierra Nevada, and Shock Top. All three breweries have a number of corporate sustainability practices and initiatives including sustainable energy, water conservation programs and more. Golden Road's flagship brewery is located less than two miles from the Honda Center and generates nearly 80% of its energy from solar panels, and partners with Heal the Bay to reduce ocean pollution (About Us: Golden Road, 2019). Sierra Nevada is brewed in Northern California, and also has a LEED certified brewery in North Carolina. Sierra Nevada's Northern California brewery used closed-loop carbon capture to prevent emissions and reuse them in production as well as their very own 10-acre hops garden on site (Sustainability, 2020). Shock Top is brewed in Colorado, and "through its 'Shock the Drought' campaign, Shock Top [donates] each month to innovative water-conservation projects" (McNally, 2015).

## 2.3 Available Information from the Anaheim Ducks

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The Anaheim Ducks have an active social media presence on a variety of platforms, including Facebook and Instagram, as well as a regularly updated website. Fans interact with these different platforms; their Instagram has over 365,000 followers, and their Facebook has nearly 420,000 likes. A sold-out event at the Honda Center will draw a crowd of over 18,000 visitors. Despite the wide reach of fan interaction with both social media and venue attendance, the Anaheim Ducks have limited information available to fans about current sustainability practices, particularly regarding food and beverage. The positive changes that have been implemented are largely unknown to fans due to a lack of food-specific and beverage-specific marketing, both on social media platforms and in-person at the Honda Center. Most of the following information regarding current practices at the Honda Center came from an in-person visit with Anaheim Ducks and Honda Center management and could not be found on publicly available platforms.

### 2.3.1 Information Available to the Public

There is limited data available online informing viewers ways about the Honda Center promoting sustainability through food and beverages. Some information that is available includes the fact that “safe” food is donated via Food Finders to local populations in need, but this does not specify what constitutes “safe” food or how much food is collected by Food Finders. It is also stated that the Honda Center “source[s] from local sustainable vendors...as much as possible” (Honda Center, n.d.), but there is no information from the Ducks regarding which vendors are sustainable and where the local vendors are located. Additionally, the Honda Center operates bulk condiment stations to reduce individual packaging waste and uses compostable silverware, but it is unclear from online sources if composting takes place on site, if at all. There is no online information through the Ducks website regarding sustainable beer practices, but more information can be found about particular vendors on their individual websites.

It is also important to mention steps being taken by the Anaheim Ducks to help the public during the COVID-19 crisis. On March 21, 2020, less than 10 days after the NHL season was postponed, the Anaheim Ducks hosted a drive-through food bank with Second Harvest Food Bank in the Honda Center parking lot for families in need of access to safe and inexpensive food. These banks maintain proper social distancing procedures and are scheduled for every Saturday morning from 9-11am or until supplies run out, and are estimated to feed 4,000 families in one day (Elattar, 2020).

## 2.4 Best Practices in Professional Sports

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Just like the members of the National Hockey League and the Anaheim Ducks, other sports teams across the country are moving towards more environmentally friendly practices. Though certain locations and teams will benefit more from certain practices than others, effective solutions currently being implemented can be looked to for inspiration.

### 2.4.1 Current Best Practices Throughout Sports

Professional sports leagues and teams across the country are moving towards more sustainable food programs. Some best practices identified by the NRDC that are happening across the country are as follows (Wei, 2015):

- *Florida Marlins*: Approximately 10,000 pounds of unused prepared food at Marlins Park is donated to local senior homes annually to feed those in need.
- *Dallas Cowboys*: AT&T Stadium sources its USDA-certified organic produce from nearby Paul Quinn College's student-run farm.
- *San Francisco Giants*: AT&T Park features vegetarian and vegan meal options in every concession area, earning the ballpark first place in PETA's 2014 Vegetarian Friendly MLB Stadium Rankings.
- *Sonoma Raceway, Host of NASCAR*: The raceway was the first North American racetrack to plant a two-acre organic garden onsite and uses a herd of nearly 3,500 milking sheep to mow the raceway lawns without any industrial equipment.
- *Tampa Bay Lightning*: 125 hydroponic garden towers grow one acre of organic food onsite at Amalie Arena to feed Lightning players and fans.
- *San Francisco 49ers*: 30% of all Levi's Stadium produce is USDA-certified organic and more than 20% of the menu is vegetarian.
- *San Diego Padres*: 100% of used cooking oil at Petco Park is recycled and donated as biodiesel to support local public transportation and school buses.

Additionally, there are a few players throughout the NHL that follow vegan or plant-powered diets. Professional sports are incredibly physically demanding and it can be difficult to ensure that players are receiving proper nutrients from their food with such intense workout schedules, but the few vegan players prove that this can be obtained with plant-based diets. One player who is vocal about his plant-powered diet is Zdeno Chara, the captain of the Boston Bruins, who also happens to be the tallest NHL player in history at 6'9". On Earth Day 2020, Chara posted on his personal instagram (@zeechara33) a video discussing the importance of a

plant-based diet and his personal successes after transitioning animal products out of his eating habits. This type of outreach via social media has become more and more prominent as players tackle a wide variety of causes, and can be an effective way of conveying a message to a large audience.

These practices span across a wide range of professional sports, and could be adjusted to work for the Honda Center and specifically the Anaheim Ducks. As more national teams come up with innovative ways to reduce the ecological footprint associated with food consumption, further solutions that reduce an arena's impact can be implemented. Though the best practices listed above are by no means an all-encompassing list of ways to obtain a more sustainable food program, they can provide a starting point for the Ducks to create their own environmentally friendly food program, reduce their impact associated with food and increase public education of the power of food to better the environment.

## 2.5 Required Information

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In order to perform an in-depth, comprehensive audit of the Anaheim Ducks, both qualitative and quantitative data will be needed. This data will be used to assess the feasibility of certain sustainable practices within the Honda Center and to determine the potential effects of those practices. Unfortunately, due to the current pandemic situation which led to a shutdown of Honda Center and thus a stoppage of food and beverage sales, much of this information will be unavailable unless past data has been collected by the Honda Center, the Ducks, or by vendors themselves.

### 2.5.1 Tracking Quantitative Data Needed

Quantitative data needed to conduct a food sustainability analysis may include:

- Amount of resources used in food production (GHG emissions, water, land usage, etc.)
- Transportation mileage and emissions per food vendor
- Amount of food waste generated
- Amount of trash generated by food consumption and production
- Number of vendors already contracted with Honda Center that use sustainable practices
- Number of plant-based options offered
- Amount of beer sold per game
- Distance beer travels from breweries to Honda Center
- Area of rooftop of office building to determine feasibility of a rooftop garden

For future studies, tracking data is strongly recommended to best represent the current status of the Honda Center. In order to collect and track quantitative data, the Honda Center food and beverage procurement and warehouse operations team will need to communicate with different stakeholders such as food vendors, agricultural plants, and internal operations. For instance, to track the amount of resources used in food production, the Honda Center would need to be in contact with the agricultural companies to obtain data such as GHG emissions, water and land usage. Data should be recorded as necessary, such as when deliveries are made. Overall, data should be updated at least once a month. This is essential in order to produce accurate and insightful annual reports that analyze sustainability benchmarks.

### 2.5.2 Tracking Qualitative Data Needed

Qualitative data needed to conduct a food sustainability analysis may include:

- Modes of transportation for food
- Crop seasonality in the region
- Food preferences of Honda Center attendees
- Importance of sustainability to the public
- Willingness of fans to return to Honda Center after the COVID-19 pandemic

Qualitative data such as modes of transportation for food sold at the Honda Center as well as crop seasonality can be tracked by contacting agricultural plants to gain insight on internal operations, as well as compiling seasonal crops in the region. This information should be archived as operations change, in order to gain the most accuracy. Additionally, a strong recommendation for the Honda Center food and beverage procurement and warehouse operations team and marketing team is to conduct surveys to fans and staff on an annual basis, as food menus are likely to change often.

### 2.5.3 Survey Questions

Some information may need to be collected through a survey sent out to game attendees and Honda Center staff. If the public's perception of sustainable food choices is better understood, the Honda Center can adjust based on those preferences and provide options that will satisfy a larger number of game attendees. Likewise, it is important to gauge the willingness of staff to implement and carry out new sustainable practices to ensure that they are fully committed to the plan and as such will be enthusiastic and excited to carry it out.

Sample survey questions directed towards fans may include:

- How would you describe your diet? (Vegan, Vegetarian, Pescatarian, Flexitarian, etc.)
- What types of food do you usually purchase at the Honda Center? (Drinks, Snacks, Food, None)

- If you are on a restricted diet, do you find it difficult to eat at the Honda Center? (Yes, Sometimes, No)
- How satisfied are you with the plant-based options currently offered? (Very satisfied, Satisfied, Neutral, Somewhat satisfied, Not satisfied)
- Would you be open to trying a plant-based option? (Yes, Maybe, No)
- How often would you purchase the plant-based option? (Always, Frequently, Occasionally, Never)
- Would you be open to dining at on-site restaurants with changing seasonal menus? (Yes, Maybe, No)
- Would you be upset if certain foods were unavailable if they were out of season? For example, avocados were only served from spring-early fall? (Yes, Maybe, No)
- Would you be more likely to purchase from a vendor that practices sustainability? (Yes, Neutral, No)
- Would you purchase a more sustainable food option if it was more expensive? (Yes, Maybe, No)
- What is your favorite restaurant/vendor at Honda Center? Why? (Short answer)
- Would you be interested in learning more about the sustainability initiatives of the Ducks? (Yes, Maybe, No)

Sample survey questions directed towards staff may include:

- Would you be interested in creating a seasonal menu? (Yes, Maybe, No)
- Would you be interested in developing more plant-based dishes? (Yes, Maybe, No)
- How important is incorporating sustainability in the workplace for you? Please rate the importance on a scale from 1-10 (1 being least important, 10 being most important)
- How satisfied are you with sustainability initiatives at the Honda Center? Please rate your satisfaction on a scale from 1-10 (1 being least important, 10 being most important)

#### 2.5.4 Possible Analyses

Once both quantitative and qualitative data is collected, a series of analyses can be conducted to give a comprehensive look of food sustainability within the Honda Center and the Anaheim Ducks team. Some analyses may include:

- Comparing carbon footprint of various food options
- Estimating success rate if sustainable food practices were incorporated
- Average food waste produced at each the Honda Center and whether there is a variance between different types of events (hockey vs. concert)
- Economic feasibility of reducing food waste to zero
- Long-term monetary savings of switching to primarily plant-based food vendors or



- adding more plant-based options
- Environmental impact of a seasonal menu
- Comparative food and beverage sales before and after COVID-19 pandemic

## 2.6 Parties of Interest

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It is crucial to identify these parties in order to propose environmental solutions that will not only have a positive impact on the world but also on the people who will be affected.

### 2.6.1 Stakeholders

Some of the stakeholders who are affected by the environment and economy include Honda Center management, vendors who are currently contracted with the Honda Center and vendors who wish to be contracted with the Honda Center in the future. However, the event attendees are likely the most important stakeholder in the issues. Their willingness to pay for sustainably sourced food and beer could be the defining factor in the ability of the Ducks to move towards a more environmentally sound program.

### 2.6.2 Target Population

The target population for the sustainable food program is all people who visit the Honda Center for any number of events, including, but not limited to, Anaheim Ducks games. It is our goal to ensure that all visitors to the Honda Center are provided with healthy and eco-friendly food options at a variety of vendors throughout the arena. Additionally, we hope to provide every visitor with educational information about the positive environmental impact of reducing animal product consumption, buying from local vendors and reducing food waste as much as possible.

## 2.7 Recommendations

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Ultimately, the audit's main goal is to provide recommendations for ways that the Anaheim Ducks and the Honda Center can implement more sustainable food practices to minimize negative environmental impact. Below is a list that will help the Anaheim Ducks and Honda Center achieve this goal. Recommendations have been separated into low cost and high cost so that less expensive and labor-intensive options can be addressed first and more costly or difficult recommendations can be addressed when feasible.

### 2.7.1.1 Low Cost and/or Effort Recommendations

Recommendations that will have the lowest associated costs and/or effort and will be the easiest to implement:

- Purchasing and utilization of on-site Tower Gardens (see section 2.7.4)
- Creation of brochure to display vendors with plant-based options for visitors
- Increasing social media presence with a focus on posts highlighting sustainability initiatives
- Increasing number of food drives

### 2.7.1.2 Medium Cost and/or Effort Recommendations

Recommendations that will have a medium cost and/or effort to implement:

- Polling season ticket holders to determine public opinion of increased plant-based food options (see section 2.5.3 for detailed survey questions)
- Implementing rotating seasonal menus (see section 2.7.5)

### 2.7.1.3 High Cost and/or Effort Recommendations

Recommendations that will have higher associated costs and/or effort and will take more time to implement:

- Scouting and implementation of Green Roof
- Addition of nutrition education into S.C.O.R.E. program for local children
- Increasing the amount of plant-based options at existing vendors
- Examination of sustainability practices of current vendors from farm to site
- Relocating vendors with plant-based options to desirable locations in Honda Center
- Contracting with new vendors who offer more plant-based or sustainably sourced food

### 2.7.4 Green Roofs and Tower Gardens

One recommendation that could have significant benefits for the Anaheim Ducks and the Honda Center, including providing produce for on-site restaurants to use, is the implementation of a Green Roof or hydroponic or aeroponic tower gardens. More information would be needed to determine the feasibility of a Green Roof on the office building adjacent to Honda Center, such as “slope, the structural loading capacity and existing materials of the roof, the nature of any drainage systems, waterproofing, and electrical and water supply in place,” but its creation could have a number of benefits, including “aesthetic improvements, waste diversion, stormwater management, moderation of urban heat island effect, improved air quality, amenity space, job creation, energy efficiency, fire retardation, noise reduction, marketing, [and] educational opportunities” (About Green Roofs, 2020). Green Roofs can also contribute up to 15 credits towards multiple LEED Certifications (About Green Roofs, 2020). The following

website can be used to determine the amount of energy saved by implementing a Green Roof: <https://sustainability.asu.edu/urban-climate/green-roof-calculator/>.

An alternate or supplementary plan could be to implement aeroponic tower gardens, which grow vertically, need very little space and care, and are up to 30% more efficient than typical gardening practices (Tower Garden, 2020). This could not only provide aesthetic appeal but also a significant amount of produce for the on-site restaurants to use. This would be a much less labor-intensive application than creating a Green Roof while still providing a variety of benefits. Tower gardens could be implemented very quickly to provide food for the restaurants while further research about the possibility of a Green Roof was evaluated. Additionally, the Tower Garden company or other vertical garden companies can maintain tower gardens at the Honda Center by coming to the venue periodically, which would minimize the need for Honda Center employees to manage the gardens. The use of tower gardens has been extremely successful at the University of California Irvine, where 30 vertical aeroponic gardens provide food to the dining halls and university catering service. The garden “uses 90% less water, yields 10 times the amount of produce, does not use pesticides and grows two to three times faster than traditional farms” (Crain, 2019). UCI’s gardens are maintained by a company called Lettuce Grow, which visits the gardens for about three hours per week for harvesting, cleaning and other upkeep (Crain, 2019).

### 2.7.5 Seasonal Menus

Creation of seasonal menus can allow for sourcing of produce that has not been transported long distances to reach the Honda Center. Fenway Park in Boston, the home of the Red Sox, sources most of its food from a farm less than 40 miles away. Stadium Manager Rich Roper said that “if you are designing seasonal and local menus, your food costs are going to be lower” (Favaloro, 2015). For the Anaheim Ducks, seasonal menus would undergo multiple changes throughout the regular hockey season, which lasts from October-April. As an example, an October menu could include fruits such as apples, avocados, blueberries, oranges and raspberries, and vegetables such as asparagus, bell peppers, broccoli, corn, pumpkins, and zucchini, among many others. These menus could change every few months to reflect seasonal items. There are a number of websites that show what produce is in season in particular locations, such as: <https://www.seasonalfoodguide.org/california/>. Constantly updating menus in the sit-down restaurants could keep regular visitors to the Honda Center more engaged in the dining experience while also reducing costs and associated emissions for the Anaheim Ducks.

For an example of what one seasonal menu could look like, see below.



## 2.7.4 Environmental Marketing

Increasing environmentally-focusing marketing and public outreach could not only highlight the work that the Anaheim Ducks do from a sustainability standpoint, but also promote and encourage sustainable living practices. As previously mentioned, Zdeno Chara, a defenseman for the Boston Bruins, advocates for a plant-based diet on his personal instagram. By using him as a spokesperson or encouraging Ducks players to post about the benefits of plant-based diets, the Anaheim Ducks could reach their large social media following and advertise these ideas. Social media is an excellent tool that could allow the Ducks to promote their sustainability initiatives to their fans and embolden followers to increase their own sustainability practice in their day-to-day lives. Social media challenges and initiatives are an excellent way to increase interaction and encourage participation. Other food-related marketing tools could include pamphlets or signage directing visitors to the Honda Center to the food vendors that have plant-based options, emails to season ticket holders that include seasonal menu options, Jumbotron challenges and trivia regarding food sustainability during games, and the inclusion of a food sustainability section on the Anaheim Ducks and Honda Center websites.

### 2.7.5 COVID-19 Related Recommendations

In light of the global pandemic, it seemed appropriate to make recommendations specific to the current situation to prepare for future disasters.

- Educational tools for fans regarding the connection between environmental and human health
- Increased marketing on social media and in person regarding:
  - Safety precautions taken in regard to food and beverage
  - Nutritional information and health benefits of offered choices
- Disaster program to utilize available space and food to benefit the at-risk local community
- Increased fundraising efforts with a variety of organizations, including schools, medical providers, and non-profit organizations
- Increased sponsorships for food drives

## 2.8 References

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About Green Roofs. (2020). Retrieved from <https://greenroofs.org/about-green-roofs>

About Us: Golden Road. (2019). Retrieved from <https://www.goldenroad.la/about-us>

Alter, A. (2009, February 17). Yet Another 'Footprint' to Worry About: Water. Retrieved from <https://www.wsj.com/articles/SB123483638138996305>

Anaheim Ducks. (2020, March 12). National Hockey League Pauses 2019-20 Season. Retrieved from <https://www.nhl.com/ducks/news/national-hockey-league-pauses-2019-20-season/c-316156510>

Bellantonio, M. (n.d.). The Ultimate Mystery Meat. Retrieved from <http://www.mightyearth.org/mysterymeat/>

Chai, B. C., et. al. (2019, July 30). Which Diet Has the Least Environmental Impact on Our Planet? A Systematic Review of Vegan, Vegetarian and Omnivorous Diets. Retrieved from <https://www.mdpi.com/2071-1050/11/15/4110>

Crain, J. (2019, May 29). College dining goes ultra local with greens. Retrieved from <https://www.food-management.com/colleges-universities/college-dining-goes-ultra-local-greens>

Elattar, H. (2020, April 9). Weekly Drive Through Food Pantry Starts at Honda Center. Retrieved from <https://voiceofoc.org/2020/03/weekly-drive-through-food-pantry-starts-at-honda-center/>

FAO. (2019). Food Loss and Food Waste. Retrieved from <http://www.fao.org/food-loss-and-food-waste/en/>

Favaloro, S. (2015, July 30). Green Your Stadium: Sports Venues Reducing Food Waste. Retrieved from <https://www.centerforecotechnology.org/green-your-stadium-sports-venues-reducing-food-waste/>

- Held, L. (2019, May 2). How Barclays Is Reducing Stadiums' Enormous Waste Challenge. Retrieved from <https://greensportsalliance.org/how-barclays-is-reducing-stadiums-enormous-waste-challenge/>
- Heller, M. (2017, September). Food Product Environmental Footprint Literature Summary: Food Transportation. Retrieved from <https://www.oregon.gov/deq/FilterDocs/PEF-FoodTransportation-FullReport.pdf>
- Honda Center. (n.d.). Green Sports Alliance. Retrieved from <https://www.hondacenter.com/arena-info/green-sports-alliance/>
- Hoover, D. (2014, March). NRDC Report: Guide to Composting at Sports Venues. Retrieved from <https://www.nrdc.org/sites/default/files/sports-venue-composting-guide.pdf>
- How Far Does Your Food Travel to Get to Your Plate? (2018, February 5). Retrieved from <https://cuesa.org/learn/how-far-does-your-food-travel-get-your-plate>
- Mackintosh, E. (2019, August 23). The Amazon is burning because the world eats so much meat. Retrieved from <https://www.cnn.com/2019/08/23/americas/brazil-beef- amazon-rainforest-fire-intl/index.html>
- McNally, B. (2015, August 14). Shock Top, Indiegogo Partner to Shock the California Drought. Retrieved from <https://sustainablebrands.com/read/waste-not/shock-top-indiegogo - partner-to-shock-the-california-drought>
- NHL Green. (2019). Play It Forward: Hockey for the Next Generation. Retrieved from <http://sustainability.nhl.com/report/#!/innovate/curbing-waste>
- Petter, O. (2018, August 29). Going vegan is 'single biggest way' to reduce our impact on the planet, study finds. Retrieved from <https://www.independent.co.uk/life-style/health - and-families/veganism-environmental-impact-planet-reduced-plant-based-diet-humans-study-a8378631.html>
- Simon, B. (2018, July 18). What Environmental Problems Does Wasting Food Cause? Retrieved from <https://www.forbes.com/sites/quora/2018/07/18/what-environmental- problems-does-wasting-food-cause/#635e556e2f7a>
- Sustainability. (2020). Retrieved from <https://sierranevada.com/about/sustainability/>
- Tower Garden. (2020). Retrieved from <https://www.towergarden.com/tg>
- The Vegan Web Designer. (n.d.). Retrieved from <https://thevegancalculator.com/>
- Wei, J. (2015, June 30). Report: U.S. Pro Sports Shifting to More Sustainable Game Day Food. Retrieved from <https://www.nrdc.org/media/2015/150630-0>
- World Health Organization, Food and Agriculture Organization of the United Nations, and World Organization for Animal Health. (2004, May 3-5). Report of the WHO/FAO/OIE joint consultation on emerging zoonotic diseases. Retrieved from [https://apps.who.int/iris/bitstream/handle/10665/68899/WHO\\_CDS\\_CPE\\_ZFK\\_2004.9.pdf](https://apps.who.int/iris/bitstream/handle/10665/68899/WHO_CDS_CPE_ZFK_2004.9.pdf)

# Chapter 3: Recycling and Waste Management

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## 3.1 Introduction to Recycling and Waste Management

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### 3.1.1 Anaheim Ducks

The Anaheim Ducks are a professional hockey team, a part of the NHL, located in Anaheim, California. The NHL is a multinational sports division including the USA and Canada. The whole organization is comprised of 31 teams; 24 in the US and seven in Canada. This multi-billion-dollar industry has the richest fans of all other sports (one-third of its viewers earn an annual salary of \$100k), placing them in a position of extreme influence. How can this influential power be harnessed to encourage a more sustainable future?

### 3.1.2 Global Waste Production

Waste generation rates are rising on a global scale, with the world's cities producing over 2.01 billion tons of solid waste in 2016 (WB). As trends in urbanization and population growth continue, the amount of global waste produced annually is becoming increasingly difficult to manage and is projected to increase by as much as 70% by 2050 (World Bank).

### 3.1.3 Waste Production in the United States

In 2017, the United States generated a total of 267.8 million tons of municipal solid waste (referred to as "MSW" throughout the rest of this report) and sent roughly 139.6 million tons of MSW to landfills (Environmental Protection Agency). Of the total MSW generated in 2017, recyclable materials like paper, glass, metals, and plastics accounted for more than half at 51.8% of total waste. (EPA)

Landfills are "the third-largest source of human-related methane emissions in the United States", and over a 100-year period, the impact of methane is 25 times greater than that of carbon dioxide. (US EPA). In order to divert more of the country's organic and recyclable waste from landfills, which contribute to climate change, waste management strategies must be improved nationwide. Recycling presents a unique challenge for many individuals, businesses, and institutions who may want to adopt more sustainable habits due to varying regulations and waste management policies. This makes assessing accurate information about how to properly dispose of materials difficult.

### 3.1.4 Sustainability in Sports

Sports are universal, global activities that unite people and have the power to promote positive change. The United Nations Office on Sport for Development and Peace (UNOSDP) outlined the relationships between sport and the United Nations' 17 Sustainable Development

Goals (SDGs) adopted in 2015, which aim to encourage and support the continued contribution of sport to achieving these goals (UNOSDP). There are a few key areas in which professional sports can align their goals and messages with the SDG's and facilitate change, especially regarding waste and recycling.

Sporting arenas and stadiums are designed to hold large volumes of people. In the 2018-2019 season the NHL averaged a little over 17,000 live spectators per game (ESPN). Fans that attend sporting events typically purchase apparel, memorabilia, food, beverages, and accept free "goodies" as well as flyers and pamphlets with game information or promotions from sponsors. The level of consumption at large sporting events generates a significant amount of waste, presenting an opportunity for the sports teams and venues to take action and reduce their overall environmental impact. Several professional sports teams in the United States have incorporated strategies to increase waste diversion rates at their stadiums and arenas through recycling and composting initiatives.

### 3.1.5 Waste Management Legislation

California is making significant progress to decrease the impact of trash statewide. However, the state faces a lot of challenges regarding recycling. California's current bottle deposit system is designed to recycle billions of empty glass, plastic and metal beverage containers every year, cut pollution, and save energy (CalRecycles.gov).

In the past year, Governor Newsom and other lawmakers have agreed to reform the system by adding a few new initiatives, such as using enforcement and financial penalties to ensure targets are met, shift responsibility for recycling beverage containers away from consumers to the beverage industry, and raise consumer deposits on beverage containers to incentivize redemption (Consumer Watchdog, 2020). California's strict attitude towards recycling among consumers and businesses has resulted in the adoption of greener waste management strategies by many California-based businesses and institutions (SF Gate, 2001).

During the Obama Administration, the "National Strategy for Environmental Stewardship" plan was developed which focused on the management and recycling of electronics, designed to promote the electronics recycling market and jobs in the country (Recycling Today, 2011). Some of the primary goals of the plan include promoting the development of more efficient and sustainable electronic products for direct federal agencies to buy and reuse and recycle their electronics responsibly. This plan collaborated with the Electronics Industry to address the potential health and environmental problems caused by the mismanagement of discarded electronics, such as the release of toxic chemicals in the atmosphere and the contamination of groundwater (Info Mayer Alloys, 2018).

Another notable act from the Obama Administration regarding recycling is instituting Recycle Day, which promotes recycling and environmental stewardship. Engagement like this is important because it allows people to connect to their community, seek ways to promote recycling, and decrease the impact of waste in the country. This type of declaration could be important in a sports setting where fans are consistently engaged with their favorite teams and players.

California regularly enacts new regulations and laws that focus on recycling and how consumers and businesses should approach waste management. One of the first laws that the



state has adopted to enforce recycling is AB 341 (CalRecycles.gov). This piece of legislation, also known as California's Mandatory Commercial Recycling Law, aims to reduce greenhouse gas emissions by diverting commercial solid waste to recycling efforts and to expand the opportunity for additional recycling services in California. The bill lists a few business commercial recycling requirements on how businesses should reuse, recycle, compost or otherwise divert solid waste from disposal. Some examples of these requirements include arranging for the pickup of recyclable materials and being legally requiring businesses to subscribe to a recycling service that may include mixed waste processing that yields diversion results comparable to source separation. The bill also requires that local governments implement a commercial solid waste recycling program that consists of education, outreach, and monitoring of businesses, and is designed to divert commercial solid waste from businesses and consumers alike.

Lastly, AB 792, also known as the Recycling Plastic Containers Act, establishes the total number of plastic beverage containers filled with a beverage sold by a beverage manufacturer subject to the California Redemption Value. It also states that on average each sale in the state shall contain no less than 50 percent post-consumer recycled plastic each year. This is important because it allows the consumers to see the impact of the beverage industry and its practices in our environment. Reducing the amount of plastic material that is required to make these beverages is only part of a bigger solution.

Other laws have tried to be put in place such as the "Beverage Container Recycling Act of 2020" but reach no success in the state legislature (Cal Matter, 2020). This law could have an impact on the recycling and waste management and with a new congressional term starting, it is possible that supporters can persuade legislators to pass this bill. Businesses would be the first to be impacted by this law since they take part in purchasing and disposing containers to their local recycling centers. Companion bills known as SB 54 and AB 1080 were some of the first bills in the nation to attempt to force plastic manufacturers to take responsibility for single use products which end up in the ocean. The bill faced strong opposition from the plastic industry with critics saying that the legislation would be ineffective due to costs consumers will ultimately have to pay for. Potential legislation can impact consumers and business especially in places like sports stadiums where plastic usage is common.

### 3.1.6 COVID-19 Impact on Legislation

With COVID-19 affecting all industries across the country, its impact has been felt the hardest in the legislative process. Many grocery stores across the country are not allowing consumers to bring their reusable bags due to risk of transmitting COVID-19 to others (NPR, 2020). This action prompted many local legislators to rescind their plastic bans in order to combat the health concerns Covid-19 is bringing to the general public. Meanwhile other states that were gaining traction in recycling legislation such as Maine who proposed a "product stewardship system" that would have made producers help pay recycling and disposal costs of waste (Wasted Dive, 2020). However with the virus disrupting government entities across the country, this bill has been put on hold until the next congressional term. While this can be seen as bad in the general public, others see this situation as an opportunity for the government, producers, and consumers to investigate the deeply rooted issues that affect the supply chain.

## 3.2 Background and History of Recycling in the National Hockey League

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### 3.2.1 Hockey and Climate Change

Hockey depends on a healthy environment, and warmer temperatures associated with climate change are impacting the length and quality of the outdoor season (NHL Green). If the effects of climate change continue, the game of hockey may be permanently affected. The NHL recognizes the risks of climate change to both the environmental aspect of hockey as well as the industry itself. COVID-19 brought an abrupt end to the 2020 hockey season, impacting players, fans, and stakeholders at all levels of the sport. While the current restrictions are only temporary, this sudden absence of hockey could be a glimpse into the future of the sport without meaningful climate action. As players and fans around the world have realized through this global pandemic, their lives are greatly impacted when their access to hockey is suspended. The return of the normal hockey season will be a crucial moment to emphasize the volatile nature of hockey in the changing world. If communicated effectively, this will create a sense of urgency as stakeholders will make the connection between climate change and the future of the sport. These people will then become powerful voices to advance and advocate for sustainability in the NHL.

### 3.2.2 NHL Green

The creation of NHL Green in 2010 marked the League's commitment to the future of hockey, preserving a healthy natural environment and promoting sustainable practices. One of the 5-year goals of NHL Green is to "increase waste diversion efforts across the NHL to 50% landfill avoidance" (NHL Green, 2018). The NHL also created the Recycle the Game program to provide donated hockey equipment to underserved communities, and the Anaheim Ducks collected "over \$11,000 in donated used hockey equipment" with the program in 2017 at the NHL Centennial events. (NHL)

### 3.2.3 The Anaheim Ducks and Recycling

The Anaheim Ducks Hockey Club previously partnered with Orange County Waste & Recycling and the Discovery Cube of Orange County to promote recycling and composting events, such as the Day of Recycling, EcoChallenge, and Compost Giveaways. The Honda Center provides an excellent venue for these types of events and represents an opportunity for the Ducks to expand on these types of community-based recycling activities in the future.

## 3.3 Current Status of Waste Management at the Honda Center

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### 3.3.1 Information Available to the Public

There is limited information regarding recycling and waste management on the Honda Center website or the Anaheim Ducks website. What is posted under the recycling section of waste management is, “Recycling of bottles and cans extracted at the point of guest purchases from all food and beverage bar locations.” There is a lack of communication in this sentence that provides the reader with confusion based on what the Honda Center is actively doing regarding recycling. It is hard to figure out what this sentence is attempting to communicate. The Honda Center is serviced by Republic Services for all of trash, recycling, and composting needs.

In the past year, disposable paper straws have been put in place for the whole arena. They do still offer “plastic straws that are available upon request for guests with special needs.” The Honda Center has stated that they are recycling all cardboard, plastic, paper, event banners and lighting within the facility. Unfortunately, when one of our students went to a Ducks game, they found no recycling bins available to fans that may want to discard their recyclable containers accordingly.

On the Honda Center website, readers are informed that the Anaheim Ducks are a part of the Green Sports Alliance and committed to the Green Sports movement through the ongoing environmental and sustainable efforts that they have put in place like the ones mentioned in the first paragraph of the Current Status section. The goals of the Green Sports Alliance are to “leverage the cultural & market influence of sports to promote healthy, sustainable communities where we live & play.”

## 3.4 Broad Waste Management Goals

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Many questions will be needed to be answered in order to get a proper hold on all of the facts. A visit to the property itself to investigate its recycling availability will also be necessary. There is a list of questions already lined for the facilities manager or whomever will be available to answer said questions in a timely manner. The following will be a compilation of the information needed and how it will be beneficial to the audit providing the final recommendations.

### 3.4.1 Data Collection & Analysis Strategy

The initial question would be, “What items, specifically, are recycled at the Honda Center?” This would provide the analytics team with a better idea of how much of their products on sale during events is considered waste versus recyclable. This information would help determine their waste diversion rate. The next question would be “How are they recycled?” This provides the team with an idea of whether or not they are being recycled

properly. What is also important to know is “How often does the Honda Center get their bins picked up?” This answer helps with figuring out can size for the recycling, trash, and composting bins. Next is “Where are the recycling bins being placed?” Placement of bins is very important when it comes to the recycling efficiency of the fans and employees. The bins should be placed in areas where items that can be recycled are being sold. Another factor that helps with recycling efficiency would be if the recycling bins are labeled.

The next question reflects more of the business's legacy, “How important are the subjects of recycling/reducing waste to the Ducks/the Honda Center?” The answer to this question is very important. This would provide an idea of whether or not the business is committed to the changes we may recommend. If they are then there would be a better inclination to give them more ambitious goals whereas if they are not, then they would have to be given cheaper and easier ways to implement a less waste workstyle. Once we know their commitment to an overall goal, we can identify what kind of legacy they want to present to the public regarding business sustainability.

Information that would help in creating goals for the Honda Center would to know if the waste production is measured. It is necessary to find their current waste management data and also ask if the city provides tonnage information back to the Ducks about how much trash is removed. This information would allow for the formulation of realistic goals that could lead to a decrease in landfill waste. Without this information, a 10% decrease in waste destined for the landfill will be recommended. An on-site bin inventory would yield a better understanding of the Honda Center's total waste production and would improve suggestions. In this situation, there would need to be contact between the team and the person who deals with the trash on a day to day basis.

The next question is “what do they have in place to educate their fans on what can/can't be recycled, and where/how they can do that within the facility?”. This is by far one of the most important aspects when dealing with such a big space that holds so many people at once. Making sure all and any recycling that is being done is done right is a priority. The recommendation for this is to integrate recycling into the game activities. The team has come up with a concept called “BOOM-cycling”. This is a TV monitor activity where an employee stands at the bottom of the bleacher stairs holding a recycling bin and the fans take turns slamming recyclable waste into the bins on camera. When they do this the screen will light up saying “BOOM-cycling”. This would increase fan education on what can and can't be recycled and it will also add a fun aspect to recycling. Perhaps on the way out we will see fans dunking their recycling into bins outside of the game because the activity in itself is fun and exciting.

All of these factors should be answered and should include close contact with the companies Risk Management and legal teams. These people would be able to contract items out to different companies. It will be important to direct authority to the director of operations.

### 3.4.2 Stakeholders and Target Populations

There are multiple stakeholders that will be important to consider throughout the process of implementing new recycling and waste management practices at the Honda Center.

## Honda Center Employees

Honda Center management and employees will be among the first to adapt to the proposed changes. For this reason, it will be critical that the proposed changes are feasible and that all Honda Center employees have a solid understanding of the new waste and recycling practices. As a result, Honda Center employees will become reliable sources of information on how to correctly recycle or dispose of waste within the facility and can convey this information to others. Other important stakeholders are listed below:

## Sponsors

Sponsors are a major stakeholder because they have a lot of influence as to what products are sold at the Honda Center as well as providing funding for the Honda Center. Promoting effective recycling as well as composting may raise concerns among sponsors, especially ones that are known for producing a lot of organic and plastic waste. It is important to know this in order to effectively work with sponsors who agree to work with the Center to promote recycling and waste management. This could also have a positive effect on sponsorship. Since global change is becoming a trend in all industries there could be new sponsors that will be interested in investing in the Ducks with their increase in environmental concern.

## Players

Players have an important part and say in this plan due to their status as well as popularity among the fans. Players can be utilized in a number of ways such as creating fun content that involves promoting recycling and waste management. Players can also engage the fans by convincing the fans to do a good deed, such as recycling a certain product or placing products in the correct bins. Fans may receive prizes or be engaged through another incentive. Players promoting fan recycling habits will increase rates of recycling and fans will be able to learn about best recycling practices.

## Potential Clients

Potential clients can have a small or big stakeholder role depending on what services they are seeking. An example of clients can be companies that want to do business with the Honda Center. The Honda Center can use its leverage in order to tell clients that they should promote recycling and waste management through incentives such as a discount or a free item and such. As mentioned before, it really depends on the direction of the clients and the Center as to what best practices to use.

## Fans

The fans are the major target population in this plan since the majority of events encompass many fans from all parts of the country as well as bringing it a huge portion of income for the Center. Through education and engagement as well as best practices, we can create a fanbase that is knowledgeable and aware of the issues of waste as well as promoting

effective recycling methods among the fans. There are many ways to go about this but with time and effective engagement, it is possible.

### Neighboring Bodies

Neighboring bodies as well as businesses can also have a significant stakeholder position depending on how it is utilized. Through methods such as suggesting the best practices on promoting effective recycling and discussing with neighboring bodies on figuring out how to engage fans to recycle can work however there has to be a set of clear goals before moving onto the next plan. Examples of neighboring bodies such as the City of Anaheim can help promote recycling by hosting events that promote the ideas besides the Center. Local businesses can also help as well depending on how they want to go about promoting effective recycling.

## 3.5 Best Practices in Sports Waste Management & Recycling

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### 3.5.1 Sustainable Stadiums

Scott Jenkins, the General Manager of the Mercedes-Benz Stadium in Atlanta, Georgia, believes that zero waste is the “next big thing” in sports (Campelli, 2020). The Mercedes-Benz Stadium was the first professional sports stadium to earn a Platinum LEED Certification, and the stadium works with teams and local organizations in hopes of eventually becoming zero waste (Sustainability). Novelis, the Official Recycling Partner of the Atlanta Falcons, has partnered with the Mercedes-Benz Stadium and Habitat for Humanity for the “Recycle for Good” program, which challenged the Falcons to recycle 3 million aluminum cans throughout the 2016 football season (Atlanta Falcons and Novelis Launch ‘Recycle for Good’ Campaign, 2016). Cans are recycled locally, and the value of the recycled aluminum is used to fund affordable housing projects in Atlanta’s Historic West Side. The program has already provided enough funding to build two houses less than 2 miles from the stadium, a value equivalent to about 6 million recycled aluminum cans.

Aluminum containers have tremendous potential to replace plastic and transform recycling initiatives in sport. Aluminum is infinitely recyclable, far more valuable than plastic or glass, and according to Resource Recycling Systems, aluminum beverage cans are “the most recycled drinks package in the world” (Cans: Most Recycled Drinks Package in the World, n.d.). The Ball Corporation is currently the leading manufacturer of these aluminum beverage containers, and CEO John Hayes declared the company will be expanding the product line in 2020 (Ball Corporation). In addition to the Mercedes-Benz Stadium, Ball’s aluminum beverage containers have already replaced plastic ones at the Pepsi Center in Denver, Colorado and the Hard Rock Stadium in Miami, Florida, where Ball provided 50,000 aluminum cups for the Super Bowl LIV (Brezinka, 2018; Maloto, 2020).

### 3.5.2 Recycling Green Teams & Volunteering

The Environmental Protection Agency suggests that post-game cleanup is one of the most effective ways to retrieve and correctly dispose of recyclable materials from bleachers and seating areas, as fans often leave their empty food and beverage containers in their seats (Bell, 2018). When fans are encouraged to leave their waste behind instead of trying to dispose of it themselves, it reduces the amount of material that is incorrectly recycled.

Another best practice is the use of Recycling Green Teams (RGTs) at professional sports events, pioneered by the Boston Red Sox. In their *Guide to Recycling Green Teams at Sports Venues*, the Natural Resources Defense Council (NRDC) reported that some venues saw “recycling diversion rates in excess of 80 percent” (Hershkowitz, 2014). RGTs collect recyclable containers from fan sections during events, and their efforts help venues save energy, reduce pollution caused by waste disposal and transport, foster a sense of community involvement, and increase recycling rates. Members of RGTs can be stadium or arena employees, sponsors, or volunteers from local environmental, community, school or fan groups (Hershkowitz, 2014). The Red Sox have included RGTs at All-Star Games, All-Star Events, and World Series games since 2008.

### 3.5.3 Other Best Practices in Sports

Additional waste management strategies in professional sports include:

- A multi-day outreach program during the 2008 U.S. Open in which volunteers handed out eco-tips and NYC Metro Cards to guests;
- Zero Waste at Ohio Stadium, which was launched in 2011 by Ohio State student volunteers and achieved a diversion rate of 98 percent in 2012;
- At Lincoln Financial Field, the Philadelphia Eagles divert 99 percent of game-day waste from landfill through green energy procurement, recycling and composting;
- The Super Bowl LII (at the U.S. Bank Stadium in Minneapolis, MN), which diverted 91% of game-day waste from landfill;
- The Super Bowl LIV (at the Hard Rock Stadium in Miami Gardens, FL), which replaced plastic cups with 50,000 recyclable aluminum beverage cans.

## 3.6 Recommendations

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After full consideration of the current practices and capabilities of both the Anaheim Ducks and the Honda Center, the following is recommended;

### 3.6.1 High Cost Short Term - Medium Effort - Long Run Low Cost

- Replace all single-use plastic cups with Ball’s aluminum beverage container
  - Several stadiums have already made the switch from single-use plastic to the Ball Corporation’s Aluminum Cup (see Best Practices); this would eliminate a large portion of non-recyclable plastic from the Honda Center’s waste stream.

- Aluminum is infinitely recyclable, and the majority of aluminum products contain mostly recycled material. Therefore, the cost to manufacture and purchase these cups is negligible when compared to plastic, and the return value of the recycled aluminum can be channeled into funds, used on stadium infrastructure, or for community projects.
- Implement a “Recycle for Good”-type program. This is a campaign to recycle all aluminum cans throughout the hockey season. It would improve the neighboring community, increasing the credibility of the Honda Center. In this program the aluminum cups are recycled locally, and the value is used to fund affordable housing in the community. These practices are being done at the Mercedes-Benz Stadium in Atlanta, GA. The Honda Center could start a similar program.

### 3.6.2 Medium Cost Short Term - Medium Effort - Initial Investment Only

- Recycling Green Teams
  - Recycling Green Teams (RGTs) are groups of volunteers from within the local or Anaheim Ducks community (school groups, fans, Honda Center employees, sponsors) that collect recycling during events. The teams get to attend the events for free as volunteers as long as they participate in encouraging correct recycling behaviors.
  - The RGTs would also be interactive with guests and fans. There will be tabling in the food court areas, educating patrons about the program. Here they will be able to recruit more volunteers and educate the public on proper recycling habits.
  - There could also be volunteers near recycling bins to ensure correct placement of recyclable items. This will increase the recycling rate at the Honda Center and therefore help the Ducks achieve the NHL Green goal of a 50% diversion rate across the league.
- Incorporate “BOOM”-cycling as a fan-based, interactive show during Ducks games at the Honda Center
  - “Boom”-cycling was explained earlier as an interactive event where fans would be able to dunk their recyclable material into bins being held by RGT volunteers. The fans that do it will be projected on the Jumbotron as an incentive, with the opportunity to win prizes.
  - This would increase fan awareness of and participation in recycling. It is important for the fans to be educated on what can and can’t be recycled. This system would include a photo on the jumbotron showing the fans what can and can’t be recycled in the stadium. It will include all products sold at the stadium. The fans will be able to see what they have purchased and separate their own waste into recyclable material and non-recyclable material.
- Install recycling and compost bins next to entrances and exits throughout the Honda Center
  - With the information from “BOOM”-cycling, fans will know which of the products they have purchased can and cannot be recycled.



- When exiting the arena sections, fans will be able to locate the recycling bins and correctly separate recyclables from their trash.

### 3.6.3 Low Cost - No Cost

- Update Honda Center Website
  - Currently, there is a poorly worded section on what the Honda Center is doing to improve recycling. A revision of this content is strongly recommended to better reflect the efforts being made and any plans for improvement.
  - After the Honda Center makes some recommended changes there will be more content available to add to this section of their sustainability page of the website.

## 3.8 References

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Atlanta Falcons and Novelis Launch 'Recycle For Good' Campaign. (2016, July 28). Retrieved from <http://investors.novelis.com/2016-07-28-atlanta-falcons-and-novelis-launch-recycle-for-good-campaign>

Ball Corporation Website. (n.d.). Retrieved from <https://www.ball.com/>

Basic Information about Landfill Gas. (2020, May 4). Retrieved from <https://www.epa.gov/lmop/basic-information-about-landfill-gas>

Becker, R. (2020, February 5). With one California recycling bill already dead, will this be the year the state tackles its waste crisis? Retrieved from <https://calmatters.org/environment/2020/02/california-recycling-bottle-bill-single-use-products-plastics-wine/>

Bell, S. (2018, September 21). Minimizing Waste at Stadiums & Arenas. Retrieved from <https://www.roadrunnerwm.com/blog/stadium-arena-recycling>

Brezinka, S. (2018, February 1). 2018 Super Bowl to be held in LEED Gold U.S. Bank Stadium. Retrieved from <https://www.usgbc.org/articles/2018-super-bowl-be-held-leed-gold-us-bank-stadium>

Campelli, M. (2020, March 3). PODCAST: Green sports pioneer Scott Jenkins on engaging fans through sustainable innovation. Retrieved from <https://sustainabilityreport.com/2020/03/03/podcast-green-sports-pioneer-scott-jenkins-on-engaging-fans-in-sustainability-through-stadium-innovation/>

Cans: Most Recycled Drinks Package in the World. (n.d.). Retrieved from <https://www.ball.com/na/newsroom/features/cans-most-recycled-package-in-the-world>

Celebrating America Recycles Day. (2018, April 17). Retrieved from <https://novelis.com/celebrating-america-recycles-day/>

Crunden, E. A. (2020, April 24). With EPR bills frozen due to coronavirus in many states, proponents still see path forward. Retrieved from <https://www.wastedive.com/news/epr-coronavirus-covid-19-extended-producer-responsibility-maine-new-york-california/576612/>

DeFao, J. (2012, January 29). California's recycle race / Attitudes changing, but cities still struggle to meet mandate to cut landfill dumping by half. Retrieved from <https://www.sfgate.com/bayarea/article/California-s-recycle-race-Attitudes-changing-2821068.php>

Global Waste to Grow by 70 Percent by 2050 Unless Urgent Action is Taken: World Bank Report. (2018, September 20). Retrieved from <https://www.worldbank.org/en/news/press-release/2018/09/20/global-waste-to-grow-by-70-percent-by-2050-unless-urgent-action-is-taken-world-bank-report>

Hagemann, H. (2020, April 13). Coronavirus Fears Prompt Suspensions Of Bans On Single-Use Plastic Bags. Retrieved from <https://www.npr.org/sections/coronavirus-live-updates/2020/04/13/832838321/coronavirus-fears-prompt-suspensions-of-bans-on-single-use-plastic-bags>

Hershkowitz, A. (2014, July). Guide to Recycling Green Teams at Sports Venues. Retrieved from <https://www.nrdc.org/resources/guide-recycling-green-teams-sports-venues>

Honda Center Makes Switch to Paper Straws. (2018, September 19). Retrieved from <https://www.hondacenter.com/arena-info/press-releases/honda-center-makes-switch-to-paper-straws/>

Lincoln Financial Field Awarded LEED Gold Certification. (2018, December 11). Retrieved from <https://www.philadelphiaeagles.com/news/lincoln-financial-field-awarded-leed-gold-certification>

List of National Hockey League attendance figures. (2020, March 15). Retrieved from [https://en.wikipedia.org/wiki/List\\_of\\_National\\_Hockey\\_League\\_attendance\\_figures](https://en.wikipedia.org/wiki/List_of_National_Hockey_League_attendance_figures)

Lubell, I. (2018, April 27). 5 Shocking Environmental Effects of E-Waste. Retrieved from <https://info.mayeralloys.com/ewaste-blog/5-shocking-environmental-effects-of-e-waste>

Maloto, A. (2020, February 5). What You Didn't Know About Super Bowl LIV: It Did Something Great For Sustainability. Retrieved from <https://therising.co/2020/02/05/super-bowl-2020-sustainability/>

National Overview: Facts and Figures on Materials, Wastes and Recycling. (2020, March 13). Retrieved from <https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/national-overview-facts-and-figures-materials#Recycling/Composting>

Philadelphia Eagles: Go Green 2019 Annual Report. (2020, February 6). Retrieved from <https://www.philadelphiaeagles.com/community/go-green>

Publication Summary: California Beverage Container Recycling & Litter Reduction Act. (n.d.). Retrieved from <https://www2.calrecycle.ca.gov/Publications/Details/1478>

Rosengren. (2019, September 16). California governor vetos recycled content mandate. Retrieved from <https://www.wastedive.com/news/california-packaging-epr-stalls-recycled-content-mandate-passes/562977/>

Solid Waste & Recycling: Anaheim, CA - Official Website. (n.d.). Retrieved from <https://www.anaheim.net/474/Solid-Waste-Recycling>

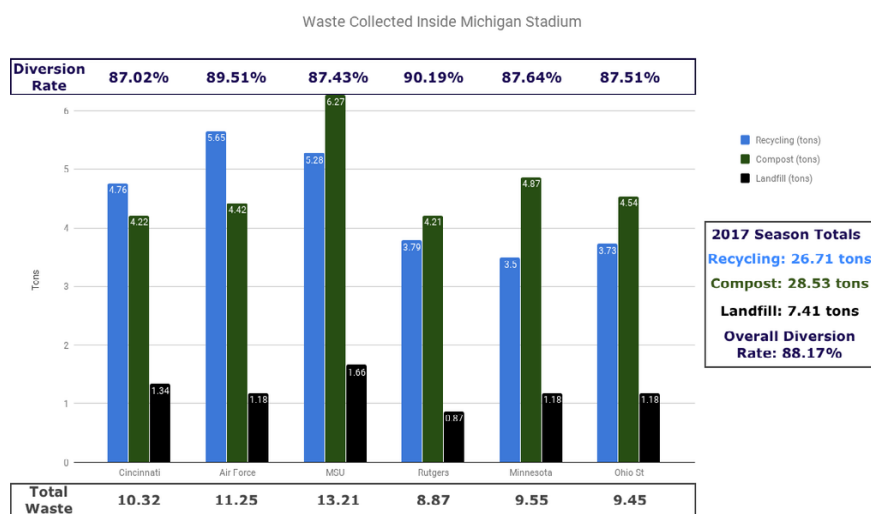
Sustainability. (n.d.). Retrieved from <https://mercedesbenzstadium.com/sustainability/>

Tucker, L. (2020, January). TRASHED: How California Recycling Failed and How To Fix IT: Consumer Watchdog. Retrieved from <https://consumerwatchdog.org/report/trashed-how-california-recycling-failed-and-how-fix-it>

Zero Waste at Ohio Stadium. (2020, April 6). Retrieved from <https://ohiostatebuckeyes.com/zero-waste-at-ohio-stadium/>

## 3.9 Appendix: Waste Management and Recycling

Figure 3.9.1: Waste Collected in Michigan Stadium



An example of how much waste either gets recycled, composted, and ends up in landfill.

Figure 3.9.2: California Recycling Legislation

Bill Title	Description	Status
<b>Beverage Container Recycling Act of 2020</b>	This bill would require distributors of beverage containers in the state to form a beverage container stewardship organization.	<b>Inactive:</b> Bill died
<b>California Circular Economy and Pollution Reduction Act</b>	The Act aims to curb waste from single-use packaging and food service items like containers, forks, and stirrers.	<b>Active Bill</b> In floor process Majority vote required
<b>California Recycling and Plastic Pollution Reduction Act</b>	This Act aims to accomplish 2 objectives: 1. Give CalRecycle, the state department in charge of waste and recycling programs, to require producers of single-use plastic packaging and foodware to take steps to minimize plastic pollution; 2. Establish a Plastic Pollution Reduction Fee for producers of all single-use plastic packaging and foodware of no more than \$0.01 per item	On track to qualify statewide ballot

# Chapter 4: Water Sustainability and Conservation

Jarod Matteoni, Michaela Montgomery, Lyndie Duich

## 4.1 Introduction

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Large events and the venues they are held in require substantial amounts of water to operate and ensure a positive guest experience. The Honda Center, which hosts hockey games, concerts, and other events throughout the year, is no exception. Water use is essential in keeping the facility and events running smoothly. With high water use, there are many ways to cut back on water consumption and long-term cost through water sustainability efforts.

### 4.1.1 Categories of Water Use

The main categories of water use in the Honda Center include restaurants, concessions, sanitation of seats and other facilities, landscaping, restrooms/locker rooms, and the ice rink.

### 4.1.2 Impact of Action

The Honda Center has already made substantial progress in lowering water use and becoming more sustainable as it is located in Southern California and has had to adjust to consistent drought conditions. Due to these efforts, water use has fallen significantly in some areas, but more improvements could be made to bring the Honda Center to the forefront of water sustainability practices. This document is being written during the COVID-19 pandemic, a global event that is unmatched in its disruption of everyday life and business. While it is incredibly difficult to avoid the impacts of an event of this magnitude, it highlights the fact that being prepared for worst case scenarios is beneficial. For example, a major water related crisis in California is drought. While the Honda Center or the Anaheim Ducks cannot prevent a drought from occurring, they can prepare for its impacts starting now. By lowering water use and continually becoming more water sustainable, the likelihood of keeping the doors open during an extreme water shortage increases.

### 4.1.3 Broad Goals

The goal of this water proposal is to continue improving the Honda Center's reduction of water use both inside and outside of the facility. Thus far, the Honda Center has taken steps to alter operational practices within the facility – such as changing how restaurants clean their spaces day to day. However, there are still improvements to be made to reduce water use and associated long-term costs, primarily in the areas of

landscaping and appliance water use. At this point, the primary obstacle to making these changes is financial, as the management group will most likely face significant upfront costs where infrastructural changes are concerned. One such change will hopefully include a shift towards use of recycled water.

#### **4.1.4 Impacts of COVID-19**

During the research and data gathering phase of this audit, the COVID-19 pandemic forced many closures and took the complete attention of many businesses. While this did not limit the data that could be gathered online and from previously published sources, it did complicate communications between the audit group and the Anaheim Ducks regarding water use data. The original plan to analyze past water usage was unable to be carried out; therefore, the understanding of their current status as well as the basis for recommendations was made from publicly posted information. This does not take away from the research conducted, it only limits the ability to estimate water saving figures. Section 4.5.5, which discusses future areas of research, goes into greater detail on ways to use water data to analyze the benefit of the recommendations and help plan for the future.

## **4.2 History of Water Sustainability and Conservation**

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Water is a key part of hockey. Often, frozen bodies of fresh water serve as the first ice rinks for many future NHL players. With the importance of water conservation noted by the NHL, they took action early on and have been encouraging individual arenas to become more water wise as well.

### **4.2.1 NHL Programs**

In 2014, the NHL broke new ground for professional sports organizations in North America by publishing the first sustainability report of its kind, and creating a follow-up report in 2018. In this the 2014 sustainability report Gary Bettman, the NHL Commissioner, wrote about the link hockey has to the environment and the interest the NHL has in fighting issues such as climate change and freshwater scarcity (LaCaruba, 2015). Moreover, this was not the first time the NHL showed interest in environmental stewardship and sustainability.

In 2011, the NHL teamed with the Bonneville Environmental Foundation (BEF) to restore an equivalent amount of water used in the Stanley Cup Final. The success of this joint venture led to the creation of the Gallons for Goals program and teams exchanging water use metrics and best practices (LaCaruba, 2015; Honda Center, n.d.-a)

In addition to the program with BEF, the NHL has pushed arenas to be more conscious of water use and take action to lower it. The efforts made by individual arenas were a large factor in overall league water use dropping by 6.65% between 2015 and 2016 (NHL, 2018). While being mindful of water use is less than a decade old in the NHL, the programs in place have made an impact already and continue to encourage individual teams and arenas to be leaders in water sustainability.

#### **4.2.2 Anaheim Ducks and Honda Center Programs**

The Anaheim Ducks and the Honda Center chose to join the Change the Course program created between the NHL and BEF. This program works to raise awareness about water issues and restoring water when personal pledges are made (BEF, n.d.).

### **4.3 Current Status of Water Conservation and Sustainability**

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The current state of water conservation and sustainability at the Honda Center shows that there have been previous efforts to improve the facility's water consumption. While information regarding these efforts is available online, it is difficult to find and not comprehensive. The Director of Publications and Digital Content, the Social Media Coordinator, and the marketing department should immediately publicize the following initiatives made by the Honda Center to show the organization's commitment to water conservation and sustainability.

#### **4.3.1 Honda Center Status**

It is important to acknowledge that efforts such as reducing power washing of the building by 50%, reducing landscaping water use by 33%, and installing auto-sensor faucets in the restrooms and low flow shower heads in the locker rooms are all incremental steps towards making the arena more water sustainable. Another noteworthy water conscious effort is that the ice for the rink is only laid down once per season with periodic resurfacing (Honda Center, n.d.-a). The aforementioned improvements to reduce water usage shows that the Honda Center has water at the forefront of its sustainability efforts.

#### **4.3.2 Anaheim Ducks' Programs**

The Anaheim Ducks have joined the NHL's Gallons for Goals program. This program is unmatched in its efforts to protect and conserve water while also restoring freshwater ecosystems. It works through a partnership with BEF's Water Restoration Certificate Program, where the NHL pledges to restore 1,000 gallons of freshwater to rivers and streams across the United States for every goal during the season. Since 2011, the NHL has helped restore approximately 50 million gallons of water (NHL Green, 2016).

However, this program ended in 2018 since there was discontinuity between where the teams were located and where the water restoration projects were taking place.

### **4.3.3 Best Practices**

Some of the best practices from other sports centers, particularly other hockey arenas, show that the Honda Center still has several ways in which it can further improve its water sustainability.

#### **4.3.3.1 *Waterless Urinals***

The Staples Center in Los Angeles, CA installed waterless urinals in all of its restrooms which resulted in an annual savings of 7 million gallons of water and \$28,200 in direct water costs (STAPLES Center, 2012). Similar to the Staples Center, the Amalie Center, home to the Tampa Bay Lightning, has also switched over to waterless urinals that have helped save an estimated 15 million gallons of water (Yost, 2018). A possible downside with waterless urinals is that they may corrode the pipes they are connected to. This is only the case if there is copper piping but retrofitting all of the restrooms and piping to change from copper would make installing waterless urinals much more difficult (Shapiro, 2010).

#### **4.3.3.2 *Recycled Water***

The Centre Bell Arena, home to the Montreal Canadiens, has implemented a closed loop water system that purifies the melted ice shavings and recycles the water back into the ice resurfacer (NHL, 2018).

In terms of using recycled water for the rink, the Ducks should be very familiar with the environmental and economic benefits since the practice facility at the Great Park in Irvine uses recycled water. For reference, the Great Park has estimated an annual savings of 4.3 million gallons of drinking water and an estimated \$5,000 in water costs (NHL Green, 2016).

The Toyota Arena in Ontario, CA, home to the Ontario Reign, uses recycled water for the cooling towers. Within the first 10 days of use in 2014, the arena (then Citizens Business Bank Arena) used 85,000 gallons of recycled water rather than freshwater (VenuesNow Staff, 2014).

## **4.4 Concluding Assessments about Water Sustainability and Conservation**

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The Honda Center and Anaheim Ducks have taken good initial steps to improve their water sustainability and increase the amount they conserve. With this solid foundation

in place steps forward may be increasing in difficulty but their impact will compound with previous efforts and benefit the broader community.

#### **4.4.1 The Honda Center and Anaheim Ducks versus Best Practices**

From the examples listed in best practices, it is clear that there are organizations in the NHL and Southern California that surpass the conservation practices of the Honda Center. These organizations and their actions serve as examples for what the Honda Center can accomplish.

#### **4.4.2 Stakeholders in Honda Center Water Conservation**

From the Honda Center and the Ducks to the venue users and fans, all stakeholders have the potential to benefit from the Honda Center becoming more sustainable and water wise. First and foremost, the Honda Center will not only be making these changes to water technologies and systems for the benefit of the environment, but they will experience economic benefits in the long run. As shown by the Staples Center with installing waterless urinals, there is a great benefit environmentally and financially to reducing water consumption.

##### **4.4.2.1 Local Water Agencies**

Some of the most influential stakeholders in the Honda Center becoming more water wise are the local water agencies such as the Anaheim Public Utilities, Orange County Water District, and Orange County Sanitation District. All of the local water agencies would serve to benefit from new water implementations at the Honda Center. For instance, the Orange County Water District (OCWD) is world-renowned for its water reuse projects, particularly replenishing the Orange County Groundwater Basin (OCWD, n.d), so this partnership would be another outstanding project. The Anaheim South Recycled Water Project (estimated completion is August 2021) by Anaheim Public Utilities proposed that six miles of recycled water pipelines and a pump station would be constructed throughout the city of Anaheim for irrigation and industrial uses (California Natural Resources Agency, n.d.; City of Anaheim, 2016). By connecting to the OCWD's Groundwater Replenishment System, Anaheim Public Utilities will have recycled water pipelines running along Katella Avenue.

##### **4.4.2.2 City of Anaheim and its Residents**

The City of Anaheim owns the Honda Center; therefore, subsidizing some of the water projects would serve to benefit the longevity and appeal of the Honda Center. Local fans have a stake in the Honda Center's water use since they use water from the same source, which can become strained during times of drought.

##### **4.4.2.3 The Anaheim Ducks**



In a broader sense, fans of the Ducks and the NHL are all stakeholders of the freshwater systems across North America that BEF has helped restore in partnership with the league and teams. Finally, players have a stake since they are promoting their sport which many young fans can only play if environmental stewardship regarding water is observed. The players are also the faces of their organizations and of the league which all have taken steps toward better water practices.

## 4.5 Recommendations about Water Sustainability and Conservation

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The following recommendations are improvements on current water conservation efforts at the Honda Center and suggestions based on the best practices of other arenas. For these suggestions to make the largest impact, it will require key members of the organization, such as the Vice President of Operations and the Vice President of Finance, to implement these changes. It is important that these executives and other members of the Honda Center and Ducks understand that upfront costs and effort will be required to improve the organizations' water sustainability, yet this will ultimately lead to savings and long-term improvements.

### 4.5.1 Low Cost and/or Effort

- 1) Continually improving irrigation techniques and water usage in facility cleaning.
- 2) Changing all landscaping to be native species or drought resistant.
- 3) Creating a water conservation action plan that creates yearly goals and strategies to achieve these goals.

#### 4.5.1.1 Low Cost and/or Effort Explanation

These suggestions include staff retraining and require minimal upfront cost to implement. While they may not have a large impact, these practices would help save more water than current operations and set the Honda Center on the trajectory of accomplishing the more intensive recommendations.

The Honda Center can get a free consultation and estimate from DF Landscape to determine where the irrigation system can improve and what native or drought tolerant plants can be included in the landscaping ("Commercial Landscaping Services in Orange County, n.d."). With this estimate and support from the Operations Manager of Facilities, implementing meaningful change to the landscaping would be a relatively quick and cheap project.

It is recommended that the Honda Center creates a 10-year (minimum) water conservation action plan so that it can have a set timeline of when certain water efficiency tasks are to be completed. The creation of a comprehensive plan would need to include input from the Director of Integrated Projects and Programming and all other directors and operations managers.

#### **4.5.2 Medium Cost and/or Effort**

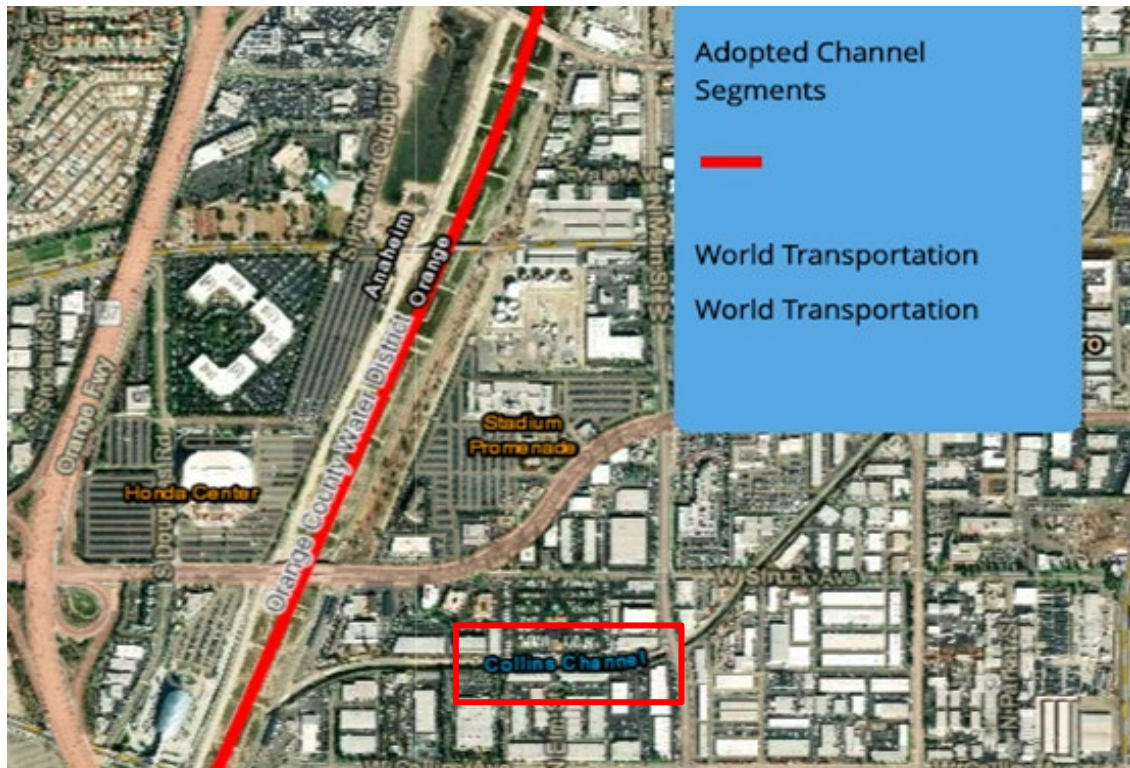
- 1) Installing water efficient fixtures throughout the building such as waterless urinals, dual flush toilets, and water saving faucets.
- 2) Adopting a channel through OC Public Works.

##### **4.5.2.1 Medium Cost and/or Effort Explanation**

1) While these water efficient fixtures have a more substantial upfront cost, they do not require much effort after installation. In order to help counter the upfront cost of these new appliances, the SoCal Water\$mart program through Metropolitan Water District of Southern California offers a variety of rebates on commercial water-saving devices ("Commercial Devices – SoCal Water\$mart", n.d.). For instance, there is a \$200 rebate per ultra-low or zero water urinal. Additional rebates can be found at the [SoCal Water\\$mart](#) website. Moreover, the Southern California Gas Company offers several energy-efficiency rebates associated with water equipment like water heaters and clothes washers (SoCalGas, n.d.-a). SoCalGas also has the SoCalGas Distributor Water Heating Program that streamlines and discounts high-quality equipment (SoCalGas, n.d.-b).

The new appliances may require some retraining for the cleaning services. A note on waterless urinals is that they will potentially corrode copper pipes, so this would need to be assessed before purchase and installation (Shapiro, 2010).

2) One downside to the Gallons for Goals program was that the watershed restoration was not occurring near where the teams were located. Water issues are local issues so it is imperative that the Honda Center works with its community to improve local water quality. The Honda Center has the option to sponsor a channel (minimum of one year) and have a contractor service conduct the channel clean-ups (OC Public Works, n.d.). The OCWD has adopted the Santa Ana River Channel near the Honda Center, but the Honda Center has the opportunity to sponsor the Collins Channel (enclosed in the red box) near the arena. This would be a great opportunity for the Anaheim Ducks Foundation to aid with sponsoring a channel since it coincides with the foundation's mission to "address the health and wellness needs of our community" (Anaheim Ducks Foundation, n.d.). The cost of this recommendation is contingent on how large of a segment of the channel the Honda Center would sponsor. The sponsorship also includes public recognition through signage at the adoption site and joining the list of current adopters, like Disneyland, to the OC Public Works site.



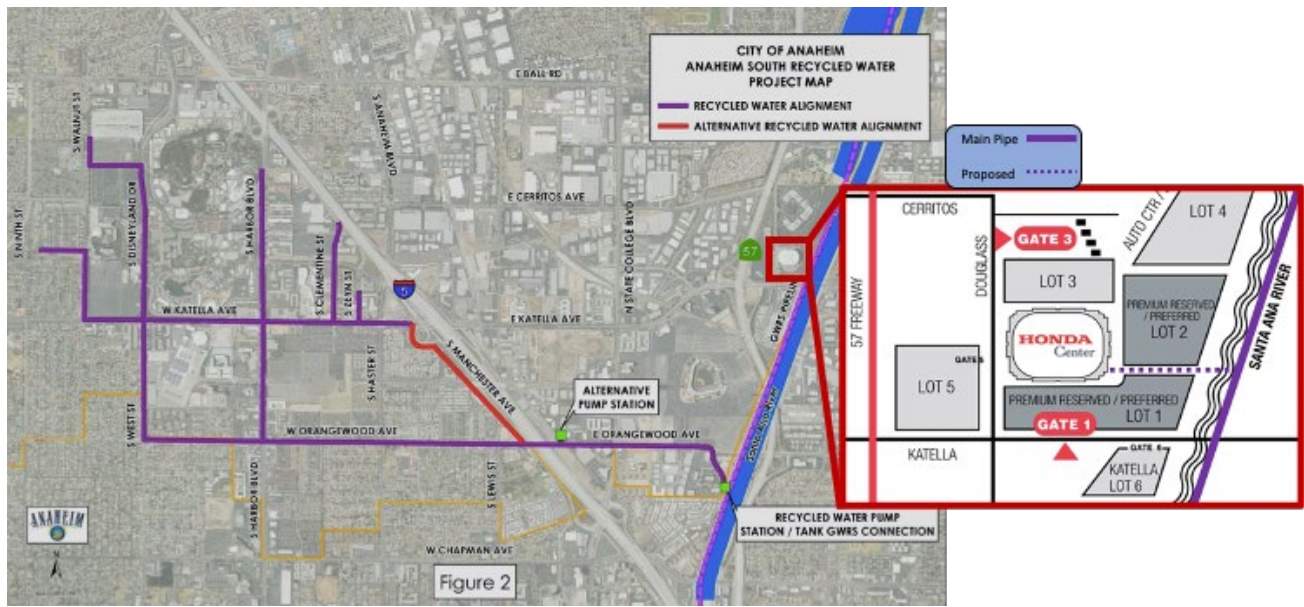
Map available through an interactive online ArcGIS story journal by OC Public Works:  
<https://ocpw.maps.arcgis.com/apps/MapJournal/index.html?appid=108d282930e64aabba864239bd20bc78>.

#### 4.5.3 High Cost and/or Effort

- 1) Gaining access to the Orange County Water District's (OCWD's) recycled water pipe.
- 2) Creating a closed loop water system within the arena.

##### 4.5.3.1 High Cost and/or Effort Explanation

1) The OCWD's Groundwater Replenishment System in connection with Anaheim Public Utilities will construct a recycled water pipeline running along Katella Ave., the main street the Honda Center is located on. For reference, the Honda Center is located at 2695 E Katella Ave, Anaheim, CA 92806 and the Santa Ana River runs directly along the arena parking lot. In the event that the new recycled water pipeline does not extend to the eastern part of Katella where the Honda Center is located, it is recommended that the Honda Center works directly with the OCWD to access recycled water since the main pipeline of OCWD's Groundwater Replenishment System runs along the Santa Ana River. Gaining access to this pipeline and using this recycled water for non-potable purposes may require an updated pipe system but would ultimately be a long-term accomplishment for the Honda Center.



This map of Orange County displays the proposed pipeline expansion for the Anaheim South Recycled Water Project and the existing GWRs Pipeline. The Honda Center (enclosed in the red box) is in close proximity to the Santa Ana River and the existing GWRs Pipeline (City of Anaheim, 2016). Due to this close proximity, it is possible to add a pipeline that connects the Honda Center to the existing GWRs pipeline. Another more detailed image of the existing GWRs pipeline throughout the entire county is available through the OCWD's Engineering report (Scott-Roberts, 2016, p. 4).

2) Installing a closed loop system to recycle water from the rink is another costly recommendation. This would require filtration systems and piping to be installed. The Montreal Canadiens are an example of an organization that uses this type of system.

Both of these recommendations are high cost since they would likely require new piping throughout the building. The Honda Center was built in 1993 and may need retrofitting (if possible) to sustain these two recommendations. However, there is another rebate program through the Metropolitan Water District of Southern California called the On-site Retrofit Program. According to [bewaterwise.com](http://bewaterwise.com), this program includes "incentives of up to \$195 per acre-foot for five years of estimated water use..., with a cap at actual retrofit costs" ("On-Site Retrofit Program", n.d.).

#### 4.5.4 Work with Corporate Partners

The Anaheim Ducks and the Honda Center have a long list of corporate partners. Some of these corporate sponsors are largely water-based companies, particularly the alcoholic beverage partners like Budweiser, Jack Daniel's, and Golden Road Brewing.

These three partners themselves, if not their parent companies, have already incorporated water sustainability initiatives. For example:

- Golden Road Brewing offers a seasonal beer called “Heal the Bay IPA” where a select amount of proceeds go to the Heal the Bay organization that works towards protecting the coastline and restoring waterways throughout LA and Orange County (Heal the Bay, n.d.; Heal the Bay IPA: Golden Road, n.d.).
- Anheuser-Busch (parent company of Budweiser) has created a 2025 sustainability report that includes a focus on water stewardship (Anheuser-Busch, 2018).
- Brown-Forman (parent company of Jack Daniel’s) also has a focus on environmental sustainability, which includes aiming to solve challenges related to water as well as wood and grains. The DendriFund was created to help solve these challenges by specifically partnering with other companies and stakeholders (Brown-Forman, n.d.; DendriFund, n.d.).

First and foremost, it is very important that the Ducks and Honda Center continue to gain corporate partners who have incorporated sustainability into their business model. It is noteworthy that the Ducks and Honda Center have these partnerships, but even more importantly, it is imperative that they use these partnerships to work on strategies to address their common goal of water sustainability. It could be something as simple as promoting the purchase of Heal the Bay IPA from Golden Road Brewing during the events at the Honda Center. However, there is the opportunity to make a more sizable impact if the Ducks and Honda Center are to work with Anheuser-Busch (Budweiser) or Brown-Forman (Jack Daniel’s) to complete water-related conservation actions within the Honda Center and out in the local community. By working with Brown-Forman, the Honda Center may ultimately be able to work alongside the DendriFund to do more community-based work such as restoring and protecting local watersheds and waterways. The final recommendation is that the Vice President of Corporate Partnerships leverages these partnerships with companies that have a sustainability mindset, particularly ones that have a focus on water sustainability.

#### **4.5.5 Future Areas of Research**

After implementing more water conservation initiatives, it will be important to study where the most water is being used. A baseline understanding of water usage at the Honda Center should be created by compiling data from previous years. A good starting point for a comprehensive look at water usage would start in 2005, when Henry and Susan Samuelli purchased the Anaheim Ducks and Anaheim Arena Management, LLC. Gathering yearly data from this point on and splitting this data into the categories listed in section 4.1.1 will allow for any trends to become apparent. With this baseline of data



complete, it is imperative that current water usage is tracked as closely as possible while changes are being implemented. Comparing between new and old data will allow the Anaheim Ducks and Honda Center to see what initiatives are working as intended and which are not. This understanding can help guide future decisions and also show that progress is being made.

## 4.6 Contacts

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No contact has been made with Honda Center or Anaheim Ducks staff or employees since the onsite visit on March 5, 2020.

- Orange County Water District (OCWD):
  - John Kennedy – Executive Director of Engineering and Water Resources:  
■ Phone: (714) 378-3200 ext. 3304
  - Jason Dadakis – Executive Director of Water Quality & Technical Resources:  
■ Phone: (714) 378-3200 ext. 3364
  - Chris Olsen – Director of Engineering:  
■ Phone: (714) 378-3200 ext. 3232
- Orange County Public Works – Adopt a Channel:
  - Email: [ocadoptachannel@ocpw.ocgov.com](mailto:ocadoptachannel@ocpw.ocgov.com)
  - Phone: (714) 955-0600
  - Sponsor Adoption Application:  
<http://prg.ocpublicworks.com/DocmgmtInternet/Download.aspx?id=1218>
- SoCal Water\$mart:
  - Email: [socalwatersmart@egia.org](mailto:socalwatersmart@egia.org)
  - Phone: (888) 376-3314
- The Metropolitan Water District of Southern California:
  - Phone: (213) 217-6000
- Anaheim Public Utilities:
  - Water Engineering: (714) 765-5196
  - Rebates and Incentives: (714) 765-4250
  - [Business Savings and Incentives](#): (714) 765-4259
- SoCalGas:
  - Rebates for Businesses:  
■ Email: [EERebatesforBusiness@socalgas.com](mailto:EERebatesforBusiness@socalgas.com)
  - Distributor Water Heating Program:  
■ Email: [SoCalGas-WH@CLEAResult.com](mailto:SoCalGas-WH@CLEAResult.com)  
■ Phone: (888) 304-2419
- Orange County Sanitation District:
  - Phone: (714) 962-2411
- Heal the Bay:
  - Phone: (310) 451-1500
- DendriFund:
  - Barbara Hurt – Executive Director  
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## 4.7 References

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- Anaheim Ducks Foundation. (n.d.). Retrieved May 5, 2020, from <https://www.nhl.com/ducks/community/anaheim-ducks-foundation>
- Anheuser-Busch. (2018, April 17). Anheuser-Busch Announces U.S. 2025 Sustainability Goals. Retrieved from <https://www.anheuser-busch.com/newsroom/20071/04/anheuser-busch-announces-u-s--2025-sustainability-goals.html>
- BEF. (n.d.). River Restoration: Change the Course Campaign. Retrieved March 2, 2020, from <http://www.b-e-f.org/environmental-projects-and-programs/change-the-course/>
- Brown-Forman. (n.d.). Environmental Sustainability. Retrieved May 7, 2020, from <https://www.brown-forman.com/environmental-sustainability/>
- California Natural Resources Agency. (n.d.). Bond Accountability – Project: Anaheim, City of South Anaheim Recycled Water Project. Retrieved April 7, 2020, from <http://bondaccountability.resources.ca.gov/Project.aspx?ProjectPK=18377&PropositionPK=48>
- City of Anaheim. (2016) Initial Study/Mitigated Negative Declaration Anaheim South Recycled Water Project. Retrieved April 7, 2020 from <https://www.anaheim.net/DocumentCenter/View/12175/ASWRP-Anaheim-South-Recycled-Water-Project?bidId=>
- Commercial Devices – SoCal WaterSmart. (n.d.). Retrieved April 28, 2020, from <https://socalwatersmart.com/en/commercial/rebates/available-rebates/commercial-devices/>
- Commercial Landscaping Services in Orange County. (n.d.). Retrieved April 28, 2020, from <https://landscaperorangecountyca.com/commercial-landscaping-company.php>
- DendriFund. (n.d.). Retrieved May 7, 2020, from <https://www.dendrifund.org/water.html>
- Heal the Bay. (n.d.). Retrieved May 7, 2020, from <https://healthebay.org/>
- Heal the Bay IPA: Golden Road. (n.d.). Retrieved May 7, 2020, from <https://www.goldenroad.la/beers/heal-the-bay-ipa>
- Honda Center. (n.d.-a). Green Sports Alliance. Retrieved March 2, 2020, from <https://www.hondacenter.com/arena-info/green-sports-alliance/>
- Honda Center. (n.d.-b). About Us. Retrieved March 2, 2020, from <https://www.hondacenter.com/arena-info/about-us/>
- LaCaruba, P. (2015). NHL Gallons for Goals: BEF: Bonneville Environmental Foundation. Retrieved March 2, 2020, from <http://www.b-e-f.org/partner/nhl-green/>
- NHL. (2018). Play It Forward: Hockey for the Next Generation. Retrieved March 2, 2020, from <http://sustainability.nhl.com/report/#!/innovate/conserving-water>
- NHL Green. (2016, March 13). NHL arenas using water more efficiently. Retrieved March 2, 2020, from <https://www.nhl.com/news/nhl-green-tip-of-the-day/c-279601524>
- OC Public Works. (n.d.). Adopt a Channel. Retrieved April 28, 2020, from <https://ocpw.maps.Arcgis.com/apps/MapJournal/index.html?appid=108d282930e64aabba864239bd20bc78>
- OCWD. (n.d.). What we do. Retrieved March 2, 2020, from <https://www.ocwd.com/what-we-do/>
- On-Site Retrofit Program. (n.d.). Retrieved April 28, 2020, from <http://www.bewaterwise.com/on-site-retrofit-program.html>

- Scott-Roberts, S. (2016, September 21). Engineer's Report for the Groundwater Replenishment System Final Expansion Project. Retrieved April 7, 2020 from <https://www.ocwd.com/media/5234/gwrs-fe-engineers-report-complete.pdf>
- Shapiro, S. (2010, February 17). Stinky Situations--The Corrosive Case Of Waterless Urinals. Retrieved March 2, 2020, from <http://www.greenbuildinglawblog.com/2010/02/articles/codes-1/stinky-situationsthe-corrosive-case-of-waterless-urinals/>
- SoCalGas. (n.d.). Business Equipment Rebates. Retrieved May 7, 2020, from <https://www.socalgas.com/for-your-business/energy-savings/business-equipment-rebates>
- SoCalGas. (n.d.). SoCalGas Distributor Water Heating Program. Retrieved May 7, 2020, from <https://scg.clearesult.com/waterheat>
- STAPLES Center. (2012, September 5). Game Changer Report: STAPLES Center Among Pro Sports' Sustainability Pioneers. Retrieved March 2, 2020, from <https://www.staplescenter.com/news/detail/game-changer-report-staples-center-among-pro-sports-sustainability-pioneers>
- VenuesNow Staff. (2014, October 14). NHL Arena's Mission to Conserve Water. Retrieved March 2, 2020, from <https://venuesnow.com/nhl-arenas-mission-to-conserve-water/>
- Yost, T. (2018, May 14). In the Playoffs of Energy Efficiency, These NHL Teams Are in the Running. Retrieved March 2, 2020, from <https://www.ase.org/blog/playoffs-energy-efficiency-these-nhl-teams-are-running>



# Chapter 5: Energy

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## 5.1 Introduction

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Energy conservation is a vital component in creating a sustainable environment, mitigating the effects of climate change, and building a healthy planet. Climate change jeopardizes the future of the hockey industry due to shorter winters, meaning shorter seasons of traditional outdoor ice hockey; frozen freshwater ponds are the foundation of where young hockey players learn and hone their skills. Due to the direct threat energy usage poses on the hockey industry, we believe it is imperative that the Anaheim Ducks and Honda Center take action to be leaders in energy-saving environmental sustainability initiatives. Saving energy would help the environment, the Honda Center save money, and be a marketable attribute for the arena and the team.

### 5.1.1 Climate Impacts due to COVID-19

During the COVID-19 lockdowns, the Honda Center's energy usage had been greatly reduced. Consuming less energy emits fewer toxins and fumes from power plants, and preserves Earth's finite resources such as coal, crude oil, and other fossil fuels. This effect is depicted globally by the correlation between energy usage and carbon dioxide emissions during the COVID-19 lockdowns. In China, the halt of industrial activity, transportation emissions, and commercial electricity usage resulted in a 25 percent decrease in carbon dioxide emissions over four weeks (Chow, 2020). This data not only shows how effective reducing energy usage is in reducing carbon emissions, but it also highlights the impact human activity has on the environment.

### 5.1.2 Broad Goals of Energy Chapter

The broad goals of the environmental sustainability audit chapter on energy are to establish the Honda Center's energy efficiency goals and cost-effective ways to achieve those goals. In this chapter, we examine where the Anaheim Ducks and the Honda Center use and waste the most energy in their operations to depict where energy-saving technology can efficiently be implemented at the lowest cost. Our initial goal was to analyze the Honda Center's past electric utility bills and separately monitored energy consumptions to determine where the most energy was being used and wasted. Based on that analysis, we planned to conduct a cost-benefit analysis of various types of renewable energy sources and energy-saving technologies to induce where in the arena to recommend implementing changes. Furthermore, we hoped to conduct an analysis of the Honda Center's past energy usage compared to future predicted energy usage projections with upgraded systems and technology. Some of the goals, however, were not able to be accomplished due to COVID -19.

## 5.2 History of Energy-Saving Initiatives for the Ducks, Honda Center, & NHL

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The Anaheim Ducks and Honda Center were founded in 1993. They joined the NHL Green initiative and Green Sports Alliance in 2013, which started their environmentally conscious thinking, recognizing the threat climate change poses on the sport of ice hockey (Honda Center, 2019). In 2013 the Anaheim Ducks partnered with Bloom Energy and installed five fuel cells, costing nine million dollars, that produce 200 kilowatts (kW) of power each comprising a 1 megawatt (MW) Bloom Energy Server (Bloom Energy, 2020).

### 5.2.1 The National Hockey League (NHL)

The NHL has 31 teams, each with their own stadium that consume enormous amounts of energy for events such as sports games and concerts. To mitigate the impact the league has on the environment, the NHL launched the NHL Green initiative in 2010 with the goal of reducing the NHL's environmental impact (NHL, 2020). In 2011 also joined the Green Sports Alliance, which was founded in 2010 (Green Sports Alliance, 2020). The NHL is a contributing factor to the climate change crisis going on all around the world from using all of their stadiums, but so far the NHL has acted appropriately and are contributing and changing the way they think about the climate crisis, the way they run the Honda Center, and all of the hockey stadiums in general. Although the Ducks can't change everything about the way the stadium was run and built, and the effects of being in a professional hockey team that fans from all over love to watch but they can try to do their part to give back to the environment that created the idea for the sport of hockey itself.

## 5.3 Current Status of Energy- Saving Technology

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### 5.3.1 Bloom Energy Fuel Cells

The Honda Center has taken many steps towards becoming an energy sustainable facility but should continue implementing and upgrading its technology to clean and renewable energy sources. The Honda Center, partnered with Bloom Energy, implemented Bloom Energy fuel cells that efficiently convert natural gas fuel into electricity through an electrochemical process that emits fewer harmful greenhouse gases into the atmosphere than regular combustion; they reduce the arena's carbon emissions and are thirty percent more electrically efficient. They can also use biogas which creates no carbon emissions and lowers sulfate nitrate emissions to the atmosphere compared to fossil fuel energy sources. (Bloom, 2020) Reference the data section for more information on Bloom Fuel cells.

### 5.3.2 Other Energy-Saving Initiatives

The Honda Center has installed LED game lights that are energy-efficient because they consume less power and emit less heat than regular lights. They save energy by turning off the large video display boards at the Honda Center when they are not in use. They also have Electric Vehicle charging stations to support the electric vehicle users. The Honda Center also shuts down the refrigerators during the off-season or when there are long gaps in the season. Though they have taken many small initiatives towards reducing their energy usage, the Ducks and Honda Center have many options to further reduce their environmental footprint.

## 5.4 Data

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### 5.4.1 Data

Due to COVID-19, we were unable to attain the Honda Center's energy usage data. Had we been able to acquire this data, we would have performed the following analyses:

In the future, the Ducks should track where the majority of their non-renewable and non-sustainable energy is used. If the Ducks can pinpoint the major energy exhausters in the Honda Center, then they can then direct their focus on finding ways to reduce energy usage in those specific areas. The Honda Center should track the energy usage by recording the levels of energy of specific systems of the arena. In order to track that information, they need to implement technology and have a team recording and interpreting the data. The team or department would focus on how they can mitigate their ecological footprint and be more sustainable. Having a separate team working on sustainability would help them get ahead from a sustainability perspective, would create jobs, and ultimately drive their sustainability goals. The team would be in charge of measuring and tracking where energy is being used throughout the stadium and of finding ways to reduce that energy usage.

### 5.4.2 Bloom Energy Fuel Cells

The Bloom Energy fuel cells are the Honda Center's main energy saving technology. Each of the five fuel cells generate 750 kW per day which is equivalent to approximately 15-20 percent of the arena's energy on a non-event day; an equivalent amount of energy could power approximately 750 average-sized homes each day (Bloom Energy, 2020). According to Bloom Energy, "For each MWh of energy the fuel cell system generates, CO<sub>2</sub> emissions will be reduced by 18-25%" (Bloom, 2020). The fuel cells offset two million pounds of CO<sub>2</sub> annually and generate power through a clean and efficient electrochemical process providing 80% of the venue's baseload power and 25% during an event (Honda Center, 2019). The energy usage for games and events at the Honda Center is fairly consistent and uses approximately 15,000-50,000 kW of power. To show context and reference for energy usage amounts, the average person uses 10,909 kWh of energy per year, and the average World Cup stadium uses 25,000 kWh per 90 minute session (Badia, 2020). Because stadiums do require enormous amounts of energy, it is imperative that they try to use as much clean and renewable energy as possible.

### 5.4.3 Solar Energy

When discussing solar energy with our contact, Kris Loomis, he affirmed that there have been discussions about adding solar panels to the roof and parking lots of the Honda Center, but they have encountered many logistical issues including aesthetic, mechanical, and electrical problems. To effectively add solar energy systems to the Honda Center, all of the changes would need to correlate with the long-term agenda for the arena.

#### 5.4.3.1 Estimates of Adding Solar Panels

Below we have calculated an approximation of the potential energy that could be produced by adding solar panels to the roof of the Honda Center.

- The Honda Center's roof spans 444 feet by 329 feet (Honda Center, 2019)
  - 146,076 square feet of roof space

- The average size for commercial solar panels is 77 inches by 39 inches and high-efficiency solar panels generate approximately 345 watts of power (Brightstar Solar, 2020).
  - Each solar panel takes up about 20.85 square feet.
- There is space for approximately 7,000 solar panels on the roof of the Honda Center.
- Those 7000 solar panels could generate 57,960 kWh of energy per day.

All the above calculations are assuming optimal conditions utilizing one hundred percent of roof space and assuming completely efficient energy capture; the projections are meant to provide a theoretical example portraying the benefits of using solar energy. If the Honda Center were able to store this energy, it would be very effective in running the arena on renewable energy and contributing green energy to the Anaheim power grid. As mentioned previously, the Honda Center uses about 15,000-50,000 kW of power on an event day, meaning the solar panels would be able to generate enough electricity to run the stadium entirely on renewable energy. Though they are initially very expensive, solar panels would pay for themselves in the long-run.

#### 5.4.4 Power Content Labels (PLC)

The power content labels depict the mix of energy sources used to generate electricity across the Southern California and Anaheim power grids. Both power content labels provide a breakdown of how much energy comes from renewable and nonrenewable sources. The first column of the PCL describes the energy resource types, the second column shows the “... actual mix of electricity purchased by your utility (or city) per product offering in a given year broken out by resource type”, and the following columns show the breakdown options for using renewable energy. (California Energy Commission, 2019)

##### 5.4.4.1 Southern California Edison PCL

As depicted on the SCE PCE (Figure 1), businesses and residents may choose their level of participation in using renewable energy sources.

Options offered by SCE:

- 1: 50% of your energy usage will be used to fund solar energy sources
- 2: 100% of your energy usage will be used to fund solar energy sources

(Southern California Edison, 2019)

Energy costs are estimated to be from 2.01 cents to 3.72 cents per kWh more for business customers to use solar energy, depending on their initial rate schedule. According to Southern California Edison, “For an average monthly bill of \$150 or usage of 865 kWh, this would result in an additional \$10/month under the 50% participation option and \$21/month under the 100% participation option” (Southern California Edison, 2019).

<b>2018 POWER CONTENT LABEL</b>				
<b>Southern California Edison</b>				
<b>www.sce.com</b>				
<b>ENERGY RESOURCES</b>	<b>SCE Power Mix</b>	<b>SCE Green Rate 50% option</b>	<b>SCE Green Rate 100% option</b>	<b>2018 CA Power Mix**</b>
<b>Eligible Renewable</b>	<b>36%</b>	<b>68%</b>	<b>100%</b>	<b>31%</b>
Biomass & Biowaste	1%	0%	0%	2%
Geothermal	8%	4%	0%	5%
Eligible Hydroelectric	1%	0%	0%	2%
Solar	13%	57%	100%	11%
Wind	13%	7%	0%	11%
<b>Coal</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>3%</b>
<b>Large Hydroelectric</b>	<b>4%</b>	<b>2%</b>	<b>0%</b>	<b>11%</b>
<b>Natural Gas</b>	<b>17%</b>	<b>8%</b>	<b>0%</b>	<b>35%</b>
<b>Nuclear</b>	<b>6%</b>	<b>3%</b>	<b>0%</b>	<b>9%</b>
<b>Other</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>&lt;1%</b>
<b>Unspecified sources of power*</b>	<b>37%</b>	<b>18%</b>	<b>0%</b>	<b>11%</b>
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
* "Unspecified sources of power" means electricity from transactions that are not traceable to specific generation sources.				
** Percentages are estimated annually by the California Energy Commission based on the electricity generated in California and net imports as reported to the Quarterly Fuel and Energy Report database and the Power Source Disclosure program.				
For specific information about this electricity product, contact:	<b>Southern California Edison</b> <b>1-800-655-4555</b>			
For general information about the Power Content Label, please visit:	<a href="http://www.energy.ca.gov/pcl/">http://www.energy.ca.gov/pcl/</a>			
For additional questions, please contact the California Energy Commission at:	Toll-free in California: 844-454-2906 Outside California: 916-653-0237			

**Figure 1.** Southern California Edison 2018 Power Content Label (SCE, 2018)

#### 5.4.4.2 City of Anaheim PCL

The city of Anaheim PCL shows a smaller power grid area of analysis pertaining more locally to the Honda Center. Anaheim is progressively transitioning from carbon intensive coal energy to clean renewable energy. "From 2004 to 2018, Anaheim has increased renewable energy from 1% to 34% while reducing coal power from 73% to 33%" (Anaheim Public Utilities, 2018).

<b>2018 POWER CONTENT LABEL</b>			
<b>City of Anaheim</b>			
<a href="https://www.anaheim.net/3452/Power-Content-Label">https://www.anaheim.net/3452/Power-Content-Label</a>			
<b>ENERGY RESOURCES</b>	<b>2018 Anaheim Power Mix</b>	<b>2018 Anaheim Green Power Program Power Mix</b>	<b>2018 CA Power Mix<sup>4</sup></b>
<b>Eligible Renewable<sup>1</sup></b>	<b>33.97%</b>	<b>100%</b>	<b>31%</b>
Biomass & waste	17.49%	0%	2%
Geothermal	5.66%	0%	5%
Small hydroelectric	0.44%	0%	2%
Solar <sup>2</sup>	0.33%	100%	11%
Wind	10.04%	0%	11%
<b>Coal</b>	<b>32.84%</b>	<b>0%</b>	<b>3%</b>
<b>Large Hydroelectric</b>	<b>1.58%</b>	<b>0%</b>	<b>11%</b>
<b>Natural Gas</b>	<b>21.87%</b>	<b>0%</b>	<b>35%</b>
<b>Nuclear</b>	<b>0%</b>	<b>0%</b>	<b>9%</b>
<b>Other</b>	<b>0%</b>	<b>0%</b>	<b>&lt;1%</b>
<b>Unspecified sources of power<sup>3</sup></b>	<b>9.74%</b>	<b>0%</b>	<b>11%</b>
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<sup>1</sup> Annual levels of renewables procurement vary from year to year, and are not necessarily representative of the utility's compliance status with the State's Renewables Portfolio Standard (RPS) Program. <sup>2</sup> Label does not include approximately 48,000 MWhs (~2%) of solar electricity generated from customer rooftop installations. <sup>3</sup> "Unspecified sources of power" means electricity from transactions that are not traceable to specific generation sources. <sup>4</sup> Percentages are estimated annually by the California Energy Commission based on the electricity sold to California consumers during the identified year.			
<div> <div>For specific information about this electricity product, contact:</div> <div> <b>City of Anaheim</b>  <b>714-765-4250</b> </div> </div>			
<div> <div>For general information about the Power Content Label, please visit:</div> <div> <a href="http://www.energy.ca.gov/pcl/">http://www.energy.ca.gov/pcl/</a> </div> </div>			
<div> <div>For additional questions, please contact the California Energy Commission at:</div> <div> Toll-free in California: 844-454-2906  Outside California: 916-653-0237 </div> </div>			

**Figure 2.** City of Anaheim 2018 Power Content Label (Anaheim Public Utilities, 2018)

#### 5.4.5 Data Needed

To dictate the most cost-effective and energy-efficient recommendations for energy-saving mechanisms the Honda Center should invest in, we need a more comprehensive scope of data to analyze. Without the following data, our recommendations are predictions based primarily on the best energy-saving practices in the industry; though all of our recommendations are more environmentally sustainable options for the Honda Center, we are unable to determine the extent of energy savings or the cost differential. To conduct the necessary analyses, we would need the following data:

- Copies of the last 5 years of electric and gas utility bills
  - energy used at the Honda Center from the previous ten years

- the projected energy usage goals data for the next ten years
- Data from all separately metered and monitored parts of the building
- Honda Center's annual budget breakdown
  - We would want to examine the budgets for energy, utilities, infrastructure upgrades, and technology upgrades.
- Any data the Honda Center has regarding their discussions about the purchase and placement of solar panels
- Suggestions for quantitatively tracking Stadiums energy usage include:
  - Monitor Bloom Energy fuel cells' efficiency and energy production
  - When each month's utility bill arrives for the Honda Center to pay, someone should be keeping records of the energy usage per month from the Honda Center. They should at least keep 5 years worth of past data in their files.
  - If the Honda Center decides that they want more specifics on what is draining the most energy from their stadium then we suggest getting energy meters and putting them around the sections where you hypothesize the most energy is being used.

#### 5.4.6 Questions

- Are there any records of past employees trying to get solar panels and how much they said it would cost and how much energy the solar company said they would produce.
- Where the energy is directed?
- What part of the Honda Center consumes the most electricity?
- Are the Bloom Energy fuel cells efficient and cost-effective?
- Did the Bloom Energy Partnership result in energy bill cost reductions?
  - Have the fuel cells been cost-effective in the long-run?
  - Have they helped the Honda Center stay on course with their energy-saving sustainability goals?
- Is there any area that is using excessive energy that we can cut back on from this report?
- Is there a spreadsheet of data compiled on the usage of renewable energy sources?
  - If so, how much money has saved them?

### 5.5 Best Practices

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According to the NHL Sustainability Report, "It is the goal of NHL Green to encourage as many NHL arenas as possible to adopt advanced building management and recommissioning systems and smart lighting controls, as well as advanced energy-efficient boilers, variable frequency drives (VFDs), renewable energy, and other energy-efficient retrofits and upgrades," (National Hockey League, 2018).

#### 5.5.1 Energy Rebates and Incentives

Many energy and utility companies, and local and federal governments offer rebates and incentives for residents and businesses to take measures to be more environmentally conscious and implement more environmentally sustainable technology. The rebates and incentives often

make the upgrades more financially viable. See examples of rebate and incentive programs below.

#### **5.5.1.1 Electric Vehicle Charging Station Rebate Program**

Anaheim Public Utilities has a Public Access Electric Vehicle Charging Station Rebate Program that compensates commercial, industrial, and municipal customers for the installation of Level 2 plug-in EV charging stations, up to a maximum of ten stations. Customers "... will be reimbursed for out-of-pocket expenses up to \$5,000 per charging station for public access locations, or \$10,000 for school, affordable housing, or publicly accessible DC fast plug-in locations" (Anaheim Public Utilities, n.d.).

#### **5.5.1.2 Solar Tax Incentives**

The Solar Investment Tax Credit (ITC), enacted in 2006, is a federal policy mechanism through the Solar Energy Industries Association (SEIA) to stimulate the use of solar energy in both the residential and commercial markets. The ITC has been extremely successful in the United States; it has grown the nation's solar energy industry by more than 10,000%, has created more than a hundred thousand jobs, and has invested billions of dollars into the economy. "The ITC is a 26 percent tax credit for solar systems on residential (under Section 25D) and commercial (under Section 48) properties." (Solar Energy Industries Association, 2020)

#### **5.5.2 Energy-efficient Systems and Technology**

The NHL is actively implementing energy-efficient technologies to create more environmentally friendly arenas. Modern arenas use energy sources such as solar power, fuel cell technology, wastewater recapture and reuse, geothermal technologies, enhanced building management systems, waste heat recapture technologies, and onsite renewable energy generation (National Hockey League, 2018). Three NHL arenas have implemented fuel cell technology, including the Anaheim Ducks. Three have added solar panels (National Hockey League, 2018). Six NHL arenas currently use recaptured waste heat to melt ice and heat the arena. The newest NHL arenas have installed ammonia refrigeration ice plant systems, which have zero ozone-depleting greenhouse gas emissions (National Hockey League, 2018). Many NHL teams have been using LED lights, new building management systems to ensure operations run efficiently, and smart building automation systems to efficiently control and monitor mechanical, electrical, and ice plant equipment. Additionally, the NHL is trying to offset its overall carbon footprint by buying renewable energy credits, participating in carbon offset projects, and with the EPA's Green Power Partnership (National Hockey League, 2018). By using smart building automated sensor system controls, arenas will be able to maximize energy conservation.

##### **5.5.2.1 Leading Energy Efficiency NHL Teams**

The Boston Bruins, Vancouver Canucks, and Tampa Bay Lightning have seen energy usage reductions between 10-20% as a result of smart building technology (National Hockey



League, 2018). Another example of a leading energy-efficient arena is the Pittsburgh Penguins' Consol Energy Center, which scored the first LEED Gold certification in the NHL. The arena's energy-saving techniques include energy-efficient lighting by maximizing natural lighting and a new HVAC system. The arena, however, is primarily funded by Consol Energy, which is one of the nation's leading coal and gas companies (Kathryn Walsh, n.d.); despite the arena's progressive efforts to save energy they are still reliant on the fossil fuel industry.

### 5.5.3 **NFL Best Practices**

A leading NFL team that depicts energy conservation action is the Philadelphia Eagles. Their Lincoln Financial Field arena contains 11,000 solar panels that provide approximately 40 percent of the stadium's power (Cummins, 2020). By examining the energy-saving efforts of the NFL it is evident that alternative energy solutions, such as solar power, could improve the Anaheim Ducks' energy efficiency while reducing fossil fuel emissions.

### 5.5.4 **Smart Stadiums: The Future of Arenas**

Sports stadiums are often located in prominent urban areas that are logistically challenging for major developments and updates; this obstacle will become more significant with the increase in global urbanization. Progressive and innovative authorities and municipalities are trying to transform cities into smart cities, with smart stadiums and venues as the nucleus of the operations.

#### 5.5.4.1 **Johan Cruijff Arena, Amsterdam**

The City of Amsterdam has leveraged the Johan Cruijff Arena to be a hub for the city's transition towards sustainable urban development and a front-runner of Amsterdam's Sustainability Programme. The initiatives included "...installing solar panels, integrating energy efficiency systems, and investing in carbon neutrality credits" (Campelli, 2019). The arena was able to achieve full carbon neutrality. To reduce fossil fuel usage, van Raan, the chief innovation officer of the Johan Cruijff Arena, implemented a three-megawatt energy storage system made of 148 recycled LEAF batteries provided by Nissan (Johan Cruijff Arena, 2018). The energy storage system collects renewable energy from the arena's 4,200 solar panels during the week and stores it for later usage providing back-up power and reducing the use of diesel generators (Johan Cruijff Arena, 2018); this makes renewable energy more viable and helps to balance the energy grid by distributing green energy to the locality and flattening energy usage spikes that occur during events. The energy-storing technology is fiscally beneficial because the arena is able to sell energy storage space to external energy operators and the arena is paid to host and test other energy-saving technologies. (Johan Cruijff Arena, 2018) The Johan Cruijff Arena is one of the most progressive energy-efficient arenas in the world and should be used as a role model for other stadiums.

## 5.6 **Stakeholders**

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Many stakeholders are directly impacted by the energy usage and energy management of the Anaheim Ducks and Honda Center. The Anaheim Ducks' players and team management are directly affected because the Honda Center is their home arena, which is vital to their success and reputation as an NHL team. Therefore, the team's interest and cooperation in implementing

changes to the Honda Center and supporting sustainability is crucial for the arena. Additionally, the Honda Center and managers are major stakeholders in upgrading the infrastructure to include more energy-efficient and sustainable technology. Through implementing the changes, the Honda Center could be marketed as an innovative and progressive energy-saving building that is eco-friendly; this could increase revenue, benefitting the city of Anaheim (who owns the arena) and sponsors. Anaheim gives the arena an annual budget and receives a portion of the arena's revenue which is used for public safety, parks, and community services (City of Anaheim, 2011).

Some sponsors, however, may show disinterest in implementing energy-saving initiatives threatening potential loss of sponsorship. Energy companies, such as Bloom Energy, are also major stakeholders; if the Honda Center updates its energy tactics from using fuel cells to solar energy for example, it will impact their business partnerships. The NHL is impacted by the Anaheim Ducks energy management and progressiveness because the Ducks' actions influence other NHL teams. Changes in perceptions and feelings about the NHL's environmental initiatives by fans, players, or other stakeholders, would yield negative repercussions for the NHL. The Ducks' reputation as an NHL team directly reflects the NHL as an institution. Another major stakeholder is the Anaheim Ducks' fans. Without them and their support, the Honda Center would not incur any revenue and the Anaheim Ducks would have fewer resources. Fan interest and involvement in the actions and initiatives are vital to the Ducks' success. There are many stakeholders that would be affected by the Honda Centers' environmental and energy conservation changes. Therefore, in order to enact change, the stakeholders must have a willingness and drive to promote a sustainable future.

## 5.7 Concluding Assessments about Energy Usage

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We are not able to draw any definitive conclusions at this time regarding the Honda Center's energy usage. We would need more quantitative data from the Honda Center for analysis. We can only provide recommendations based on the most efficient energy-saving technology.

## 5.8 Recommendations for Energy Saving Initiatives

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We recommend the Ducks and the Honda Center utilize the benefits of their geographic location and implement solar panels. The Honda Center is in the middle of Orange County California, one of the year-round most sunny places in the United States. The average percentage of direct sunlight per year in Anaheim is approximately 70 percent and peaks above 80 percent direct sunlight during August (Weather and Climate, 2019). This is a lot of sunlight compared to in other places like Chicago where they only get 54 percent of sunlight on average per year (Weather and Climate, 2019). The percentage of sunlight is a key factor when considering implementing solar panels because it is the metric that solar companies use to estimate the amount of electricity that your solar panels will be able to store and produce. Although there are many other logistical components when thinking of using solar energy, it is a large factor. Because we recognize how difficult and costly implementing solar panels would be, below we have outlined energy-saving recommendations for the Honda Center taking into account both cost and effort.

#### 5.8.1 Low Cost and/or Effort

- Simple energy tracking throughout the Honda Center: We do not have any proof you are tracking energy usage for the entire Honda Center or specific components of it other than the Bloom Energy Fuel Cells. If you are not tracking this data, we recommend you begin and utilize this info to make informed decisions.
- Explore rebate and incentive options through utility companies. For more information regarding rebate and incentive programs available reference section Best Practices 5.5.1.
- Set building energy cost guidelines

#### 5.8.2 Medium Cost and/or Effort

- Buy 100% renewable energy from utility providers (SCE). For more information refer back to section 5.4.4. to view the SCE and City of Anaheim power content labels.
- Carbon Neutrality Credits: Carbon offset credits, where each credit purchased is a tonne of carbon dioxide. The credits allow a market to cap the amount of greenhouse gases emitted into the atmosphere.
  - Have a relatively high cost, but fairly low effort in purchasing credits.

#### 5.8.3 High Cost and/or Effort

- Solar panels
- Energy Storage System to capture renewable energy from solar panels.
  - This would let the Ducks store and use any extra solar energy they absorbed during the day that they did not want to use yet and keep it for when they need it.
- Sell energy storage to others and help support Anaheim energy grid
  - provides back-up power, reduces the use of diesel generators and also helps the city of Anaheim and its people be more sustainable as well while gaining money for the Anaheim Ducks
  - Reference data section 5.4.3 *Solar Energy* for more information.
- Become LEED Certified
  - Even though it can be initially very expensive to do stadium updates required to become a LEED Gold Certified venue, it can be cost effective in the long term; according to research by Nyikos, Thal, Hicks and Leach in 2012, LEED Gold Certified Buildings are on average 31% less expensive in terms of ongoing operating costs (Campelli, 2019).
- Smart Building Technology
  - Digitalize the stadium and open up to trying new technologies- start-up technology companies will pay the Honda Center to try their technology
  - Adding smart building technology could help the building become LEED certified.
  - Utility companies may provide incentives for adding smart building technology. Initially expensive, but pays off in long-term

#### 5.8.4 Future Areas of Research

- Some future areas of research would be whether solar panels are viable?
- There are many factors involved with the idea of purchasing solar panels. To make sure that the solar panels are worth it, you would need to get an estimate from a local solar company and do

a cost-benefit analysis to figure out if it's worth it in the long term and will the amount of money invested on it return and maybe with benefits as well.

- The last question would be, is it cost-effective to implement and update the Honda Center to make it more sustainable and use more sustainable technologies.

## 5.9 Contacts

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Mackenzie Crigger: Energy Conservation and Sustainability Manager, Chapman University  
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## 5.10 References

- 
- Anaheim Public Utilities. (2018). Power Content Label (PCL): Anaheim, CA - Official Website. Retrieved from <https://www.anaheim.net/3452/Power-Content-Label>
- Anaheim Public Utilities. (n.d.). Public Access EV Charger Rebates: Anaheim, CA - Official Website. Retrieved from <https://www.anaheim.net/3312/Public-EV-Charger-Rebate>
- Weather and Climate. (2019). Average monthly percentage of sunshine in Anaheim (California), United States of America. Retrieved March 5, 2020, from <https://weather-and-climate.com/average-monthly-percent-Sunshine,anaheim-california-us,United-States-of-America>
- Badia, J. S. (2020, January 22). How much energy does a World Cup stadium use in 2018? Retrieved March 4, 2020, from <https://selectra.co.uk/energy/news/world/world-cup-2018-stadium-energy-use>
- Bloom Energy. (2020). Retrieved from <https://www.bloomenergy.com/honda>
- Brightstar Solar. (2020). Common Sizes of Solar Panels. Retrieved from <https://brightstarsolar.net/common-sizes-of-solar-panels/>
- California Energy Commission. (2019). "Power Content Label (PCL)." California Energy Commission, 2019, [ww2.energy.ca.gov/pcl/power\\_content\\_label.html](http://ww2.energy.ca.gov/pcl/power_content_label.html).
- Campelli, M. (2019). Reimagining stadiums as the nucleus of smart cities. Retrieved from <https://sustainabilityreport.com/2020/04/30/reimagining-stadiums-as-the-nucleus-of-smart-cities/>
- Chow, D. (2020, March 31). Coronavirus shutdowns have unintended climate benefits: cleaner air, clearer water. Retrieved from <https://www.nbcnews.com/science/environment/coronavirus-shutdowns-have-unintended-climate-benefits-n1161921>
- City of Anaheim. (2011). Honda Center: The Next 25 Years: Anaheim, CA - Official Website. Retrieved from <https://www.anaheim.net/5157/Honda-Center-The-Next-25-Years>
- Climate and average monthly weather in Anaheim (California), United States of America. (2019). Retrieved March 5, 2020, from <https://weather-and-climate.com/average-monthly-Rainfall-Temperature-Sunshine,anaheim-california-us,United-States-of-America>
- Cummins, E. (2020, January 14). The Philadelphia Eagles are driving the NFL toward a greener future. Retrieved from <https://www.popsci.com/story/environment/sustainable-nfl-stadiums/>
- Cunningham, M. (2013, December 12). Retrieved from <https://www.anaheimblog.net/2013/12/12/3626/>
- Douglas, W. (2019, April 23). Ducks practice facility incorporates latest environmental technology. Retrieved from <https://www.nhl.com/news/anaheim-practice-facility-incorporates-latest-environmental-technology/c-306973030>
- Green Sports Alliance. (2020, January 29). About. Retrieved from <https://greensportsalliance.org/about/>

Honda Center. (2019). About Us. Retrieved from <https://www.hondacenter.com/arena-info/about-us/>

Honda Center. (2019). Green Sports Alliance. Retrieved from <https://www.hondacenter.com/arena-info/green-sports-alliance/>

Johan Crujff Arena. (2018). Energy storage system Johan Crujff ArenA shortlisted for the 2018 BusinessGreen Technology Awards. Retrieved from <https://www.johancrujffarena.nl/default-showon-page/energy-storage-system-johan-crujff-arena-shortlisted-for-the-2018-businessgreen-technology-awards-.htm>

Kathryn Walsh (n.d.). NHL Scores Big with Sustainability. Retrieved from <https://www.energy.gov/articles/nhl-scores-big-sustainability>

National Hockey League. (2018, March 28). NHL Releases 2018 Sustainability Report. Retrieved from <https://www.nhl.com/avalanche/news/nhl-releases-2018-sustainability-report/c-297441846>

National Hockey League. (2018). Play It Forward: Hockey for the Next Generation. Retrieved from <http://sustainability.nhl.com/report/#!/mission/goals>

National Hockey League. (2018). Play It Forward: Hockey for the Next Generation. Retrieved from <http://sustainability.nhl.com/report/#!/innovate/reducing-emissions/carbon-offsets>

National Hockey League. (2018). Play It Forward: Hockey for the Next Generation. Retrieved from <http://sustainability.nhl.com/report/#!/innovate/smart-energy>

NHL. (2020). NHL Green. Retrieved from <https://www.nhl.com/info/nhl-green>

SCE. 2018 Power Content Label Southern California Edison. 2018, [www.sce.com/sites/default/files/inline-files/2018SCEPCL.pdf](http://www.sce.com/sites/default/files/inline-files/2018SCEPCL.pdf).

Solar Energy Industries Association. (2020). Solar Investment Tax Credit (ITC). Retrieved from <https://www.seia.org/initiatives/solar-investment-tax-credit-itc>

Southern California Edison. "Green Rates." SCE.com, 2019, [www.sce.com/residential/rates/standard-residential-rate-plan/green-rates](http://www.sce.com/residential/rates/standard-residential-rate-plan/green-rates).

Sustainability. (2020). Retrieved March 4, 2020, from <https://www.bloomenergy.com/benefits/sustainability>

Zientara, B. (2018, July 11). Our guide to installing solar panels on your home in Anaheim, California. Retrieved March 4, 2020, from <https://www.solarpowerrocks.com/california/anaheim/>

# Chapter 6: Transportation

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## 6.1. I Introduction

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### 6.1.1 The Importance of Transportation

Environmental protection is a critical policy problem in the United States, with almost 75% of Americans agreeing that the country should do whatever it takes to protect the environment (Anderson). Now more than ever, the planet is under stress from various human activities, including transportation, which is the single greatest source of oil consumption both domestically and internationally (IEA). In Southern California, more than 80% of smog forming pollution is caused by vehicles ("Editorial: Smog is Making [...]"). Furthermore, noise and carbon monoxide emissions from traffic are known to be harmful to humans ("Transportation and the Environment"). Noise pollution has been linked to increased risk of high blood pressure, heart attack, cardiovascular disease, and stroke, while air pollution increases the likelihood of respiratory problems like asthma and decreased lung function (Biba; "The World Counts"). Transportation is the state's largest source of greenhouse gas emissions, a leading cause of climate change ("Editorial: Smog is Making [...]"). Climate change poses an immense threat to hockey as a sport since many players rely on naturally formed ice for their rinks ("Play It Forward [...]"). Thus, the National Hockey League ("NHL") has been an environmental leader in the sports world. ("Play It Forward [...]"). They have championed carbon reducing measures such as LED lighting and on-site renewable energy generation ("Play It Forward [...]"). The Anaheim Ducks, Orange County's local hockey team, has joined the NHL's initiative and committed to improving the environmental footprint of their organization. Transportation is one facet of their operations that could profit immensely from eco-friendly changes. It is a critical aspect of this study, as changes made here could have substantial and long-lasting implications for both industry-wide practices and the environmental health of our planet.

### 6.1.2 The Impact of COVID-19 on Transportation

The pandemic has had an unprecedented effect on transportation worldwide. Most public transit has seen a severe decline in ridership. New York City's public transit system, which is the largest in the United States, experienced a 60% drop in subway ridership and a 90% drop in train ridership (Bliss). Cities and transit companies across the nation are preparing for substantial drops in revenue, which could eventually result in permanent cuts to service (Bliss).

There are some positives to this situation. In New York City, bicycle ridership is up 50% and air quality has improved worldwide (Bliss). But there are fears that the mass transit industry may not recover to pre-pandemic levels, partially due to concerns about the inevitable close proximity to other people when on public transit. (Bliss). This would be devastating as vehicle emissions already are the largest contributor to American greenhouse gas emissions (Bliss). An increase in single-occupancy vehicle traffic should be avoided at all costs. The current

state of transportation makes it more crucial for organizations to consider ways they could incentivize the use of public transit.

## 6.2 History of Transportation at the Honda

### 6.2.1 History of the Honda Center

In 2005, Henry and Susan Samuelli purchased both the Anaheim Ducks team and the venue management company Anaheim Arena Management (“About Us”). The center can seat roughly 18,000 people, depending on the type of event hosted and has 3,532 parking spaces (“About Us”). Many private lots in the area also offer parking during events. Traffic is high during events as cars enter the parking lots surrounding the center and people also walk over from other private lots. Historically, local police departments have aided with traffic control before and after events.

### 6.2.2 History of the ARTIC

In 2014, the Anaheim Regional Transportation Intermodal Center (“ARTIC”) opened directly across from the Honda Center. It was originally operated by the city, but in 2018, Anaheim Arena Management struck a deal to manage the ARTIC for 25 years (Pimentel). The city has maintained ownership of the ARTIC and there is a profit-sharing arrangement between the city and company (“Anaheim Fact Sheet”). Additionally, Anaheim Arena Management purchased four surrounding surface parking lots, comprising 1,738 parking spaces (“Anaheim Fact Sheet”). The deal maintained the requirement for the center to offer a minimum of 3,900 parking spaces for games and events (“Ducks and Honda Center [...]”). The ARTIC is served by several train lines, including Metrolink and Amtrak, and bus lines such as Greyhound, Megabus and the Orange County Transportation Authority (“Anaheim Fact Sheet”). It also offers parking (“Anaheim Fact Sheet”). Anaheim Resort Transportation, which operates several lines out of the ARTIC, has fourteen electric buses and twenty-one Compressed Natural Gas buses (Anaheim Resort Transportation).

## 6.3 Current Status of Transportation

### 6.3.1 The ARTIC’s Current Status

A substantial environmental impact could be made by reducing the number of fans who drive to games and incentivizing public transportation. Though the ARTIC is located directly across from the Honda Center, it has historically been underutilized as a transportation hub. When it opened in 2014, it was predicted that its train bookings would cover its operating costs (Vo). However, it has operated at a deficit since its opening, losing approximately \$2.5 million per year (“Anaheim Fact Sheet”). In 2017, the total cost to taxpayers to subsidize its operations was over \$6.9 million and its operating expenses were subsidized by \$2 million annually by the

Anaheim Tourism Improvement District (Vo; “Anaheim Fact Sheet”). The hub has been able to generate additional revenue from television shows and commercials filmed on site (Vo). Per the new agreement with the city, Anaheim Arena Management now assumes all operating expenses. Given the ARTIC’s lack of success so far, incentivizing and promoting its use as environmentally friendly transportation could also help the hub turn a profit.

### 6.3.2 Current Transportation Options

The Honda Center has partnered with Lyft to incentivize ridesharing, and there is a dedicated Lyft pickup and drop-off area located directly in front of the southwest entrance (“Transportation”). Additionally, according to Plugshare, the Honda Center has three electric vehicle charging stations. It is unclear whether any bicycle racks are available but given high rates of bicycle theft in the area, it may not be beneficial to install more outdoor bicycle racks and instead explore more secure options. Furthermore, it is reported that five six-level parking structures are going to be added to the surrounding area. During events, traffic in and out of the center is congested. Exploring options to reduce single-vehicle traffic would reduce wait times and increase fan satisfaction.

### 6.3.3 Employee Transportation Status

A larger impact could also be made if changes were implemented for the employees of the Honda Center and the Ducks. Currently, Main Lot 1, with 547 parking spaces, is reserved for administrative staff, and club and suite parking (“Transportation”). Main Lot 3 is for media, production, and operations parking and offers 106 spots (“Transportation”). More information is needed to understand the current transportation habits of event staff and administrative employees, as well as the Ducks team itself. Since employees adhere to predictable, consistent schedules, it may be easier to implement new policies. However, information regarding the current travel policies and procedures of the team is understandably difficult to find. It is possible that incentivizing and promoting use of public transit and carpooling for employees could also result in significant environmental savings.

## 6.4 Best Practices

### 6.4.1 Best Transportation Practices for Fans

There are many varieties of fan transport practices across the sports industry. One popular method for reducing vehicle travel is the concept of transit validation. When fans purchase a ticket for an event, they can then use that ticket to access local public transportation. This reduces energy usage, carbon emissions, pollution, and traffic congestion while costing very little and increasing public transit ridership (Shoup). University of Utah fans with a valid ticket to a game can use their tickets for free local transit all day, and Seattle’s new hockey team will offer a similar service (“U of U”; Toussaint). When this was implemented at Husky Stadium in Seattle, the percentage of ticket holders using public transit increased from



just 4% to 21% (Shoup). Additionally, pedestrian overpasses like the one at Baylor University, which is used by 5,600 people on game days, can connect transit stations to the stadium in a manner that decreases surface road congestion (Steinach). Team branded banners and signage along walking routes can increase fan spirit and begin the “gameday experience” before arrival at the stadium (Steinach). Apps such as Spot Hero, which identifies available parking spaces, and Lyft and Uber, which are used for ridesharing, can also help reduce the amount of carbon emissions generated by vehicle travel.

#### 6.4.2 Best Transportation Practices for the Team

Most NHL team travel is done in chartered airplanes and chartered buses. In some professional sports, consecutive away games are scheduled in cities that are close to each other, which reduces costs. This means that even if a team must take a chartered plane to get to the first game, they are only a short, chartered bus ride away from the next game

#### 6.4.3 Best Transportation Practices for Daily Employees and Event Staff

In 2001, the Environmental Protection Agency released a document outlining the benefits of implementing a carpool incentive program to both employers and employees. For employers, the benefits include reduced need for parking space, increased employee productivity, and decrease in employee stress. Employees benefit from reduced vehicle wear, cost-sharing, and time-saving from HOV lanes (“Carpool”). 2019 transit survey data for Chapman University showed that of the 3,780 faculty, staff, and students, there were around 30 OCTA riders and 60-70 Metrolink riders. The university pays the first \$30 per month of a commuter’s OCTA pass and pays \$100 of the \$217 Metrolink monthly pass. The cost to Chapman per month is around \$14,000 for Metrolink and \$800 for OCTA (“Carpool”).

### 6.5 Goals and Stakeholders

#### 6.5.1 Low Cost and/or Effort Goals

Changes are easier to implement within an organization than outside of it. As internal change is simpler to generate, adjusting team and staff travel procedures should be the first aspects addressed. The goal would be to streamline team travel as much as possible with carpooling by bus and limiting flights to destinations far away, where travel by bus would not be realistic. In addition to team travel, the transportation of employees to and from work every day should also be modified. Incentivizing carpooling between employees along with rewarding staff with electric vehicles with free charging at onsite charging stations would be the best option for change within the organization. The goal would be to move employees into more efficient groupings for carpooling and to employ the usage of complimentary on-site charging.

## 6.5.2 Medium Cost and/or Effort Goals

Offering free travel with the purchase of a ticket to the Honda Center would create an incentive for people to choose public transit over driving their cars to games. It is likely many fans would take the train instead of dealing with driving and parking. With the Honda Center now assuming responsibility for the ARTIC, it is more feasible to incentivize fans to use the train or bus. Though this shifts some transport costs from externalities to internal considerations, it is worth exploring for the greenhouse gas emissions savings. An increase in ticket pricing to cover this cost would not be popular, so raising the price of parking to help subsidize train and bus tickets would help offset this issue. This could be a complicated arrangement, however, as Amtrak and Metrolink would have to adjust their ARTIC stops to align with games and events at the Honda Center. Ideally, tickets to events at the Honda Center would work as paid tickets on the trains so that additional tickets do not need to be printed.

## 6.5.3 High Cost and/or Effort Goals

A way to reduce the impact of transportation with minimal effort, but at a relatively high cost would be to follow the lead of companies like Delta. Delta buys carbon offsets to counteract its environmental impact. 98% of Delta's environmental footprint comes in the form of burning jet fuel ("Delta [...]"). This is considered a primary emission, as it is caused directly by Delta, whereas emissions for transportation in relation to fans would be a secondary emission. Even though the Honda Center is not directly responsible for fans generating emissions by driving, they are encouraging people to drive to see events at the stadium since public transit options are lacking. Incorporating the cost of average emissions per vehicle would be a method of fully recovering the emissions cost on the world but would be costly because it would apply to every game and every recorded mile driven. Raising parking prices to include the average cost of necessary carbon offsets would cover the cost on the dollar of the source creating it but would cause predictable backlash and possibly incentivize offsite parking provided by local proprietors. The recommendation is for the Honda Center and the Anaheim Ducks to pay for the cost of the environmental impact and take advantage of the accompanying tax incentives and positive publicity. This policy work in tandem with reducing fan vehicle traffic to games because it would further lower the cost of repaying those carbon offsets by the Honda Center.

## 6.5.4 The Cost of Offsetting

The method for calculating the cost of emissions from fans (excluding team transportation) can be found through attributing averages from car emissions per mile and allowing adjustments to the formula, which can incorporate more accurate data. Each car emits around 411 grams of CO<sub>2</sub> per mile driven (EPA). With 3,500 stalls at the Honda Center, using an arbitrary number of miles would allow for the calculation of the total impact of fans per game. For a 10 mile commute,  $3500\text{cars} \times 10\text{ miles/car} \times 0.4\text{KG/mile} \times 2.2\text{lbs/KG} = 30,800\text{ lbs}$  per game of CO<sub>2</sub> emissions for an average distance of 10 miles for each commuting car. The average social cost of a ton of CO<sub>2</sub> emissions is around \$50. This would come out to roughly 15.4 tons of CO<sub>2</sub> emissions from just fan travel, which could be offset for around \$770 per game. With approximately 41 home games per season, that is \$31,570 per year. That number starts to

increase drastically when the scope is widened to include further distances traveled and the impact of staff and team travel. For this project, the true cost of carbon offsets would include the travel costs from flying, which has the largest impact of any type of travel. These numbers can be calculated, but it would be time intensive and would include many variables due to the large variability of travel to different cities on different methods of transportation.

### 6.5.5 Stakeholders

There are several stakeholders with ties to local transportation and the Anaheim Ducks. The franchise itself has an image to maintain and lowering transportation emissions makes for good publicity. The fans are the team's biggest source of revenue, so improving their transportation experience while reducing emissions is imperative. Event staff, as well as daily employees, can personally benefit greatly from the same programs that decrease carbon emissions from transportation. Local businesses and residents will benefit from decrease in surface traffic around the stadium on game days. The ARTIC, which has not yet turned a profit, stands to increase earnings as ridership increases with incentives and encouragement. This would in turn benefit Amtrak and Metrolink. Finally, the city of Anaheim is a significant stakeholder, as they currently own both the Honda Center and the ARTIC.

## 6.6 Necessary Data and Anticipated Recommendations

### 6.6.1 Data

There is currently little available data on transportation at the Honda Center, leaving room for growth in this realm. Understanding how fans currently travel to and from games would allow decisionmakers to prioritize among these goals. It would also be interesting to see how full cars are when arriving at the Honda Center. Survey questions such as the following could provide valuable information:

- How likely would you be to take a train or bus to the game if it was included with your ticket?
- Have you taken a train or bus to a game previously? If so, was it a good experience?
- If you drive to games, do you try to carpool?
- If you drive to games, how full is your car on average?
- How far on average do you travel to games?
- Does the day/time of the game affect your mode of transportation?
- Do you think fan transportation to games needs to be improved?
- Do you attend the Ducks games with friends or family? If so, do you carpool or take public transit together?
- If individual players promoted public transportation, would you be more likely to use it?

Additionally, demographic data on both employees and fans could be utilized to determine what modes of transportation they are most likely to use. More information is also

needed on current team travel procedures. Some companies incentivize employees who rideshare and the Ducks may already do so.

### 6.6.2 Impact of Coronavirus on Data and Recommendations

Unfortunately, the world is currently experiencing a pandemic, which has impacted our ability to gather necessary information. Without this data, our capability to make precise recommendations based on new data is somewhat limited. Originally, we had planned on attending games to collect data from fans ourselves, but that it is not currently possible. Additionally, there have been some struggles in acquiring more data from the Honda Center itself, due to the problems they are facing at this time. The scope of our audit will be more limited than intended in face of these new issues. However, to mitigate this problem, we have created recommendations for data collection and usage that the Honda Center and the Ducks can then use to develop new policies.

### 6.6.3 Recommendations

Subsidizing public transportation would be one of the simplest and most popular methods to reduce the negative environmental impact from fans driving to the Honda Center. It would require some work to coordinate between the ARTIC, bus, and train lines as well as the center itself, but the benefits would be significant. Additionally, employees should be incentivized to carpool with better parking spots or complimentary electric charging. Carbon offsets are another recommendation that would be reasonably easy to implement but that come with large financial commitments.

Collecting data about the fans would aid decisionmakers in choosing between these options. This information could be gathered easily via surveys. Surveys can be sent via email to season ticket holders, as they are more likely to respond because of their high commitment to the franchise. Furthermore, employees could ask fans questions as they wait in security lines to enter the Honda Center, or text-in polls could be displayed on the jumbotron between periods. Demographic information, such as age and location, could be used to determine which transportation options fans are most likely to utilize. For example, only twenty-two percent of Lyft users are over the age of thirty-five, so if the fan base skews towards older populations, then promoting ride-sharing apps may be less effective (Williams). Fans' location information could be used to choose strategic locations for parking areas or in development of a local tram that picks up fans on game days.

It is also important to understand how people currently travel to games. If few fans carpool with others, a carpool incentive program could easily reduce traffic. The same is true of the Ducks and the Honda Center employees. Offering prime parking spots to those who carpool is an excellent motivator and also markets the program to others. In addition, carpool programs reduce wear-and-tear on individual vehicles and reduce fuel costs for employees; these benefits should be explicitly stated to encourage participation. Location information on

employees should be analyzed to facilitate the creation of carpool groups. By gathering all this information, the Honda Center and the Ducks can make effective, data-driven decisions to reduce their environmental impact.

## 6.7 References

- About Us. *Honda Center*, [www.hondacenter.com/arena-info/about-us/](http://www.hondacenter.com/arena-info/about-us/).
- Anaheim Fact Sheet. *Honda Center*, Honda Center, [www.anaheim.net/DocumentCenter/View/23803/ARTIC-fact-sheet-fall-2018](http://www.anaheim.net/DocumentCenter/View/23803/ARTIC-fact-sheet-fall-2018).
- Anaheim Resort Transportation. Timeline. *Anaheim Resort Transportation*, [rideart.org/about-us/timeline](http://rideart.org/about-us/timeline).
- Anderson, Monica. How Americans View Environmental Issues. *Pew Research Center*, Pew Research Center, 20 Apr. 2017, [www.pewresearch.org/fact-tank/2017/04/20/for-earth-day-heres-how-americans-view-environmental-issues/](http://www.pewresearch.org/fact-tank/2017/04/20/for-earth-day-heres-how-americans-view-environmental-issues/).
- Biba, Erin. This Sound Is Killing You. *The California Sunday Magazine*, 26 Sept. 2016, [story.californiasunday.com/noise-pollution](http://story.californiasunday.com/noise-pollution).
- Bliss, Laura. When the World Stops Moving. *CityLab*, 20 Mar. 2020, [www.citylab.com/transportation/2020/03/coronavirus-impact-public-transit-street-traffic-data-trains/607915/](http://www.citylab.com/transportation/2020/03/coronavirus-impact-public-transit-street-traffic-data-trains/607915/).
- Carpool Incentive Programs: Carpool Incentive Programs: Implementing Commuter Benefits Under the Commuter Choice Leadership Initiative. *Clean Air Partners*, EPA, [www.cleanairpartnerstx.org/resources/Carpool%20Incentive%20Programs%20-%20EPA.pdf](http://www.cleanairpartnerstx.org/resources/Carpool%20Incentive%20Programs%20-%20EPA.pdf).
- Delta invests \$2 million for study of potential facility to produce biofuel from forest floor debris. (2019, October 22). Retrieved from <https://news.delta.com/delta-invests-2-million-study-potential-facility-produce-biofuel-forest-floor-debris>
- Ducks and Honda Center Management Solidify Contract Extension with City of Anaheim. *Honda Center*, [www.hondacenter.com/arena-info/press-releases/ducks-and-honda-center-management-solidify-contract-extension-with-city-of-anaheim/](http://www.hondacenter.com/arena-info/press-releases/ducks-and-honda-center-management-solidify-contract-extension-with-city-of-anaheim/).
- Editorial: Smog Is Making a Comeback in Southern California. That's beyond Unacceptable. *Los Angeles Times*, Los Angeles Times, 3 July 2019, [www.latimes.com/opinion/editorials/la-ed-smog-gets-worse-20190703-story.html](http://www.latimes.com/opinion/editorials/la-ed-smog-gets-worse-20190703-story.html).
- Hockey Team Bus Rentals. *Coach Canada*, [www.coachcanada.com/charters/hockey-team-bus-rentals](http://www.coachcanada.com/charters/hockey-team-bus-rentals).
- IEA. World Energy Balances and Statistics – Data Services. *IEA*, [www.iea.org/subscribe-to-data-services/world-energy-balances-and-statistics](http://www.iea.org/subscribe-to-data-services/world-energy-balances-and-statistics).
- Pimentel, Joseph. Anaheim Ducks Owner Will Develop Entertainment, Retail Centers Around Honda Center After Striking Deal with City. *Bisnow*, 3 Dec. 2018, [www.bisnow.com/orange-county/news/commercial-real-estate/ducks-will-develop-around-honda-center-after-striking-deal-with-anaheim-95527](http://www.bisnow.com/orange-county/news/commercial-real-estate/ducks-will-develop-around-honda-center-after-striking-deal-with-anaheim-95527).
- Play It Forward: Hockey for the Next Generation. *NHL.com*, [sustainability.nhl.com/report/#!/innovate/smart-energy](http://sustainability.nhl.com/report/#!/innovate/smart-energy).

Reducing Sports Impact on the Environment." *Knowledge at Wharton*.

<https://knowledge.wharton.upenn.edu/article/reducing-sports-impact-environment/>

Shoup, Donald. Hate Stadium Traffic and Game Day Parking? An Idea. *City Lab*.

<https://www.citylab.com/perspective/2020/01/sports-free-tickets-event-parking-transit-super-bowl-traffic/605827/>

Steinach, Paul. Designing for Parking, Fan Traffic at Spectator Venues. *Athletic Business*, Feb.

2014, [www.athleticbusiness.com/stadium-arena/designing-for-parking-and-fan-traffic-at-spectator-venues.html](http://www.athleticbusiness.com/stadium-arena/designing-for-parking-and-fan-traffic-at-spectator-venues.html)

Take the Metro Transit Wild Ride. *Minnesota Wild*, [www.nhl.com/wild/tickets/metro-transit](http://www.nhl.com/wild/tickets/metro-transit).

The World Counts. *The World Counts*, [www.theworldcounts.com/stories/How-Does-Pollution-Affect-Humans](http://www.theworldcounts.com/stories/How-Does-Pollution-Affect-Humans).

Toussaint, Kristin. Seattle's New NHL Team Will Give Fans Free Public Transit to Get to Games.

*Fast Company*, Fast Company, 25 Feb. 2020, [www.fastcompany.com/90466510/seattles-new-nhl-team-will-give-fans-free-public-transit-to-get-to-games](http://www.fastcompany.com/90466510/seattles-new-nhl-team-will-give-fans-free-public-transit-to-get-to-games).

Transportation and the Environment. *The Geography of Transport Systems*, 24 Feb. 2020, [transportgeography.org/?page\\_id=5711](http://transportgeography.org/?page_id=5711).

Transportation. *Honda Center*, [www.hondacenter.com/plan-your-visit/transportation/](http://www.hondacenter.com/plan-your-visit/transportation/).

U Of U Athletic Events. *UTA*, [www.rideuta.com/Fares-And-Passes/U-of-U-Athletic-Events](http://www.rideuta.com/Fares-And-Passes/U-of-U-Athletic-Events).

Vo, Thy. Anaheim's ARTIC Train Station Loses Its Deficit Funder. *Voice of OC*, 23 Apr. 2017, [voiceofoc.org/2017/04/anaheims-artic-train-station-loses-its-deficit-funder/](http://voiceofoc.org/2017/04/anaheims-artic-train-station-loses-its-deficit-funder/).

Williams, Robert. Study: Lyft Picks up More Younger Customers than Uber. *Mobile Marketer*, 18 May 2018, [www.mobilemarketer.com/news/study-lyft-picks-up-more-younger-customers-than-uber/523855/](http://www.mobilemarketer.com/news/study-lyft-picks-up-more-younger-customers-than-uber/523855/).

# Chapter 7: Engagement

Maddie Milla, Rachel Sison

## Consideration to COVID-19

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The novel coronavirus has affected the tentative plans of countless groups all over the world. On top of the global crisis in regard to the COVID-19 pandemic, the initial plan to reach out to the Anaheim Ducks community members directly and engage them with environmentally focused content does not seem to be at the forefront of anyone's mind. Most people are working remotely due to COVID-19 and government-issued quarantine orders, which can draw the assumption that app use has increased; this poses an opportunity to capitalize on this surge of online viewers. The following report will include the original recommended engagement initiatives for The Anaheim Ducks; this includes both short and long-term goals that can be attainable during this time of strict social distancing *and* afterwards. By laying out things to work towards, it makes it easier for people to see tangible goals.

### 7.1 Introduction

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It is a critical point in time where the effects of human activities on the environment have become hard to ignore. Climate change and environmental degradation has accelerated over the past century due to anthropogenic activities (NASA, 2020). Before reaching a 'point-of-no-return' in respect to climate change, it is important to take action towards sustainable efforts.

It is more important than ever to be part of the collective effort to be sustainable. There is greater obligation to not only work towards more sustainable practices, but to also encourage them amongst everyone. This is particularly important in the sports industry as they have large environmental footprints. Major sporting events generate significant unforeseen—or at least unaccounted for—environmental consequences (Warren, 2017). Environmental externalities arise from “building stadiums, hotels, parking lots and other infrastructure to handling sanitation” (Warren, 2017). Externalities also rise from the production, consumption, waste of varying resources, and transportation (i.e. food, energy, water, flights/other modes of transport for athletes or fans, etc.) (Warren, 2017). The average attendee “generates a footprint seven times larger than someone going about normal, everyday activity” (Collins, 2008).

In response to the need for immediate action to slow down climate change, organizations, such as the Green Sports Alliance, have formed. The mission of the Green Sports Alliance is to “leverage the cultural and market influence of sports to promote healthy, sustainable communities where we live and play.” These organizations direct change through leveraging the power of sports to drive meaningful impact, engaging stakeholders (i.e. industry, fans, athletes, communities, etc.), inspiring sports leagues to join and providing them with resources on how to embrace sustainability (Green Sports Alliance, 2020).

The sports league with a higher urgency to fight climate change is the National Hockey League (NHL). The game is played on ice, and as global temperatures continue to rise the average length of the skating season may shrink by 20% to 33% in western and eastern Canada (Brady, 2018). Inspired to make a greater commitment to decelerating climate change and preserving the frozen ponds that cultivated the game, NHL Green was launched in 2010 to promote green business practices across the league (NHL Public Relations, 2018). The NHL was also the “first North American professional sports league to issue sustainability reports” with goals of reducing carbon footprints every season (Mazzoni, 2019). Furthermore, being one of the top five most popular sports in North America and Europe, it is important to leverage this opportunity to instill and promote environmentally conscious and sustainable efforts (Das, 2020).

## 7.2 History/Background of Engagement

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In 1993 the Honda Center, formally known as the Anaheim Arena, first opened its doors to a sold-out performance of Barry Manilow and later the same year it became home to the Mighty Ducks of Anaheim. Little over a decade later, Honda Motor Company became the title sponsor changing the arena name to what is now known as the Honda Center (Honda Center, 2012).

The Anaheim Ducks Hockey Club and the Honda Center are members of the Green Sports Alliance where they have “committed to the Green Sports movement through ongoing environmental and sustainable efforts” (Honda Center, 2019). Large strides have been made in reducing energy and water consumption, improving recycling efforts, reducing food waste, composting, and promoting varying services and programs. An increased engagement with fans, employees, stakeholders, and the community at large when promoting sustainable practices or celebrating eco-friendly achievements made by the Honda Center can aid in reaching new sustainability targets.

### 7.2.1 The Fans

The love of sport has a large, widespread fan and stakeholder community. Millions of individuals attend or live-stream sport events every year (Gough, 2019). They are all united and dedicated for the love of the sport. Sports culture is a “true common denominator in our society and throughout the world” (Mazzoni, 2019). Fan engagement can be enacted through in-role behaviors (i.e. direct association to an individual's affinity with a team) and extra-role behaviors (i.e. individuals feeling more of a moral obligation as a fan). To enact either in-role, extra-role, or both behaviors within fans/stakeholders, it is instrumental to “meaningfully engage and encourage fans to practice sustainable behavior” (Rowand, 2018). Harnessing the power to influence fans and stakeholders alike to promote sustainable practices would play a large role in slowing down climate change.



#### **7.2.1.1 The Employees**

The backbone of every company is the employees. Employee satisfaction is transferable to every aspect of the company. To accomplish sustainability targets such as improving recycling efforts, enforcing attendees to dispose of waste properly, or assisting with the production of large eco-themed events—employee support rather than compliance is preferable. Workplace culture and how employees are treated will translate to their quality of work (Wright, Cropanzano, & Bonett, 2007). Guests will interact with many employees before they interact with upper management. A key role in maintaining a successful business is to ensure positive employee and guest relations.

### **7.3 Stakeholders/Target Population**

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The stakeholders surrounding the community engagement of the Anaheim Ducks and Honda Center include all Anaheim community members and Ducks fans. This also includes the attendees and employees of hockey games, as well as all other events held at the stadium. Youth and their family members that benefit from the Anaheim Ducks Foundation are also included in the stakeholder category. The Ducks players, the Ducks mascot, ice girls, food vendors, janitorial staff, and upper management/administration make up the internal stakeholder positions of the Honda Center. Lastly, sponsors and partners of the Ducks/Honda Center are extremely important stakeholders which hold power in the engagement of the community and the NHL as a whole.

The target population of engagement includes all individuals within the Anaheim Ducks/Honda Center community. Fans that come in contact with environmental messaging in the arena may find that it impacts their consumer choices outside of the arena. Media attention on apps and websites will reach an audience of stakeholders which can shed a positive light on the eco-friendly efforts of the Ducks and therefore increase the total fan support.

### **7.4 Current Status of Engagement**

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Currently, the Anaheim Ducks Hockey Club and Honda Center have many strengths in engaging their fans and major stakeholders. They have an accessible web interface in finding how the Ducks are involved in the community. On the Official Anaheim Ducks Website, there are multiple tabs that provide varying resources for fans and reporting of community events such as fundraisers or special promotions. Furthermore, there are established partnerships that are very prominently displayed such as that with UCI Health, Popcornopolis, Chick-fil-A, and Pacific Premier Bank. In addition, there are preexisting and established social media presence. For example, Instagram accounts promoting the Honda Center with twenty-seven thousand followers and the Anaheim Ducks with three hundred forty-six thousand followers. Furthermore, there is a large effort to partner up with local schools to provide educational and wellness opportunities to the local youth. Overall, there appears to be a positive presence amongst the neighboring communities and key stakeholders.

#### **7.4.1 Engaging the Fans**

The foundation to promote sustainable practices and events exists, now it is simply about using them to their full potential. Eco-themed events or the celebration of sustainable accomplishments proves difficult to find or are far and few between on either platform (i.e. the Anaheim Ducks' website or the Instagram accounts for both the Honda Center and the Anaheim Ducks). An opportunity to take

advantage of is using the jumbotron to promote, engage, and educate guests on sustainable practices or eco-themed challenges. It is another missed opportunity to not use the mascot, Wild Wing, to its full potential on promoting the conservation of Earth, although it is an anthropomorphic duck, it is a duck at its core. Finally, from first-hand experience attending events and visiting the site there appeared to be no recycling bins, compost bins, or flyers promoting sustainable practices easily accessible to guests or employees. To get a message across multiple points of contact are necessary. For instance, if flyers, social media promotion, employee assistance for guests on how to dispose of waste properly, or simple things like bins are not present or easily accessible it will affect the rate at which sustainability benchmarks are met.

#### **7.4.1.1 Engaging the Employees**

In respect to employee engagement, there was limited information available. The access to employee satisfaction is currently limited to reviews posted on sites like Glassdoor, and 21 reviews is not representative of employee satisfaction and how the work culture truly is. However, if employee engagement and satisfaction analyses do not exist, then this opens up the opportunity to create a survey to determine how to best support employees in the workplace. A stronger connection can be formed between employers and employees from new workplace policies that may be the result of the surveys, ultimately resulting in greater strides to meeting sustainability goals.

## **7.5 Best Practices**

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It is apparent that there is a foundation of environmental conscientiousness and proactivity towards going green in various sectors within the Anaheim Ducks Hockey Club and the Honda Center. However, there is always room to improve when it comes to sustainable business practices that go hand in hand with stakeholder and employee engagement. In the process of improving as a company, it is important to look to those that have made progress and implemented best practices in the workplace in respect to sustainability.

### **7.5.1 Best Practices in Sports**

As combating climate change appears more critical, the greening of professional sports and rolling out league-wide programs to improve sustainability engagement efforts is very common.

- NASCAR has a Green NASCAR initiative and a website solely dedicated to it.
  - User friendly site where the general public can learn about how they work to “minimize NASCAR’s environmental impact while bringing value and inspiration to the motorsports industry, its partners, employees and fans” (NASCAR Green, 2020)
- In 2019, the Waste Management Phoenix Open (WMPO) worked to be as close to perfect at organizing a zero-waste event.
  - Multiple trash, recycling, and compost bins
  - Education on sustainable practices
  - Education on how to dispose of waste properly
  - Community engagement
    - Ex: If guests were spotted disposing of waste properly, they were rewarded with upgraded seats to view the tournament

- Ex: There is currently an open contest called #BinThereDoneThat where individuals submit recycling trick shots for a chance to win a trip to the 2021 WMPO (Waste Management Phoenix Open, 2020)
- General elements of an effective green sports program include:
  - Establishment of an internal green team and a leader “supported by interested staff from the top to the bottom of the organization and engaging leadership as early as possible”
  - Engaging operational partner, vendors, and community experts
  - Setting regular meetings for all stakeholders
  - Identifying resources available nationally and locally (both free and for hire)
  - Writing a mission statement and setting goals with sustainability included, preferably at the forefront of it
  - Translating successes into easily understandable soundbites for staff, fans, sponsors and other stakeholders (i.e. celebrating any and all accomplishments) (Hoover, 2012)
- Positive organizational culture
  - “...to create a culture where your employees, not the customers, come first...[i]f the employee feels respected, developed and promoted, he or she will in return treat the customer the same way” —Derrick Hall, Arizona Diamondbacks President and Chief Executive Officer (CEO) (Belzer, 2015)
    - “...the Diamondbacks have created an operating environment where team employees have a tremendous opportunity to be heard. The club's staff vote on an "employee of the month" who is then placed on the "*Presidents Council*", which meets monthly to discuss key issues facing the organization. From groundskeepers to ticket sales to the front office, every staff member that works for the Diamondbacks has a real opportunity to influence the direction of the organization...” (Belzer, 2015)

#### **7.5.1.1 Best Practices Outside of Sports**

Many companies outside of the sports world are doing their part to improve upon environmental practices as well.

- PepsiCo
  - Recognized for stakeholder engagement
    - During their annual shareholder meeting they present sustainability strategies and goals
    - They identify and disclose “climate change, water scarcity, and public health issues as core sustainability challenges in its annual financial filings” (Cofino, 2014)
- General Electric
  - Uses human resource department to “integrate sustainability into the company’s culture, ranging from hiring practices, and training to employee wellbeing programs” (Cofino, 2014)
- General best practices for businesses include:
  - Being intentional about sustainability by incorporating sustainability into corporate strategies and goals
    - The Walt Disney Company has set targets to “help measure [their] progress and guide [their] ambitions”
      - Ex: Waste Diversion- “By 2020, we aim to divert 60% of waste from landfills and incineration. In 2019, we achieved a 57% diversion rate” (“Environmental Sustainability,” n.d.)

- Partnering with employees
  - Provide opportunities empowering employees to voice their ideas and developing sustainability work policies and procedures to reinforce the efforts made towards being more sustainable (Lotich, 2019)

There may not be a single corporation performing perfectly in the area of best practices for sustainability in the workplace; however, there are many that put forth noteworthy effort and deserve recognition. It is best put by Anne Marie Bonneau, a Zero Waste Chef, when she said, “We don’t need a handful of people doing zero waste perfectly. We need millions of people doing it imperfectly.”

## 7.6 Broad Goals of Engagement

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Assessing a company’s engagement presents a copious amount of opportunities for goal setting in regard to environmental consciousness raising in and outside events held at the Honda Center. Recommendations are extremely forward-looking, as the Honda Center and Anaheim Ducks have already made great efforts toward a future of sustainability. Such efforts include their involvement in the Green Sports Alliance, committing to the Green Sports movement by means of energy conservation, water conservation, recycling, food, composting, and services and programs (Honda Center, 2019). The goal is to focus on specific and realistic goals that give short and long-term benefits to the facility and team. Sports-fan engagement in general is something that can always be positively changed over time with the growth of a company. Employee, fan, and stakeholder engagement are three crucial and multifaceted elements to the success of an addition of environmental sustainability to a historically well-established company and fanbase such as the Ducks.

Throughout the course of partnership with the Ducks, the engagement team hoped that by obtaining satisfaction survey results from the current Honda Center employee population, an assessment could be made of various needs within the employee population, sequentially boosting the morale and enthusiasm. Due to COVID-19, the survey creation and dispersal was unable to occur; however, when state orders are lifted and employees resume work, this initiative can be taken on as planned. This could potentially lead to employee education opportunities and engagement in sustainability practices during events. The social media marketing team also possesses a large role for both the Honda Center and Anaheim Ducks, discovering what kind of posts attract the most attention from followers and fans. It is then in these types of posts (and eventually, *all* posts) that environmentally conscious messaging and undertones will be most impactful. The creation of an undeniably transparent media message via social media apps, the Ducks website, and also on electronic screens/Jumbotrons during their games to the general public about the developing efforts to improve the status of sustainability within the Honda Center itself and the many far-reaching branches of influence into the outside community is vital.

Fundraising and philanthropic efforts are especially important because it directly affects the Anaheim community surrounding the Honda Center. The Anaheim Ducks Foundation, founded during their ‘08/’09 hockey season, created their mission statement: “the Anaheim Ducks Foundation is to facilitate and support programs that produce positive change for children and families throughout Southern California by providing educational opportunities, broadening access to the sport of hockey, and addressing the health and wellness needs of our community” (The School and Education Programs for the Anaheim Ducks, 2019). With their very strong passion for giving the community’s youth equal access to education and exercise, the Anaheim Ducks Foundation can quite easily integrate the importance of sustainability into their core values as a philanthropic entity; it is the younger generations

that will be hit the hardest by climate change, after all. The current local school involvement in the Duck's Scholastic Curriculum of Recreation and Education (S.C.O.R.E.) program as well as the partners that fund the program are factors which influence sustainability efforts. The integration of environmental issues is essential for middle school aged individuals to begin their fight against climate change and receive a comprehensive look at what the world is facing, and what they can do specifically to help the effort to lessen its effects.

Partnerships and sponsorships from corporations such as The American Heart Association, Orange County Department of Education, and Microsoft open doors for the Anaheim Ducks Foundation to establish and facilitate programs that encourage young people to engage themselves in humanitarian efforts and have fun while doing it. Breaking down a list of corporate donors can give a complete and detailed overview of the similarities and differences of environmental values shared by these companies. To avoid greenwashing, it would be beneficial for the Anaheim Ducks Foundation to strengthen their established partnerships with sustainability focused companies and potentially disband from partnerships that are not. In essence, a company or program cannot claim environmental motivation whilst being funded by a polluting or corrupt corporation.

## 7.7 Data

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In order to have a holistic look at the improvements that can sustainably benefit the Ducks and Honda Center, collected data is needed within the marketing, fundraising, and employment areas of the company. It will be important to drive home the statement that Southern California is the *best* place to promote eco-friendly and sustainable practices in sports by comparing the best sports practices across the nation to those only in Southern California. It is not enough to “feel” that the Ducks could be more connected because of where they’re located in the Honda Center, but it must be proven and effectively displayed in a comprehensive manner to the public. Once stay-at-home orders and social distancing regulations are lifted, it’s essential to proceed with any in-person engagement initiatives with public health in mind. When the Honda Center reopens its doors and the Ducks resume games, data collection will allow for a baseline understanding of what the new “normal” will be at the stadium on a day-to-day basis. Initial employee satisfaction reports found via Glassdoor must be classified and categorized, and questions regarding overall employment must be raised and answered: What kind of turn-over do the typical food service, custodians, etc.... positions experience in the organization? Is it realistic to think that those employees could take on additional roles? How would that look for their roles? The inability to give foundation or event workers the hours they need to care about the work they do or the company they work for is a foundational failure which inherently affects company morale. By creating a survey to send out to the Ducks/Honda Center employee base, there might be a possibility to get a good look at specific areas in which the company can better improve their employee accommodations.

While evaluating the already-established partnerships, it will be beneficial to curate a list of potential new partners with an environmentally focused agenda, including Community-Based Organizations, grassroots businesses, uninvolved middle/high schools, etc. which will decrease the probability of greenwashing while adapting this new eco-friendly persona. Social media engagement statistics (views, likes, shares, etc.) from Instagram can specifically provide a baseline for what online fans and followers appreciate most. Data regarding how often the Ducks promote environmentally conscious practices at games and events at the Honda Center can also be used as baseline data to track positive changes with recycling/composting efforts at the stadium. This can set a precedent for future data collection and progression of environmental marketing and community engagement in sustainability for years (and decades) to come.

## 7.8 Recommendations

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Steps that can be taken to increase stakeholder engagement are, generally speaking, low cost initiatives. Much of what can be done in terms of increased engagement with a focus on sustainability involves consciousness-raising efforts which can be done virtually or in-person via employee-to-fan communication or physical posters, stickers, banners, etc. Many recommendations listed below can be done while stay-at-home and social distancing regulations are in place, strengthening short and long-term positive effects within the community. To incentivize current employees to be proactive and enthusiastic about engagement recommendations, it may be beneficial to include such efforts in individual performance reviews; the mandatory inclusion of environmental awareness and sustainability within a job title or position can result in these efforts becoming implied and “second nature” for the company.

### 7.8.1 Low-Cost Initiatives

These recommendations can be taken on by employees within already-established departments of broadcasting, communications, community relations, entertainment, marketing & brand management, and publications & digital content.

- A social media environmentally focused rebranding effort with the stark inclusion of sustainability. Include the Duck’s mascot, Wild Wing, to appeal to the younger stakeholder generation
  - Social Media Coordinator
- Make it clear to the fans that plant-based/local food options are there for attendees to get involved and make environmentally conscious consumer choices
  - Director of Food & Beverage Strategy and Operations
  - Concessions Manager
  - Marketing Project Manager
- Environmentally focused games and sustainability poll questions through a “Text Your Answer to This #” interactive game on the Jumbotron during time-outs or intermissions.
  - Graphics/Video Producer
  - Fan Development Marketing Associate
  - Community Relations Coordinator
- Create sustainability focused traditions, days, and events via pre-established youth education programs and fundraising efforts for CHOC Children’s which can include activities such as: waste cleanup, recycling, composting, tree planting, etc.
  - Anaheim Ducks Foundation
  - Community Relations Department
  - Communications Department

Additionally, if these initiatives are not assigned to aforementioned departments, a suggestion can be made to potentially create an intern position within the realm of sustainability and the Anaheim Ducks. This sustainability interns work would be in symbiotic exchange for internship credits at a university level, at no cost to the Honda Center or Anaheim Ducks.

#### 7.8.1.1 Medium-Cost Initiatives

Although there are some quantifiable medium-cost initiatives to increase engagement in sustainability, it is important to view such efforts as beneficial to the Honda Center and Anaheim Ducks in the short and long-term.

- Encourage an eco-friendly mindset around the stadium for fans and employees to observe and learn from can include messaging on major electronic screens/Jumbotron, small posters/stickers in places where fans will frequent during their time in the stadium (restrooms, concessions, procurement areas)
  - Graphic Designers
  - Marketing Coordinators
- Promote the Duck's use of clean energy and how the fans can help via energy/waste/water conservation messages. Companies such as Bloom Energy and other vendors which provide The Honda Center clean energy can use their contribution as a platform for environmentally focused advertisements
  - Media & Communications Manager
- Encourage fans to use public transit or carpool to events and games through potential procurement/concession discounts. Incentivize sustainability practices which provide the greatest amount of fan participation, including upgraded seating, souvenirs, etc.
  - Ticketing Department

### 7.8.2 Importance of Engagement in Sustainability

Fan and community engagement are already well-established with the Anaheim Ducks and Honda Center as a whole. Although it has been seen as a major setback and tragedy to the human race, COVID-19 has allowed the observation of the undeniably close relationship between humans and the environment. Human action affects environmental health, which is why it is so important to advocate for environmental consciousness raising within the hockey community and beyond. By using the rich stock of resources and loyal fan base, education involving prominent environmental issues can pose as a great addition to the mission statement of the Anaheim Ducks to ensure that, as a large company that reaches many demographic groups, they are doing their part to combat climate change and raise awareness to those who do not yet have the knowledge they need to make a difference in the future of hockey, the future of the Honda Center, and the future of humanity.

## 7.9 References

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- Belzer, J. (2015, July 30). The Best Organizations To Work For In Sports. Retrieved from <https://www.forbes.com/sites/jasonbelzer/2015/03/02/the-best-organizations-to-work-for-in-sports/#24ae3d347b81>
- Brady, E. (2018, March 28). Concerns about ice, environment spur NHL to fight climate change by thinking green. Retrieved from <https://www.usatoday.com/story/sports/nhl/2018/03/28/save-ice-nhl-climate-change-sustainability-report-green-environment/463158002/>
- Claver, B. (2017, December 14). Who Is More Important To A Company: Its Customers Or Its Employees? Retrieved from <https://www.forbes.com/sites/quora/2017/12/14/who-is-more-important-to-a-company-its-customers-or-its-employees/#628a6a549f5e>
- Collins, A., Jones, C., & Munday, M. (2009). Assessing the environmental impacts of mega sporting events: Two options? *Tourism Management*, 30(6), 828–837. doi: 10.1016/j.tourman.2008.12.006
- Confino, J. (2014, April 30). Best practices in sustainability: Ford, Starbucks and more. Retrieved from <https://www.theguardian.com/sustainable-business/blog/best-practices-sustainability-us-corporations-ceres>
- Das, S. (2020, January 21). Top 10 Most Popular Sports in America 2020 (TV Ratings). Retrieved from <https://sportsshow.net/most-popular-sports-in-america/>

Environmental Sustainability. (n.d.). Retrieved from <https://thewaltdisneycompany.com/environmental-sustainability/>

Gough, C. (2019, March 4). Most watched sporting events in the U.S. 2018. Retrieved from <https://www.statista.com/statistics/619023/number-tv-viewers-sporting-events-usa/>

Green Sports Alliance. (2020, April 17). Retrieved from <https://greensportsalliance.org/>

Honda Center. (n.d.). Green Sports Alliance. Retrieved from <https://www.hondacenter.com/arena-info/green-sports-alliance/>

Honda Center Enhancement Project Draft EIR. (n.d.). Retrieved from <http://anaheimpd.org/DocumentCenter/View/3050/Project-Description-?bidId=>

Hoover, D., Hershkowitz, A., & Henly, A. (2012). Game Changer Report. Retrieved from <https://www.nrdc.org/sites/default/files/Game-Changer-report.pdf>

Lannoye, J. (2019, March 9). Continental Airlines: Business Turnaround Legend. Retrieved from <https://toughnickel.com/business/Continental-Airlines-Business-Turnaround-Legend>

Lotich, P. (2019, May 29). 8 Sustainable Business Practices - Are You Doing Your Part? Retrieved from <https://thethrivingsmallbusiness.com/sustainable-business-practices/>

Mazzoni, M. (2019, December 3). The Sports Sector Takes a Stand For Sustainability: What's Next? Retrieved from <https://www.triplepundit.com/story/2019/sports-sector-takes-stand-sustainability-whats-next/85801/>

NASCAR Green: An Industry Effort. (2020). Retrieved from <https://green.nascar.com/>

Nhl. (2018, March 28). NHL Green month highlighted by 2018 sustainability report. Retrieved from <https://www.nhl.com/news/nhl-green-2018-sustainability-report/c-297374464>

Rowland, M., Cahill, M., & Newport, D. (2018). Green Sports Alliance Fan Engagement Playbook. Retrieved from <https://greensportsalliance.org/wp-content/uploads/2019/02/FanEngagementPlaybook2018-06-27FINAL.pdf>

Scientific Consensus: Earth's Climate is Warming. (2020, January 21). Retrieved from <https://climate.nasa.gov/scientific-consensus/>

The School and Education Programs for the Anaheim Ducks. (2019). Retrieved from <https://www.ducksscore.com/Foundation.aspx>

Warren, G. (2017, December 11). Big Sports Events Have Big Environmental Footprints. Could Social Licenses To Operate Help? Retrieved from <https://www.forbes.com/sites/uhenergy/2017/12/11/big-sports-events-have-big-environmental-footprints-could-social-licenses-to-operate-help/#7c37b21350cf>

Waste Management Phoenix Open - Zero Waste Event. (n.d.). Retrieved from <https://www.wm.com/us/en/inside-wm/phoenix-open>

Wright, T. A., Cropanzano, R., & Bonett, D. G. (2007). The Moderating Role of Employee Positive Well Being on the Relation Between Job Satisfaction and Job Performance. Retrieved from [http://apps.webofknowledge.com.libproxy.chapman.edu/full\\_record.do?product=WOS&search\\_mode=GeneralSearch&qid=14&SID=7EqBamuyhRowshc6OtD&page=1&doc=1](http://apps.webofknowledge.com.libproxy.chapman.edu/full_record.do?product=WOS&search_mode=GeneralSearch&qid=14&SID=7EqBamuyhRowshc6OtD&page=1&doc=1)



## Author Biographies

**Luis Anaya** is a senior at Chapman University studying Environmental Science and Policy with an emphasis in policy and a minor in Leadership Studies. Born and raised in Santa Ana, Luis always had a passion for helping others through community service work. During his undergraduate career at Chapman, Luis was involved in organizations such as the Promising Futures Program and Mission Environment Club. He also worked with the Civic Engagement Initiatives Department for two years, where he helped students get involved on campus. Luis took his interest in community service work to the next level by taking a travel course in New Orleans to study and learn about the role of government in crisis situations and the importance of community work. After graduation, Luis plans to join the workforce in a career that focuses on environmental sustainability or policy in the public or private sector.



**Lauren Dvonch** is a senior from Orange County, California. She has worked as an ocean lifeguard for the past five years, which has strengthened her love of the environment and desire to pursue a career in sustainability. During her time at Chapman, she traveled to the Galapagos Islands for a class and played on the varsity water polo team. This past school year, she has been working at an environmental education foundation teaching environmental science to elementary and middle school kids. Following graduation, she hopes to pursue a career in corporate sustainability.





**Emily Ghods** is a southern California native who has always loved animals and the outdoors. She majored in Environmental Science and Policy, with a minor in French. While studying at Chapman, she volunteered as a naturalist for the Newport Bay Conservancy, attended animal tracking workshops with OC trackers, and fostered homeless kittens for Friends of Orange County's Homeless Pets. She also interned with Wetlands and Wildlife, a wildlife rehabilitation center, and worked for the university as a Geographic Info Systems (GIS) lab assistant. Following graduation, Emily hopes to move into a role that combines her passion for working with animals and environmental conservation

**Rachel Sison** was born and raised in Chicago, Illinois. Developing a fascination for the protection of the Earth through independent STEM research in high school, Rachel hoped to expand her knowledge and declared a major in Environmental Science and Policy. During her time at Chapman, Rachel's growing energy behind environmental activism soon shifted and changed dynamically after declaring a minor in Women's Studies and studying the injustices experienced by marginalized and disenfranchised communities. By combining a science-heavy course load in her major with a humanities-focused minor, Rachel hopes to pursue a post-grad job which will allow her to collaborate with like-minded individuals in efforts to create positive changes in her community and the world.



**Alison Cargile** is a senior at Chapman University majoring in Environmental Science and Policy with a minor in Economics. Born and raised in Orange County, California, her passion for the environment was sparked by hiking in Southern California's many parks. Her interest in sustainability has led her to incorporate it into her work at a small diner in Long Beach, where she is leading an initiative to earn an Ocean Friendly Restaurant certification through the Surfrider Foundation. After graduation, Alison hopes to apply what she's learned at Chapman to a career focused on sustainability or water conservation.

**Daisy Torres** is a senior at Chapman University. She was born in New York City, moving to her hometown of Lakeville, Connecticut shortly after. Growing up, she spent most summers summiting the Adirondack High Peaks, exploring the Appalachian Trail, and lifeguarding at several lakes in her hometown. Her love for nature led her to pursue a degree in Environmental Science with an emphasis in Ecology, and she minored in Spanish studies. During a semester in Costa Rica, she combined these two academic disciplines through studying and managing ecosystems and doing independent research. The experience helped discover her passion for environmental justice and sustainable development. After graduation, Daisy hopes to find a career in which she can preserve natural habitats, work with communities to improve sustainability, and foster environmental stewardship in others.

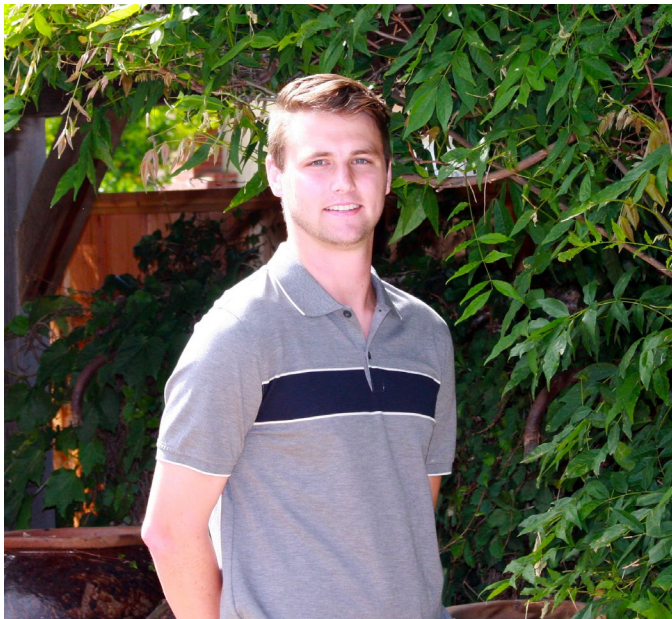


**Anna Bene** is a senior at Chapman University majoring in Environmental Science and Policy with an emphasis in Ecology. She was born in Berkeley, California, but moved to Vienna, Austria and Tokyo, Japan before eventually moving back to the states in Westport, Connecticut. Living in these countries gave Anna the opportunity to experience many different cultures. In highschool, she led a team of students on a building trip in Ecuador, motivating her to become an environmental activist. After graduation, Anna hopes to pursue a career in New York City as an environmental consultant or specialist to advise large corporations on sustainability practices to better the community and world.



**Galileo Pacioni** is from Portland, Oregon, he developed a deep appreciation for the environment. While at Chapman University, he achieved a Bachelor of Science in Environmental Science and Policy and a Bachelor of Arts in Economics. He had the valuable opportunity to take his studies abroad to the Galapagos Islands, Taiwan, and Australia. For two years, he held a role as Sustainability Research and Reporting Intern at Chapman's Office of Sustainability. He enjoyed conducting environmental audits on Chapman University

departments and helping to develop the Green Film Certification Program for Dodge College of Film and Media Arts. After graduation, Galileo strives to obtain a job in an industry that includes aspects of both sustainability and business. Later, he plans on returning to school to receive his MBA in sustainability management. Galileo's overarching goal is to find a career that allows him to preserve the health of our natural world and to contribute to growing a successful business.



**Jarod Matteoni** is a senior at Chapman University who is majoring in Environmental Science and Policy with an emphasis in policy and a minor in Sociology. Born and raised in San Jose, California, he enjoyed hiking in the nearby hills and mountains and relaxing at the Santa Cruz beaches. Playing competitive soccer growing up and collegiately offered him the opportunity to travel frequently and see much of the diverse wildlife and ecosystems across the country. In high school, his interest for the environment began in classes such as botany and AP Environmental Science. This interest turned into a passion in college as he learned more and gained

real world experience in environmental health and safety. Following graduation, Jarod hopes to continue his environmental work in the business world through corporate sustainability or environmental health and safety.

**Julia Boronski** is a senior Environmental Science and Policy major at Chapman University with a minor in Business Administration. She was born and raised in the rural mountains of Aspen, Colorado, which helped her cultivate a unique passion for the outdoors, love for the environment, and perspective on the world. During her time at Chapman, Julia was involved with several student-run clubs including Stemtors and B Positive. During her junior year, she spent a year living and studying in Madrid, Spain broadening her world view. She also worked in the HealthCare industry at Aspen Clinic Internal Medicine Associates. Following graduation, Julia hopes to pursue a career in environmental sustainability and public health.



**Sydney Cheung** is

a fourth-year Environmental Science and Policy major with a minor in Political Science. Born in Los Angeles, California, she had many pets which grew her affinity for animals and the environment. At Chapman, she became more involved with environmentalism when she travelled to Washington, D.C. in June 2017 with Citizens Climate Lobby to lobby for a carbon fee and dividend act. The following summer, she travelled to London in collaboration with Buro Happold, an engineering firm, to develop a sustainable urban planning guide for the upcoming city of NEOM. She currently works as an office assistant for Chapman's Office of Sustainability to engage the student body with sustainability. She is also a part of a research team on campus to address public health disparities that affect marginalized communities. Sydney plans to pursue a service-oriented career through the Shinnyo-en Foundation after graduation.



**Michaela Montgomery** is a double major in Environmental Science and Policy and Psychology. She was born and raised in Riverside, California, so she spent most of her summers at the beaches in Orange County and winters in the San Bernardino Mountains. These drastically different ecosystems within the Southern California region led her to become fascinated by the environment. At Chapman, Michaela became involved in student research in the Kim Environmental Geochemistry (KEG) lab and was the President of Net Zero Chapman. She will be continuing her graduate education at Chapman pursuing a Master's in Teaching and a Single Subject Teaching Credential in Biology. She aspires to become a Biology and Environmental Science educator.



**Lyndie Duich** is a fourth year Environmental Science and Policy major with a focus in Ecology. Born in coastal Florida and raised in San Diego, CA, she spent most of her life at beaches and on fishing boats, developing a love for marine animals at a young age. In the summer of 2019, Lyndie pursued a research internship in the Mote Marine Environmental Laboratory for Forensics in Sarasota, Florida, where she ran a project using PCR to determine how different fish species methylate out toxins associated with the Gulf oil spill. She is currently involved in research in Dr. William Wright's Marine Invertebrate Biology Lab at Chapman University, where she researches learning and memory in *Aplysia californica*. Lyndie plans to pursue a Masters in Marine Biology.

**Jacy Sera** was born and raised in Maui, Hawaii. Being constantly surrounded by nature as a child instilled a core value within her to respect the Earth, and prompted her to study Environmental Science and Policy, with minors in Economics and Nutrition. While at Chapman, she was a graphic design intern for CupRite, a local, startup eco-business that provided a reusable rental cup service to prevent the use of single-use plastics. In addition, she was a communications assistant for the Southern California Coastal Research Water Project, a public R&D agency that conducted scientific research to inform management decision-making and policy development. These professional experiences fostered her interest in the intersection between communications and environmental science. Conducting the Anaheim Ducks sustainability audit this semester has furthered her interest in corporate sustainability or environmental communication. However, she is also considering pursuing a



career in higher education after her life-changing experiences at Chapman University.

**Maddison Milla** is a first-generation college student in her third year at Chapman University. Born and raised in Southern California, she was very passionate about the ocean and its health leading her to pursue a degree in Environmental Science and Policy and a minor in Leadership studies. During her time at Chapman, she explored scientific research in lab settings, such as assisting the Comparative Biomaterials lab one summer, being part of an internship at sea the next summer with STEMSEAS, and has contributed to the Environmental Geochemistry lab for a year. Her other involvements included being a Chapman Ambassador, Dialogue Ambassador, a STEMtor, President of the Orange County Association for Environmental Professionals (O.C.A.E.P.), a mentor for Give Something Back, an Orientation Leader for 2 years, the student peer advisor for her major, and one of next fall's orientation coordinators. Through combining her science-centered experiences with her service-oriented experiences,

Maddie has discovered a passion for helping others. Following graduation, she hopes to pursue a career in corporate sustainability, environmental education, or environmental/public health.



**Matthew Mead** is a senior Environmental Science and Policy major with a focus in Ecology, and a minor in Business Entrepreneurship. He was born in Newport Beach, California but has spent half of his life living in Wilmette, Illinois. He grew up swimming in the beaches of SoCal and in Lake Michigan during the summer. As a four year collegiate athlete at Chapman University, he is an avid tennis player and has a love for all sports but his main passion is his love of wildlife and marine mammals. He has learned many great skills throughout his time at Chapman but most importantly, he learned how to be a leader and be more self-confident. He hopes to one day work at MBARI as a marine mammal researcher but is pondering the idea of graduate school in the far future as well.



**Elliott O'Brien** is a Senior at Chapman University majoring in Environmental Science and Policy with an emphasis in ecology. He gained a respect and love for the natural world backpacking, climbing, kayaking, and more while growing up in his home state of Washington. During his studies at Chapman, Elliott did field research in Southern California beaches, worked in the field of outdoor recreation, and did environmental conservation and restoration in the Pacific Northwest. After graduating, he hopes to return to the Washington backcountry as a mountain or river guide as well as working in conservation and habitat restoration.



**Chad Sloggett** is graduating with a double major in Environmental Science and Policy and Economics. He is from Hawaii and enjoys action sports ranging from surfing to rock climbing. When he wasn't busy surfing, Chad experienced everything nature has to offer from camping to mountain biking all while growing his love for the outdoors. He is passionate about furthering access to nature for society, especially in artificial ways like wave pools and climbing gyms. Chad worked at the Chapman rock wall throughout college and interned as a surf forecaster this past semester at Surfline. He hopes to pursue a career related to surfing and wants to help the sport grow to become more mainstream in society.



**Mackenzie Crigger, Faculty Advisor** has been the Energy and Sustainability Manager at Chapman University for the last eight years years. She also serves as a lecturer in the Schmid College of Science and Technology, where she teaches the Environmental Science and Policy Senior Capstone course and Corporate Sustainability Management. She holds a BA from Transylvania University, an MBA from Duquesne University, and is currently a Ph.D. Candidate at Chapman University. Her research interests include energy efficiency, climate change resilience and adaptation, environmental migration, and education for leadership in the field of sustainability. Ms. Crigger is thankful she gets to do work that not only feeds her soul, but helps to advance the goals of Chapman University.

## Sustainable vs Regular Products

Product	Avg Cost Reg	Avg Cost Sus	Price difference	% Difference (vs reg)
Paper	\$48.18	\$60.94	\$12.76	26.5%
Pens	\$0.54	\$0.63	\$0.09	16.3%
T-shirts	\$3.07	\$5.49	\$2.42	78.8%
Hoodie	\$13.43	\$16.94	\$3.51	26.1%
Hat	\$4.21	\$6.17	\$1.96	46.5%
Banner printing	\$41.54	\$73.83	\$32.29	77.7%

## Regular Products

	Paper	Pens	T-shirts	Hoodie	Hat	Banner printing
	\$53.69 Staples	\$0.30 Office depot	\$1.68 Gildan	\$13.00 Gildan	\$6.62 Big Accessories	\$39.89 Vistaprint
	\$64.16 Staples	\$0.47 BIC	\$2.27 Hanes	\$19.48 Hanes	\$2.79 ValuCap	\$43.36 Signs.com
	\$59.98 HP	\$0.47 PaperMate	\$1.93 Jerseys	\$16.52 Gildan G185	\$7.19 FlexFit	\$41.38 48HourPrint
	\$39.99 Universal	\$0.56 Zebra	\$4.30 Hanes black label	\$7.96 Gildan	\$3.12 ValuCap	
	\$37.99 xerographic	\$0.89 BIC	\$4.50 Gildan G200	\$10.98 Jerseys	\$3.45 Sportsman	
	\$33.24 Office depot		\$4.83 Fruit of the Loom	\$12.86 Gildan	\$2.10 Big Accessories	
			\$1.97 Fruit of the Loom			

## Sustianable products

	Paper	Pens	T-shirts	Hoodie	Hat	Banner printing
	\$68.07 <a href="#">Hammermill</a>	\$0.76 <a href="#">Eco-Pens</a>	\$7.98 <a href="#">EthicalSwag</a>	\$18.30 <a href="#">Ecoconscious</a>	\$4.99 <a href="#">Ecoconscious</a>	\$95.73 <a href="#">Greenerprinter</a>
	\$63.39 <a href="#">Staples</a>	\$0.49 <a href="#">CustomEarth</a>	\$6.20 <a href="#">Ecoconscious</a>	\$10.64 <a href="#">Hanes EcoSmart</a>	\$4.01 <a href="#">Ecoconscious</a>	\$62.77 <a href="#">BannerBuzz</a>
	\$56.99 <a href="#">Universal</a>	\$0.64 <a href="#">BIC</a>	\$6.95 <a href="#">Print Natural</a>	\$22.59 <a href="#">Print Natural</a>	\$5.20 <a href="#">EcoMarketing Solutions</a>	\$63.00 <a href="#">JakPrints</a>
	\$59.99 <a href="#">Boise</a>	\$0.83 <a href="#">Pilot B2P</a>	\$2.71 <a href="#">Hanes EcoSmart</a>	\$16.24 <a href="#">Bella+Canvas</a>	\$6.02 <a href="#">Deluxe</a>	
	\$56.24 <a href="#">Xerox</a>	\$0.80 <a href="#">Eco-Pens</a>	\$6.99 <a href="#">Next Level</a>		\$5.81 <a href="#">Ecoconscious (hemp)</a>	
		\$0.24 <a href="#">SimplyGenius</a>	\$1.78 <a href="#">Port &amp; Company</a>		\$10.99 <a href="#">Prunaa</a>	
			\$5.90 <a href="#">Anvil</a>			
			\$7.15 <a href="#">Goex</a>			
			\$3.71 <a href="#">Bella+Canvas</a>			

**Other resources (must contact for wholesale pricing)**

<a href="#">Recover Brands</a>	T-shirts and hoodies made from recycled water bottles, competitive pricing, partners with other sports orgs. (PGA, Portland Trailblazers, New York Yankees)
<a href="#">HAE Now</a>	T-shirts and hoodies, organic cotton, fair trade
<a href="#">Topikyu</a>	Hats, ethically handmade by artisans in Indonesia, utilize components of upcycled + recycled waste, practice landfill diversion (purchase scraps, offcuts, leftovers, and deadstock fabrics from local manufacturers)
<a href="#">Known Supply</a>	Fair trade apparel made by a certified B corporation, mission is for customers to know the manufacturer
<a href="#">AcSA Image</a>	Print and design company (from orange county), certified B corp, produces displays, signage, and other promotional displays

