

STUDENT ORGANIZATION SUSTAINABILITY INITIATIVE PROPOSAL FORM

Part I- General Information:

Name of Student Organization	UAP 3354 - Introduction to EPP
Contact/Responsible Person	Caitlin Adams, Michael Chin, Jarred Lacov
Contact Office Held/Title	Office of Sustainability
Contact Email Address	Chin11@vt.edu
Contact Telephone Number	(804)-402-5771

Part II- Project Cost Information

Estimated Cost of this Proposal See III.C. below

Estimated Savings - See III.D. below

Net Cost of this Proposal =

Part III- Supporting Information

A. Please describe your sustainability initiative and attach supporting documentation.

The sustainability initiative we are proposing specifically targets students living in O' Shaughnessy Hall and Peddrew-Yates Hall. We are proposing to put attention-grabbing stickers next to all light switches that remind students to turn off their lights when they are leaving their room. These would be 2x2 stickers that will go next to or on top of light switches. Resident Assistants would be provided with the stickers and be in charge of displaying them in the rooms. As former students who lived on-campus, there were many instances where we would leave our dorms, whether for class, sports, or clubs and come back to realize that the lights in our room were on the entire time. While LED lighting has been implemented to save energy, having lights on throughout the entire day is still a significant waste of energy. On top of that, if you consider every dorm room on campus, the energy wasted can add up. For reference, a study published in Volume 19 of *Lighting Research and Technology* found that reminder stickers added to light switches reduced light energy consumption in private offices and only took 10 weeks for energy savings to match initial cost of stickers.¹ On top of that, we are proposing to make the sticker design an open competition to all students at Virginia Tech as an additional effort to promote sustainability and energy-saving awareness. The competition could be student-run by the Environmental Student Organization. All students would be given the chance to vote for their favorite design. In fact, promotion of the competition would also be a way to raise awareness about energy usage savings for all students, whether living on campus or off.

¹ Rea, M.S., et al. "The Effectiveness of Light Switch Reminders in Reducing Light Usage - M.S. Rea, R.F. Dillon, A.W. Levy, 1987." *SAGE Journals*, <https://journals.sagepub.com/doi/10.1177/096032718701900304>.

B. How does this initiative help to achieve the goals of the Virginia Tech Climate Action Commitment Resolution and Sustainability Plan?

Policy Point #1 - Virginia Tech will be a leader in Campus Sustainability

- Something as simple as a sticker may just be what is needed to remind people to practice sustainable habits. By showing energy saving results, Virginia Tech can serve as a model for other communities to implement specifically targeted signage in routine aspects of people's lives. For instance other universities could follow suit and add energy saving stickers around their campus in efforts to reduce energy consumption. Doing so will achieve point 1, for Virginia Tech to be a leader in campus sustainability.

Policy Point # 3 - Virginia Tech will establish a target for reduction of campus GHG emissions to 80% below 1990 emissions levels by 2050.

- We estimate our proposal to achieve a savings of \$744 yearly, at a cost of \$0.108 per KWH, that is a yearly energy savings of about 6,889 KWH. While this may not be an incredibly large energy savings, it is still a substantial amount that will only help Virginia Tech achieve its targeted reduction of GHG emissions, on top of other initiatives with the same goal in mind.

Policy Point # 10 - Virginia Tech will engage students, faculty and staff through education and involvement to reduce consumption of energy, water, and materials in...facilities.

- Our sustainability initiative aligns most with this point. Stickers will help engage students to “reduce consumption of energy” by reminding them to turn off the lights whenever they leave the room. In addition, our plan to make the design an open competition also aligns with the goal to educate and involve students, faculty, and staff on conservation of energy. We align with this goal by bringing awareness to sustainable living techniques in regards to reduction of energy consumption.

C. What is the cost of your proposal? Please describe in adequate detail the basis for your cost estimate.

According to Virginia Tech's Housing information, there are currently 9,300 students living on campus². If we assume that each room houses two students, 4650 dorm rooms would need a sticker for a light switch. We also assumed that suite-style rooms have multiple light switches. Our findings on sticker prices conclude that cut-to-size stickers will cost \$0.28/sticker. Thus, the cost of this project is only \$139.04 for an order of 5,000 stickers³, which allows for extras. Stickers would be sourced from the company Uprinting. These stickers will be installed for every dorm room on campus. An additional \$60.96 is proposed to be used for any additional printing, misc marketing, or set-up fees.

D. Will your proposal produce cost savings for the University? If so, how much? Please describe in adequate detail the basis for your savings estimate.

Our proposal will increase awareness about saving energy and will aim to encourage students to shut off their lights more frequently. If every dorm has these stickers placed next to their light switches, then students will likely be reminded to turn off lights more than they are currently doing. This will save the university money by reducing electricity usage in dorms and thereby reducing electrical bills. Based on the results of a University in Florida that did a similar competition for reducing energy in dorms, a 15% savings in energy from each dorm led an astounding \$27,000 in electricity cost savings⁴. However we are taking a more modest estimation and we think that we can save, at the very least, \$400 annually in energy costs. This is based off of the estimation that we can manage to reduce light usage in dorms by three hours per day from ten percent of dorms. A truly accurate estimation of dorms that will reduce energy consumption is difficult to gauge. However, we tried to come up with a conservative number that still produces a substantial cost savings and return on investment. From experience dorms, consist of two tube lights. We assume that they are LED lights and burn 10 watts. Therefore, we calculated that a combined 20 watts would be burned at a price of \$0.108 per KWH. This price was found from the Virginia Tech Electrical

²“Housing.” VT Virginia Tech, <https://vt.edu/campus-life/housing.html>.

³ “Bulk Stickers.” Uprinting, <https://www.uprinting.com/bulk-sticker-printing.html>

⁴ “Energy-Efficient College Life.” Energy.gov, <https://www.energy.gov/energysaver/articles/energy-efficient-college-life>.

Service website.⁵ At three hours of usage, per day, we calculated a cost of \$0.20 per month⁶. Since we are estimating a savings of three hours per day, each of the ten percent of dorms will save \$0.20 a month. Ten percent of dorms would equal to about 465 dorm rooms. We also factored in that the dorms are only in use for about eight out of the twelve months of the year. Therefore a monthly savings of \$0.20 multiplied by 8 is \$1.60 in savings per room over the course of eight months. In total, 465 dorm rooms multiplied by a \$1.60 savings per room over the course of eight months comes out to a conservative estimated yearly savings of \$744 and net cost of -\$604.96 per year. That is a substantial return on investment. In addition, the stickers we are proposing to use will be high quality vinyl and waterproof to ensure that they can last for years without being damaged and have to be replaced.

E. Is this funding request for a One-Time need or an Ongoing need (please check one)?

One-time

Ongoing

F. Is funding available for this request from another source? If yes, describe the funding (source, amount, etc.)

N/A

STUDENT ORGANIZATION SUSTAINABILITY INITIATIVE PROPOSAL FORM (Continued)

Part IV- Requestors/Reviewers

⁵ "Rates." *Virginia Tech Electric Service* | *Virginia Tech*, <https://vtes.vt.edu/service-rates/rates.html>.

⁶ "Electricity Usage of a LED Light Bulb." *Electricity Usage of a LED Light Bulb - Energy Use Calculator*, http://energyusecalculator.com/electricity_ledlightbulb.htm.

Michael Chin	
Prepared By (Name of Contact for Student Organization)	Date 11/06/19
Todd Pignataro and Kenneth Belcher	1/13/20
Reviewed By (Name of Appropriate University Official)	Date
Denny Cochrane	1/13/20
Reviewed By (Name of Office of Energy and Sustainability Representative)	Date

Calculated cost savings per dorm

<p>Cost Per Hour: 0.0022</p> <p>Cost Per Day: 0.0065</p> <p>Cost Per Month: 0.20</p> <p>Cost Per Year: 2.37</p> <p>kWh Per Day: 0.06</p>	<p>Hours Used Per Day: <input type="text" value="3"/></p> <p>Power Use (Watts): <input type="text" value="20"/></p> <p>Price (kWh): <input type="text" value="0.108"/></p> <p><input type="button" value="Calculate"/> <input type="button" value="Reset"/></p>
---	---

Source: http://energyusecalculator.com/electricity_ledlightbulb.htm

Cost per KWH found from Virginia Tech Electric Service

TYPE OF SERVICE	MONTHLY SERVICE CHARGE	ENERGY CHARGE ALL KWH	WHOLESALE POWER COST ADJUSTMENT PER KWH	DEMAND CHARGE PER KW	REACTIVE DEMAND CHARGE PER KVAR
Residential	\$8.35	\$0.10830	\$0.00	N/A	N/A

Source: <https://vtes.vt.edu/service-rates/rates.html>

Estimated Cost of Stickers with Size and paper properties

Bulk Stickers ★★★★★ 4.8 (133) [Write a review](#)



- ✓ Printed on weather-resistant white vinyl
- ✓ Suitable for indoor and outdoor applications
- ✓ Available in custom sizes

Configure & Price

[Share Product](#)

Sticker Type: [How do I decide?](#)

Cut-to-Size Roll

Shape: Square/Rectangle

Size: 2" x 2"

Paper: 4 mil. White Vinyl High Gloss (UV)

Rounded Corners: No

Bundling: None

Quantity: 5,000

Printing Time: 3 Business Days

Printing Cost: **\$139.04**

[UPLOAD YOUR FILE & ORDER NOW](#)

or [Create Your Design Online](#)

Source: <https://www.uprinting.com/bulk-sticker-printing.html>