Fostering Energy Saving Behaviours at BCIT

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Introduction & Objective

The evidence for climate change is unequivocal, with the energy supply sector being the largest contributor to global green-house gas emissions - 35% of total anthropogenic GHGs in 2010 (IPCC, 2014). BCIT has been working toward minimizing its overall environmental and energy usage impact by achieving net energy production. One route to becoming a net energy producer is by reducing consumption. Influencing people to adopt simple and basic energy saving behaviors can lead to reductions in energy consumption. Our goal is to pinpoint behaviors that will optimize energy consumption and create a strategy that motivates students at BCIT to adopt them.

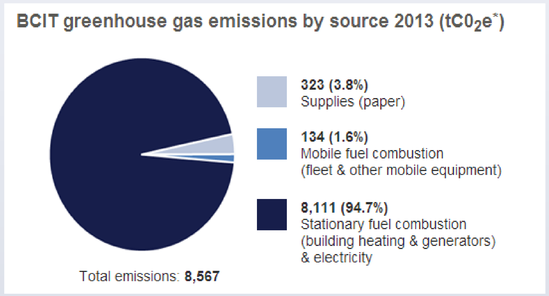

Fig.1 Under-scope GHG emissions at BCIT

Behaviours

- Turning off Computers
- Closing doors and windows
- Turning off the lights

(When leaving and after usage)

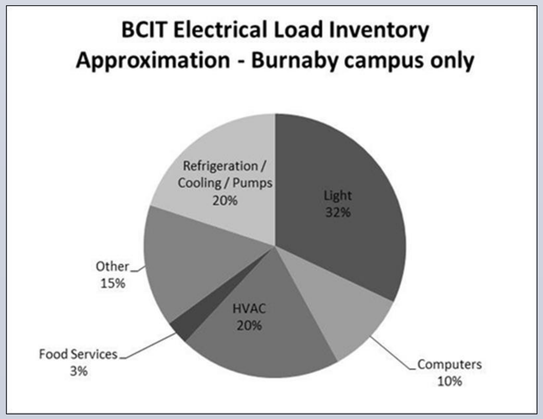

Fig.2 BCIT estimated electricity use breakdown

Method

1. Direct Observation

Location: BCIT Burnaby campus SW1
Time: 10 PM (Closing hour)

Type of behaviour	Data (On or open / Total)	Result (%)
Lights left on	10/24	42
Doors left open	14/24	58
Windows left open	3/24	13

Table 1. Direct observation data

2. Myths of Behaviour Change

Myth 1: Education will change behaviour.
- Knowledge alone is not enough.
- Presentation of information is important. (Tailored to intended audiences)
- Information needs to be tangible and personalized.
- Frame the information in terms of loss.

Myth 2: Change attitudes to change behaviour.
- Attitudes follow behavior
- Set behavioral expectations
- Connect expectations to value of the intended audience.

Myth 3: People know actions that motivates them
- Underestimating power of self-motivation
- Greatest motivator is social norm
- Incentives for people to adopt to the changes made

3. Data calculation

The following table is based on the data collected through series of interview and research. The number of classrooms and building size was estimated based on the information provided by the BCIT.

Electricity Consumption sources	Electricity Load Inventory (%)	Electricity Consumption (GWh)	Electricity Conserved (kWh)	Amount of Energy savings (%)	$ saved Per year
Light	32	1.22	12,420	1.018	$1,138
Computer desktop	10	0.38	1,998	0.786	$273.79
Computer monitor			990		
HVAC	20	0.76	3,800	0.50	$348.19

Table 2. BCIT Strategic Energy and GHG Management Plan

Strategy

1. Community Based Social Marketing (CBSM)

CBSM – approach to achieving wide ranging sustainable behavior at community level. (Combination of psychology and social marketing)

Identifying behaviours:

1. Information collection on possible sector to target.
2. Selecting the sector (High potential).
3. Investigate for high potential categories.
4. Identify non-divisible & End-state behavior.
5. Determine impact, probability and penetration level.
6. Select the behaviors with best combination of impact, probability and penetration.

Campaign Strategy (Prize for campaign winners)

- Incentive plan to encourage students' behaviour.
- Winner: most effective energy reducing faculty.
- Organizing a prize of winning program's choosing.

Social media (Social norm platform)

- Compare the progress of the programs participating
- Frame the result in terms of losses to encourage behavioral change.
- Type of social media: Facebook or BCIT homepage

Public display of progress (Monthly poster)

- Poster will display progress of each faculty
- Highlight the leaders and trailers
- Set a model behaviour for students to adopt, motivate and be engaged in.

Prompt and signs (Utilizing visual effects)

- Design BCIT homepage banners, posters & stickers
- Display prompts to affect behavioral change
- Goal: demonstrate how convenient and beneficial it is to conserve energy by adopting new behaviours

Discussion

The living gym system

- Around 90% of people are willing to exercise.
- Installing a living gym system on campus.
- Requirements:
  1. Stationary bikes
  2. Rowing machines
  3. Stair climbers
  4. Small motors
- Encourage students and faculty members to use.
- Monitor the progress by using student ID
- Extrapolate the energy production by program

Result:
1. One step closer to becoming Net Energy Producer
2. Save money and environment
3. Not simply the mitigating of energy use

Results

Behaviour	*Impact (in electricity saved/year)*	*Probability (past initiatives and expert opinion) (0-4)*	*Penetration (how much room is there for it to be adopted) (1 - value)*	*Weight*
Putting Computer & Monitors on sleep mode	*2,988 kWh*	*2 - interview with Alex and security*	*1 - student labs are currently left on 24/7 according to IT Services*	*5,976*
Turning off Lights	*12,420 kWh*	*2 - interview with security*	*.85 - from observation and interview with campus security*	*21,114*
Closing windows	*3,800 kWh*	*2 - interview with security*	*.85 - from observations and interview with campus security*	*6460*
Closing Blinds	*-*	*2 - interview with security*	*.85 - from observations*	*-*
Closing Doors	*-*	*2 - interview with security*	*.85 - from observations*	*-*

Table 3 Under-scope GHG emissions at BCIT

Conclusions

Our program demonstrates that reductions to energy consumption can be achieved through the integration of thoughtful media campaigns and innovative technology. By adopting this approach BCIT will make significant gains towards achieving its net energy production goal.