

TRU Sustainability Grant Proposal  
TRUSU Eco Club

**Application**

Name of Project <b>The Green Hands Project</b>		Date <b>March 30/14</b>
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Sustainability Grant  
TRUSU Eco Club  
March 2014

**The Green Hands Project**  
**Let's Make Using Paper Towel History**  
Proposal

**Project Description and Articulation of Benefits**

TRUSU Eco Club has seen changes in Kamloops regarding the use of paper towels in public restrooms. The City of Kamloops has been replacing their restroom's paper towel dispensers with high efficiency hand dryers. This community movement, along with reducing environmental impact, economic costs, and moving towards a sustainable future for TRU, leads us to our proposed project. With the support of TRU Facilities, we would like to reduce or eliminate the amount of paper towel waste created from TRU restrooms. Our project involves removing paper towel dispensers and poorly functioning hand dryers and replacing them with high efficiency hand dryers. We have created a tiered plan to demonstrate the scope of the project upon available funding.

Many overlook the manufacturing time, materials required for production, transportation, and the use of paper towel once made. It is an extremely temporary use, including the paper towel that is 100% recycled. For how much effort is put into making them, the amount of deforestation that goes into creating a temporary paper towel to make our hands dry, is insignificant compared to the amount of harm we are causing to the environment whilst providing support for the companies that manufacture them. Although the raw materials used to create a hand dryer appear high, they are able to last much longer than equivalent paper products. We assess the financial and environmental impacts in this proposal.

Reducing waste saves money, which can go into building a more sustainable future for TRU. The Green Hands Project looks to bring awareness to the economic and environmental impact of paper towels.

The goals of the Green Hands Project are:

- To eliminate or reduce the use of paper towels in TRU's restrooms
- Reduce the environmental impact that TRU has regarding paper waste
- Allow for diversion of funds from paper towel usage to other projects at TRU

Our video submission can be located at:

<https://www.youtube.com/watch?v=0632eX5VhnE>

**People, Partnerships, and Performance Measurement**

The people and partnerships that are involved in The Green Hands Project are

the TRUSU Eco Club, TRU Facilities – specifically Warren Asuchak and Gord Setka, and the City of Kamloops. The roles of each group are outlined as follows:

*TRUSU Eco Club*

- Coordinating with TRU Facilities on using awarded funding
- Educating and informing students and staff at TRU about the benefits in switching to hand dryers
- Providing financial and project report to the Sustainability Grant Committee

*TRU Facilities*

- Recommending an efficient and preferred hand dryer for installation and maintenance – indicated as the XLERATOR Hand Dryer
- Purchasing the number of XLERATOR Hand Dryers possible with the awarded funding
- Installing and maintaining the hand dryers with contributions from their existing budget
- Providing TRUSU Eco Club with necessary financial and project details
- Providing a drafted floor plan to alter a set of Old Main restrooms with door-less entries, which further supports sole use of hand dryers (See attached plan, page 8)

*City of Kamloops*

- Supporting the paper towel free initiative that aligns with the project they are undertaking in the community
- Tony Carlucci, Arena and Recreation Facilities Operations Manager, supports us in our initiative stating, “The City of Kamloops has successfully replaced paper towels with hand dryers in two of its most frequented arenas and we are pleased with the results” -- Tony can be reached at [tcarlucci@kamloops.ca](mailto:tcarlucci@kamloops.ca), 250-828-3488

In order to measure the project’s performance, assessing the cost and energy savings experienced by TRU will provide the most accurate data. Because the system that TRU operates on is contract based, the institution does not deal with the individual cost of the services for janitorial and paper products. However, looking at the cost break down of the XLERATOR brand hand dryer that is preferred by TRU Facilities, it leads towards lower individual costs to the contracted company, which will result in expected savings due to lower contract bids.

Compared to other competitive hand dryers, the XLERATOR proves to be more efficient. Where the conventional hand dryer runs for approximately 30 seconds, the XLERATOR runs for a mere 12 seconds at 1500W/electricity. The XLERATOR Hand Dryers have proven to be much more efficient by the Carbon Footprint, Climate Changing Score. Through 10 years of service according to a peer-reviewed article, in order to dry 260,000 pairs of hands the XLERATOR required only one dryer, with an electricity usage of 1381 kWh. This proves to be incredibly efficient compared to paper towel, where 37,960 m<sup>2</sup> was used to dry the same number of hands, calculated by two sheets used per person equaling 0.073 m<sup>2</sup> of paper towel. However, this number is extremely dependent on how much an individual requires in order for their hands to become dry. In the majority of cases, the paper towels

used are not able to be recycled. As TRU does not currently have the infrastructure in place to recycle paper towels, this waste would be going to the landfill.

Beyond the financial and energy savings of using hand dryers instead of paper towels, the restrooms at TRU should take less time to clean and maintain, as there will be less garbage to remove and paper waste on the floors. There will be a reduction of janitorial costs and landfill waste as a result of this change.

## **Level of Impact**

### *Student Involvement*

As TRUSU Eco Club is a student club, this proposal and planned change are the result of direct student involvement. As a club of dedicated students, we strive to promote awareness of environmental issues and solutions at TRU. We have worked collaboratively with TRU Facilities to assess the feasibility of The Green Hands Project. We hope to demonstrate that a group of students can effect positive change at TRU's Kamloops Campus.

### *Environmental Impacts and Benefits.*

The ecological and financial benefits of switching from paper towels to electric hand dryers are significant as they are numerous. Studies suggest that making this switch can result in an average 50 to 70 per cent reduction of an institution's carbon footprint, as well as 95 per cent cost savings in washroom supply and maintenance.

In explanation of these reductions, one must simply consider the ecological costs associated with the production and maintenance of a paper towel based sanitation system. On average, the production of one ton of virgin paper towel requires some 26,498 litres of water, 17 full grown trees, as well as some 1,756 litres of oil, and a further 159 litres of gasoline associated with the transport and production of the paper towel. Furthermore while much more variable, there are also significant costs associated with the need to purchase, restock and service paper towel dispensers, clean up paper towel waste and clogged toilets, and to process the 3 cubic meters of waste created with each ton of paper towel. Based on the information available for TRU's current funding allocated to paper towel and restroom cleaning, financial resources can be broken down as follows:

Cleaning contracted to L&J Diamond Maintenance, averages:

- 54 rolls of paper towel per week in Old Main
- 4 hours per day cleaning at \$15.00 per hour in Old Main only
- Approximately 30 paper towel dispensers replaced per year at a cost of \$19.70 each

In contrast, while there are costs associated with the production of electric hand dryers, those costs are a long term investment, with units typically lasting for 7 to 10 years of service, as opposed to the close to monthly use of one ton of paper towels. Aside from the elimination of all the costs associated with paper towel use, electric dryers have the additional benefits of only requiring annual or biannual servicing, and created no waste to speak of.

Electric hand dryers hold the additional benefit of becoming increasingly

energy efficient as technological advances are made. For example, the XLERATOR hand dryers we have proposed, use 80 per cent less energy than their predecessors, all the while drying hands approximately 30 seconds faster. These more efficient models can also be augmented with solar energy, giving the university another avenue to reduce its environmental impact. Paper towels, on the other hand, are financially and ecologically a “sunk cost.” That is to say, there is no option to reduce their impact short of removing them altogether, whereas the impact of hand dryers can be further reduced by solar augmentation.

Thus, the switch to hand dryers not only reduces financial costs, but also raises efficiency and significantly reduces ecological impact, saving not only trees, but also landfill space, hydro use, and product/ waste transportation impacts.

### *Education and Outreach*

There are education and outreach opportunities with this project within TRU and within the Kamloops community. The transition at TRU from paper towel to hand dryers should be accompanied with information regarding why the switch was made. This will educate the TRU community and promote making the decision to choose using a hand dryer over paper when they are not at TRU as well. Such education could be made by providing informational signs above each hand dryers. Some City of Kamloops buildings, TCC for example, uses these signs to provide facts on the amount of paper towel waste products they are saving. Another way we could increase knowledge as a club is to do tabling at TRU as the switch is being made. The information at the table could include facts on hand dryers versus paper towel, tips on how to dry your hands faster, and ways to open the door to the bathroom without using paper towel.

Outside of the TRU community there is also the opportunity to provide educational information. As a club, there is the potential to conduct a small research project on the comparison of waste removed from washrooms prior to hand dryers and then after the hand dryers have been installed. By doing so we could compare the amount of money saved on paper towel and washroom maintenance and present the information to other businesses in the community suggesting they too make the switch from paper towel to hand dryers.

### *TRU's Strategic Priorities*

Environmental sustainability is a part of the seven founding values of TRU. In the 2014 draft of the Strategic Priorities Plan for TRU, increasing sustainability is one of five priorities to be considered in the next five years. In the category of sustainability, the institution is looking at both economic and environmental sustainability, which are both addressed in our outlined project.

The institution's desire to make the change to paper towel free restrooms is evident in the current changes being under taken by TRU Facilities. They are currently in the process of implementing high-efficiency hand dryers in the restrooms in IB.

### *Additional Benefits*

With this implementation of high efficiency hand dryers, there will be observable benefits. According to Lincoln Chua, Associate Director of Facilities Infrastructure, IB has an average of toilets being plugged 3 times a week during Fall and Winter semester. Of these, most are addressed in-house, but RotoRooter is called in for larger problems. Comparing the dual flush system maintenance cost in IB to the single flush system in A&E, over the same period April 1, 2012 to March 31, 2013, IB cost is \$ 2409.76 versus A&E cost \$482.56. IB and A&E are around the same square footage of built up space (or floor area). There were 12 toilets in IB replaced by Facilities from the dual flush system to a single flush system. The cost of replacing just one toilet with labour and material is \$5790.70. The new toilet in IB (single flush) flushes at the rate of 1.6 gallon/flush. The dual type flushes at 1.6 gallon/flush for full flush and 0.8 gallon/flush for half flush. Removing the paper towels from TRU restrooms would open up the potential for dual flush systems resulting in reduced water consumption.

Tom O'Byrne, Mechanical Supervisor at TRU, reaffirmed what Lincoln Chua stated about replacing 12 toilets in IB. Tom stated that, "We were having problems with the sewer lines constantly backing up. This caused a lot of service calls to the plumber and clean-up costs and downtime to the washrooms. These dual flush toilets were not a good application for this building (IB). Too many students were not flushing with the full flush and they were also putting paper towels in the toilets. We did have signage for the toilets and the paper towels. I did have the low flush disabled on some of these toilets and we still had problems with them getting plugged and the sewer lines backing up."

In summary, the additional benefits include ability to move towards a dual flush toilet system, reduced cost in maintenance and plumbing requirements, and the opportunity to educate students and staff at TRU about the negative impact paper towels produce. The information provided by Tom O'Byrne and Lincoln Chua support the additional benefits that we believe moving to hand dryers will facilitate.

### **Project Feasibility**

As our proposed project has partnerships within Facilities, the installation and maintenance skills required to implement the hand dryers is available. The cost effectiveness of The Green Hands Project is outlined in previous sections, notably savings will be seen in areas of janitorial costs, bathroom and toilet maintenance, and purchase of disposable paper towels.

The cost of this project will depend on the number of restrooms targeted in this initiative. We have created a four-tiered plan depending on allocated funding. These figures are based on information provided by Warren Asuchuk and Gord Setka at TRU Facilities. The cost for ongoing maintenance of the hand dryers will be taken on by Facilities.

\*\*Please note that on the attached spreadsheet, there are 4 pages to review; one page for each proposed tier

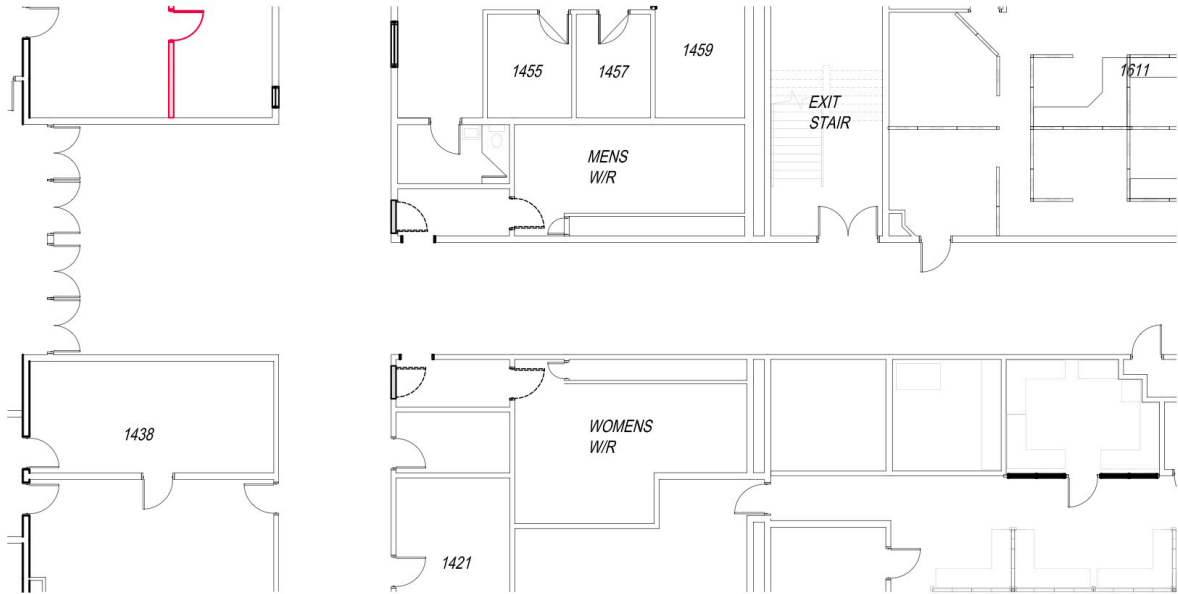
## **Planning**

TRU Facilities is working with TRUSU Eco Club on The Green Hands Project. Facilities has agreed to purchase the XLERATOR hand dryers with the funds awarded to TRUSU Eco Club and report with financial statements as required by the Sustainability Grant Committee. Facilities employees will be handling the new dryer installation and the removal of paper towel dispensers and low-efficiency hand dryers. Warren Asuchak has informed us that utilizing the funds within one year of 2014 grant disbursement is possible.

With conversations that have taken place with TRU Facilities, regular maintenance of the hand dryers will fall under Facilities existing budget. The only possibility for sustained funding is the increase of the scope of the project. If a lower tier is funded, Facilities may decide to follow up with further installation of high efficiency hand dryers. If additional hand dryers are to be installed, they will be a part of a separate project.

Creating a campus-wide change will demonstrate TRU's institutional desire to move towards sustainability. Creating a shift on campus will allow for a wide educational opportunity and understanding of the impact paper towels have on the environment and the infrastructure at TRU.

### Old Main First Floor B-Block Washrooms



Drawing provided by Warren Asuchak



**References**

<http://www.exceldryer.com/pdfs/LCAExecutiveSummary9-091.pdf>

<http://www.handdryersvspapertowels.com/Studies.html>