

Sustainable Pub: Water

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Executive Summary

Our project name is Sustainable Pub: Water, the ultimate goal of this project is how can the water usage of the Koerner Pub be reduced. The stakeholder, Tim Yu, has placed three constraints on the final outcome and conclusion of this project. These constraints are: low capital expenditures, no restructuring of the building and to follow government's health and safety regulations. Due to these constraints, the team has decided to design new water usage practices for the Koerner Pub, by doing so the water usage can be reduced without the need of any new investments other than the necessary training required for the pub employees. The team also agreed that instead of deciding which practices are most suited for the Koerner's Pub, we will present a list of possible practices with their pros and cons to the stakeholder and let him decide whether or not to implement them.

All of the team members agreed that the best method to design new water conservation practices was to survey other restaurants and learn if they had any practices that can be implemented at Koerner's Pub. The team believed that in order to get the most accurate results it would be necessary to survey workers in different positions, to ensure that they are familiar with their stations. Therefore, the survey was constructed for three different positions within a pub style restaurant: bartender, kitchen staff and manager. Out of the twelve copies of survey that were sent out, only five restaurants responded. After combining and analyzing the results, the team found that none of the restaurants have water conservation policies and neither do they have sustainability in mind. Albeit these restaurants said that they do not deliberately implement water conservation practices, the restaurant's kitchen staff and bartenders still gave us interesting practices that can contribute to water conservation.

There are four practices that our team believes could be implemented by the Koerner's Pub. The first practice is to scrape clean dishes instead of rinsing them before putting them into the dish water. This is a rather simple procedure that has significant impact on water conservation. The positive aspect of this practice is that it is environmentally friendly, while the negative aspect is the requirement of more labour hours

The second water conservation practice that our team designed is to serve customers water only when asked. As we learned from the survey, not all customers drink the water that was served. By serving water only when asked there is a higher likelihood that the water will be consumed and not wasted. This will also reduce the number of cups that need to be cleaned. This practice conserves water to two stages, however, one downside is that customers may dislike that fact that they are not immediately

served water. A simple solution to this problem is to ensure that waiters ask the customers for their drink orders in a timely manner.

The final two water conservation practices are related to the disposal of ice. According to the surveyed restaurants, they all clean up and melt any left over ice cubes in the ice wells before closing every day, this is to prevent any bacteria growth. Simply throwing ice out at the end of the night is clearly a wasteful practice. Therefore, we propose that the ice not be thrown out but put to use in other ways. The first way to use the ice cubes is to water plants. This practice eliminates the need to use fresh water on plants and reduces the amount of ice that is thrown out. The practice has no downside and conserves a noticeable amount of water if performed on a daily basis.

If there is still left over ice, then it can be dumped outside beside the plants. In our survey, we found that restaurants tend to dump left over ice into a sink and then turn on hot water to melt the ice faster. Our team finds this practice unnecessary because it creates water consumption that can be avoided. Koerner's Pub can train its employees to clean the ice well only when it is close to the closing time. By dumping the leftover ice outside, nature's energy is used to melt the ice, and the process does not affect the operation of the restaurants at all. The downside of the practice is that it takes more labour hours to transport the unused ice outside, and that the dumped ice creates a potential hazard as the melted ice water might cause people to slip. Therefore, the team recommends that Koerner's Pub to place a "slippery floor" sign next to the dumped ice or to dump the ice in a responsible location.

It should be noted that according to the stakeholder, the Koerner's Pub does not have access to the water usage bill. Therefore, it is difficult to do a quantitative analysis of these practices to see exactly what impact they would have on water consumption. However, the team strongly believes that if implemented, these practices will reduce water consumption in the long run.

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1.0 Introduction

The goal of this research report is to reduce water consumption at the Koerner's Pub. Three constraints have been placed on the final outcome and conclusion of the project by the stakeholder Tim Yu. These constraints are the following: low capital expenditure, no restructuring of the building and to meet the government's health and safety regulations. In order to construct the most practical practices, twelve surveys regarding water consumption were sent to different pub style restaurants. Based on the constraints and the results from the survey, four possible practices that can be implemented by the Koerner's Pub are provided. These practices are analyzed from three perspectives: environmental (the environment), economic (the restaurant's financials), and social (the restaurant's customers). Pros and cons of each of these practices are also discussed.

The first constraint--that we should not recommend upgrading equipment--provides the biggest challenge. According to government advisories and other sources, approximately 50% of the water consumption in a commercial restaurant is from the kitchen, mainly the equipment. These government notices advise upgrading equipment as the most effective way to reduce water usage; therefore the recommendations provided in this report might not reduce water consumption as much as upgrading equipment would.

Moreover, Koerner's Pub did not have access to its water consumption data due to the fact that it shares a building with other establishments. Without this data, we are unable to perform quantitative analyses and must instead make use of restaurant estimations and existing recommendations in our research. Although this is a limitation, our recommended practices have been implemented at other restaurants, meaning that their usefulness has been recognized by other establishments.

2.0 Methodology

Our investigation is built upon two types of sources: survey data from other pub-style restaurants and third-party recommendations from previous studies, such as government advisories.

2.1 Restaurant Surveys

We used three surveys: one for management, one for bartenders or wait staff, and one for kitchen staff. In some cases, where an employee filled multiple roles, he or she filled out multiple surveys. The management survey consisted of 12 questions, the bartender survey consisted of 4 questions, and the kitchen survey consisted of 3 questions. Copies of the survey questions relevant to our recommendations can be found in the appendix.

To avoid responses containing a significant number of “I don’t know” answers, we worded our survey questions estimated or qualitative answers wherever possible. For example, when asking how much excess drinking water is wasted in a night, we indicated that a very rough estimate was acceptable. In some cases the restaurants were very precise (one restaurant averaged the number of water glasses dumped and the amount of water in them in order to give us a value in ounces), but due to the unscientific nature of these estimates, we viewed them as relative, qualitative values to provide us with ideas. We believe that even these rough approximations are better than no data at all (answers that say “I don’t know”).

We also sent the surveys to Koerner’s Pub in order to compare data. However, Koerner’s did not complete the surveys in time for us to include the results in this report, meaning that we do not know if Koerner’s has previously implemented any of our recommendations by its own initiative.

2.2 Third-party Recommendations

We looked at two government advisories relating to restaurant water practices: the US Environmental Protection Agency (USEPA) and the Southwest Florida Water Management District (SWFWMD). We also looked at three articles by restaurant industry managers which also provided recommendations for water usage.

3.0 Scraping Dishes

Our surveys showed that before placing dishes in the dishwasher, kitchen staff either scrape excess food into the garbage or rinse it off. This is so that food does not clog the dishwasher. Since scraping does not use water (using human effort instead), it is preferable to rinsing from a water-conservation perspective.

3.1 Environmental Impact

As stated above, rinsing uses water to clear food from plates while scraping uses human effort. Scraping is therefore the better choice when trying to conserve water.

3.2 Economic Impact

The restaurants indicated that scraping and rinsing require similar amounts of effort depending on the food being removed. Water-soluble sauces are easier to remove by rinsing, but sticky food is easier to scrape. This means that the overall effort is comparable whether scraping or rinsing.

When rinsing into a sink, the possibility exists that food may cause a drain blockage. This would require a cost to fix, and thus may cause rinsing to cost more in the long run (but this is dependent on the quality of the grate over the drain and the amount of solid food rinsed).

3.3 Social impact

Since kitchen activities are out of sight of the customers, neither choice impacts the social aspect of the restaurant.

3.4 Conclusion

Scraping is the preferred method of preparing plates for the dishwasher. It saves water and does not take significant additional time.

4.0 Serving Water

Some restaurants always provide a glass of water to customers, while others do not unless the customer requests it. The restaurants we surveyed noted that customers rarely finish all of their water. Since customers who do not ask for water are less likely to drink it, water can be saved by only serving it when customers specifically request it. In fact, until recently, New York City prohibited serving water to customers unless they asked for it (Roberts, 2014). Other North American regions such as California and Texas have similar restrictions during droughts (Austin, 2012; ACWA, 2014).

4.1 Environmental Impact

Since water served to but not consumed by customers is wasted, reducing this waste will have a positive impact on the environment. Moreover, serving water uses an extra glass which must then be washed. If the customer does not intend to drink the water, both water and space in the dishwasher can be saved. We found that restaurants run their dishwashers upwards of 10 times per day, usually when full, so reducing the number of dishes washed will result in less uses of the dishwasher. The US Environmental Protection Agency found that dishwashing accounts for approximately 50% of all water usage in a restaurant (2012); thus reducing dishwasher uses will also have a positive result.

4.2 Economic Impact

Water is served for free at most restaurants in North America, so any expense, however small, is on the restaurant. Reducing waste will have a positive economic impact, though it is likely to be negligible.

4.3 Social impact

Serving water right away or waiting for a customer to request it seems to be cultural. Some European countries charge for it to cover the cost of serving and cleaning (TripAdvisor, 2011), and as previously mentioned many regions across North America only allow serving water upon request (though often for practical reasons). Because of this, a customer may expect to be served water right away. If he or she is not given water without asking for it, he or she may feel that the restaurant is not serving appropriately. On the other hand, many customers may not even notice.

4.4 Conclusion

Serving water exclusively when a customer requests it is not a new practice, but it is often region-specific. It wastes less water but can negatively impact a customer's perception of the restaurant, depending on his or her background or preferences. Thus this policy should be implemented at the discretion of the restaurant manager after an analysis of the clientele.

5.0 Ice Wells

Ice wells are tubs or buckets that provide servers and bartenders with easy access to ice. The restaurants surveyed stated that in order to meet health and safety standards, ice wells must be emptied and dried so they do not produce any bacteria. The most common method of emptying ice wells is to move the ice over to a sink and to melt the ice using hot water. This practice creates a large waste of not only water, but the ice as well. As an alternative, the ice should be dumped somewhere outside where it can melt naturally. This is limited to times of the year when the weather is warm enough to melt ice; dumping ice outside during sub-freezing temperatures will result in a growing pile that does not melt.

5.1 Environmental Impact

The restaurants indicated that they use significant amounts of hot water to melt the ice once it has been moved to the sinks. When possible, this should be avoided to conserve this water. Finding a safe area for the ice to be dumped allows the ice to melt naturally, reducing wasted water and conserving the energy used to heat the water.

5.2 Economic Impact

BC Hydro states that one of the best ways to conserve energy is to use less hot water. Energy has a cost, so conserving its use has a positive impact on the restaurant's financials. However, more work is required for the employee to move the ice to a safe location to dispose of the ice. This extra time would be reflected in the labour hours, and use more money.

5.3 Social impact

A hidden, safe location must be found where ice can be dumped. Ice is a slipping hazard if it is too near people. Additionally, customers may find the sight of a pile of ice on the restaurant's property to be unusual.

5.4 Conclusion

If a suitable location can be found at which to dump the ice, and if the weather and climate allow it, then employees should avoid using hot water to melt the ice and instead allow it to melt naturally. This saves both water and energy.

6.0 Watering Plants

Typically, restaurant plants are watered with water. However, according to an online article, ice cubes can be used instead. Placed on the surface of the soil, the ice will melt slowly enough that the residual heat from the soil will keep the cold water from shocking the plant's roots (King). Garden forums emphasize that this should not be done if the plant's roots are not fully hidden beneath the soil, as it can damage the plant (Botanical Garden, 2008). Moreover, ice water should never be used as it will reach the roots too quickly and damage them (Evans). Even just using ice can still be harmful to more delicate, tropical plants, so such decisions must be made with care (Botanical Garden, 2008).

6.1 Environmental Impact

All restaurants we surveyed stated that they throw out a significant amount of ice at the end of each day. This ice comes mostly from the ice wells where they keep ice ready for drinks, though some comes from wasted drinking water. Since this ice is thrown out anyway and since the plants would otherwise be watered with tap water, using ice from the ice wells to water the plants will avoid using additional water. We cannot provide a quantitative value to the amount of water saved because it is proportional to the number and size of the plants in the restaurant.

6.2 Economic Impact

Done correctly, using ice that would be thrown out anyway does not affect the financials of the restaurant in any way. However, if done incorrectly, plants can be damaged and would thus need to be replaced. Employees should be informed of the aforementioned limitations of this method to avoid harming their plants.

6.3 Social Impact

Watering plants is usually separate from any customer interaction, meaning that any changes to the watering process will be unnoticed or irrelevant in the eyes of the customers. We anticipate no social effect from this recommendation from the perspective of the customer. However, as mentioned previously, if this method is applied incorrectly it will damage delicate plants. Dead or withered plants may in turn affect customer satisfaction with the restaurant.

6.4 Conclusion

Watering plants with ice cubes eliminates the use of excess water for plants. It will not damage the plant as long as the plant's roots are deep within soil. Restaurants should take care when working with delicate or tropical plants as these may be more sensitive to cooler water. Since this method has a positive environmental impact and no changes

to either the economic or social aspects of a restaurant, we recommend it as long as restaurants are careful when doing so.

7.0 Conclusion and Recommendations

Four water conservation practices have been explained that will reduce Koerner Pub's water usage. Scraping clean dishes instead of rinsing them saves a significant amount of water. Serving water only when asked means that less water will be wasted and it also reduces the number of cups that need to be cleaned. The downside is the possible customer dissatisfaction; therefore it is recommended that waiters ask the customers for their drink orders in a timely manner. Naturally melting any remaining ice cubes instead of melting them with hot water reduces hot water usage and saves both water and energy. However, this practice is dependent on both the climate and the availability of a safe location at which to dump the ice. Lastly, watering plants using the wasted ice cubes removes the need to use tap water to water the plants. This practice is not always possible for all plants; tropical and fragile plants should still be watered with room-temperature tap water.

Finally, although these recommendations are made based on existing restaurant practices and can conserve water, the final decision must be made by the stakeholder, who is more familiar with the operation of Koerner's Pub. As mentioned, some practices could affect customer satisfaction, so someone more familiar with the clientele of the restaurant should weigh the pros and cons of each of our recommendations and decide.

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APPENDICES A

Survey results for bartender

	Do you serve customers water right away, or only if they ask for it?	Do customers usually drink the water you serve them?	Do customers prefer pre-chilled drinks or ice-chilled drinks?	How do you clear your ice wells during the night?
Restaurant A	Yes	No	Ice chilled	Melted with hot water
Restaurant B	Yes	Yes	Not sure	Melted with hot water
Restaurant C	Only when asked	No	Ice chilled	Melted with hot water
Restaurant D	Yes	No	Ice chilled	Melted with hot water
Restaurant E	Yes	Yes	not sure	Melted with hot water

Survey results for kitchen staff

	How frequently do you run your dishwasher? Is it always full?	Do you rinse dishes or scrape them?
Restaurant A	Whenever is full	Both
Restaurant B	Whenever is full	Rinse
Restaurant C	Whenever is full	Scrape
Restaurant D	Whenever is full	Both
Restaurant E	Whenever is full	Both

Survey results for manager:

	Approximate ly how much ice do you usually throw out at the end of a day?	Do you use ice for anything other than drinks?	Do you have any plants inside or outside of the restaurants?	Does your restaurant have any water conservation policies or practices?	Do you ever think about water conservation and how it pertains to your restaurant?	Would you be interested in making your restaurant more sustainable?
Restauran t A	Doesn't know	No	Yes	No	No	Yes if no additional cost
Restauran t B	Doesn't know	For seafood dishes	Yes	No	No	Yes if no additional cost
Restauran t C	Doesn't know	No	Yes	Yes	Yes	Yes if no additional cost
Restauran t D	Doesn't know	No	Yes	No	No	Yes if no additional cost
Restauran t E	Doesn't know	No	Yes	No	No	Yes if no additional cost