Energy Efficionados

Project Summary

Throughout the 2017-2018 school year, the Boston Latin School Energy Efficionados has worked extensively to assess, document, and spread awareness about our energy usage to promote conservation within our school community and beyond. Energy consumption is an integral factor that facilitates our everyday lives. However, we realize that we cannot take our supply of energy for granted. Thus, we took on various initiatives to encourage our community members to reflect on personal consumption of energy as we make a collective effort to conserve our precious resources.

Specifically, our team has identified the various sources that contribute significantly to our school's daily energy consumption, which include waste disposal, heating, and transportation. We collected our data through extensive auditing of the various energy sources as well as conducting a school-wide transportation survey. We made an effort to extend our reach by partnering with several entities beyond our school. We partnered with the Facilities Department for Boston Public Schools (Katherine Walsh), and the Center for Green Schools (Phoebe Beierle), and the creators of the Arc Building Platform to pilot the platform at our school, so that the Facilities Department can roll it out to other BPS schools based on our trial run. We also invited Excel Dryers to install Xlerator hand dryers in our school and develop a curriculum for tracking their energy and efficiency impacts. We also shared our initiatives with 48 adults attending the Greenbuild Conference in Boston this year during which a tour of our energy saving features at Boston Latin School.

Boston Latin School
Boston, Mass.

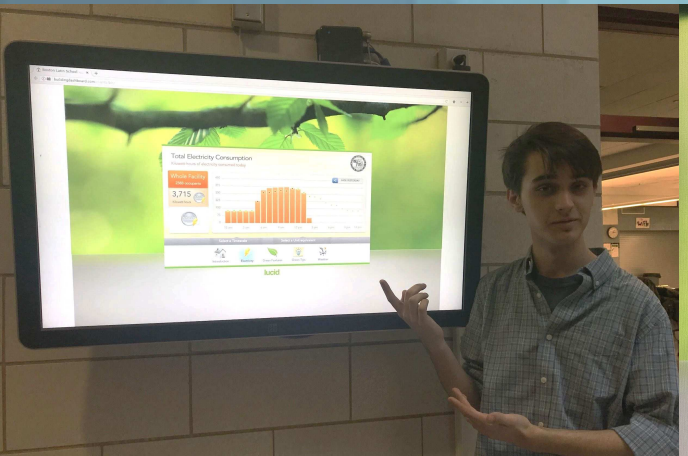
Advisor: **Cate Arnold**

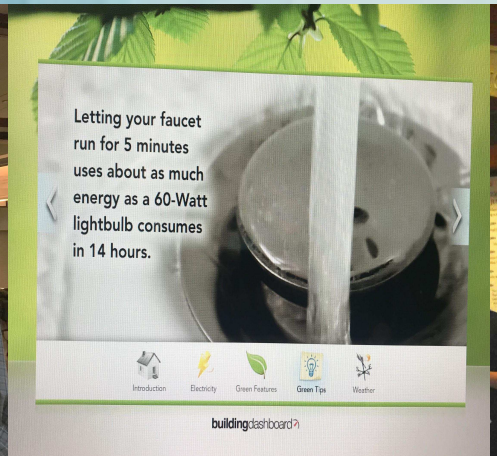
Students: Fahad Anwar, Joana Avrami, Samuel Cheever, Yanxi Fang, Addy Krom, Zoe Nagasawa, Ariana Rauch, Jia Yu

Lucid Energy Dashboard

Boston Latin School's Lucid Dashboard, located near the entrance of our school building, prominently displays weather and energy statistics. Our school won the Lucid Dashboard at the Green Schools Makeover Competition in 2013. Students and faculty are able to see live time statistics of the school's energy usage. Through the Lucid Dashboard, we are not only bringing awareness to our school's green facilities and environmental impact, but also encouraging students to get more involved with how they can save energy and identify inefficiencies through an interactive touch screen and eye catching display.

However, our license for the dashboard software expired approximately 2 years ago. The dashboard was deactivated and taken out of service. We wanted to restore the dashboard to continue to engage our school community and maximize our potential energy savings. In order to get the Lucid Dashboard up and running again, we needed to raise money. We explored different ways to collect money, but in the end eventually raised the money ourselves in order to pay for the software license and bring the Lucid Dashboard back. We were able to raise over $5000 to keep the Lucid Dashboard running for the next 5 years. Our long term goal is to encourage future students to develop an awareness of our school's sustainability in an engaging manner.





Arc Platform Pilot

***Goal*:** Our goal was to pilot the Arc Building Platform and collect baseline data to improve efficiency and sustainability in our school.

***Process*:** This year, in partnership with the Boston Public Schools District, we agreed to pilot the Arc Platform at our school. The Arc Platform allows us to collect and analyze data in five main categories: **energy usage**, **water usage**, **waste**, **transportation**, and **overall human experience**. In order to familiarize ourselves with the Arc Platform, so that we would be able to use it effectively, we reached out to the US Green Building Council's Center for Green Schools to arrange for an Arc Platform training for students at our school. At this training, which was conducted by Phoebe Beierle, we learned how to input data into the platform and how to interpret it.

***Achievement*:** The training took place on October 19, 2017 and 20 students attended. USGBC wrote an article about our school and our efforts which appeared in their quarterly magazine, accessible here. After the training, we conducted a series of audits (detailed in later slides) in order to establish a baseline set of data that would enable us to create effective action plans and initiate change within our school. Additionally, we educated ourselves about how sustainable our school is currently, as well as how we are able to improve our energy consumption.

Above: Our school's Arc Performance score for energy, water, and waste.

Audits, Collecting and Compiling Data

Transportation Audit:

We wanted to know our fellow students' mode of transportation in order to understand energy usage during their commutes to school. As a large urban school, we expected that many students would take public transportation, which is much more energy efficient than cars. We revised the transportation survey that is provided by the Arc Platform, corresponded with our headmaster, and arranged for the entire school to respond to the short audit through an online Google Form.

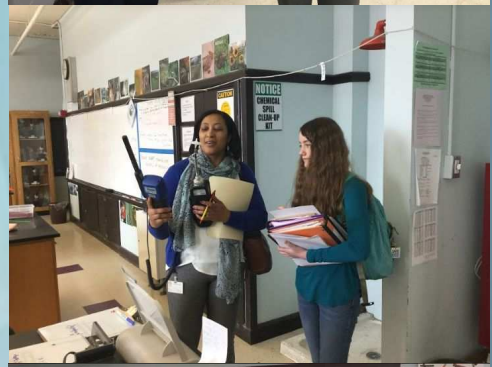
Upon school-wide completion of the survey, we discovered that the majority of the students use the MBTA (buses and trains) to get to and from school. These results confirmed our predictions for the percentage of students who make use of public transportation. In addition, we noticed the low amount of students and faculty who ride their bikes or walk to school. We further encouraged students who arrive by car to explore alternative modes of transportation.

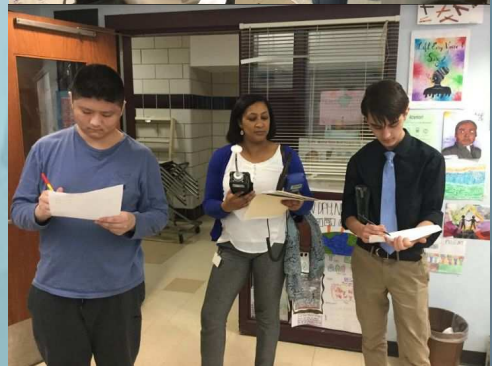
Air Quality Audit:

In order to implement our air quality audit, we met with our interim headmaster, Mr. Contompasis, and current headmaster, Ms. Skerritt, to gain their approval for an air quality test in our school. Upon gaining their approval, we reached out to our faculty and the BPS Facilities department to let them know that we wanted to conduct this audit.

The facilities departments put us in touch with Maria Carvalho, the senior environmental supervisor, who agreed to bring the equipment necessary for the air quality audit and instruct our team on how to do it. To make sure we collected meaningful data, our team conducted this audit in high-traffic places (basement, cafeteria, and in one location on each floor) in our school. Students in all three lunches led Ms. Carvalho to the necessary sites, and helped her take the measurements.

Later, we worked with Katherine Walsh to input all the data onto an excel spreadsheet, which was then uploaded into the Arc Platform. In the future, this data will be used for determining how we can further improve our school and its air quality.





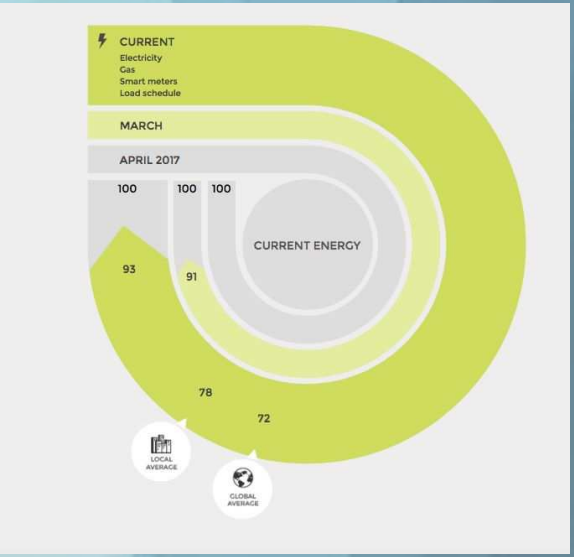
Audits, Collecting and Compiling Data (cont.)

Energy Audit:

With the baseline data collected from previous audits, such as those from AECOM, EMA, and the Green Engineer, we implemented several actions (turning down our domestic hot water, replacing the light bulbs in the auditorium with CFLs, adding energy misers to our vending machines, and fulfilling a lighting retrofit). We have obtained current energy bills and have compared them to previous bills to get data about how much energy the new heating system and our new hand dryers are saving.

We contacted the BPS Facilities Department to discuss more opportunities for making our school more energy efficient. Through Katherine Walsh, we were introduced to Harold "Bumper" Gooding, a Marine Engine Steam Specialist of Steam Trap Systems [LINK HERE], who is working on finalizing the operation of our school's newly installed heating system by repairing the leaking pipes that lose energy when the steam heat escapes through the leaks.

We invited Mr. Gooding to our meeting, and spent an afternoon with him learning about what he does, and got a general idea about how our new system works. We drew on his energy expertise and discussed how fixing the leaks will bring additional energy savings. After the leaking pipes have been fitted with redundancies to capture lost steam, we will analyze our new energy bills and examine the results.



Left: We meet with Mr. Harold Gooding of Steam Trap Systems to understand how we can reduce energy waste within our school building by repairing steam leaks.

Water Audit:

We reached out to the Boston Public Schools Facilities Department staff to obtain invoice data related to our school's annual water usage. We also asked for contact information about the plumber that services our school. We emailed the plumber, Dennis Sheridan, to arrange a meeting to talk about additional water saving opportunities. Then we began analyzing our water data and talking with our school's administrative team to identify possible areas where we can reduce our water consumption. For example, our school is currently installing a newer heating system that is more water and energy efficient. We will upload the data to the Arc platform and develop an action plan to to improve our performance.

Audits, Collecting and Compiling Data (cont.)

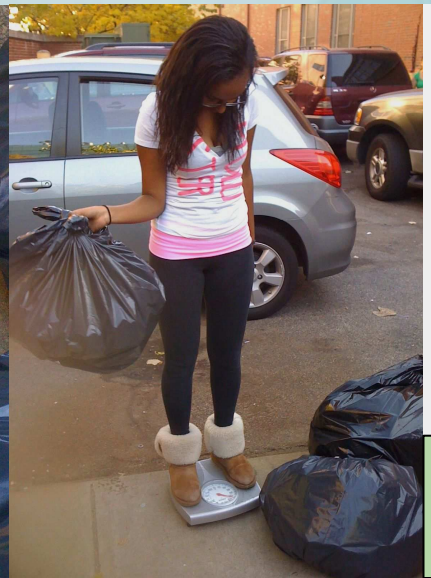
Trash/Recycling/Food Waste Audit:

We got permission from our headmaster to conduct these audits, then hosted a Recycling & Trash event to launch our audit, offering prizes for students who collected the most of each. To begin the audit, we met with our school's Recycling Committee and custodial staff to arrange a date to measure and weigh the amount of recycling and waste we produce.

We asked our custodial staff and BPS Facilities to provide additional bins for the food waste so that we would have three distinct bins to help students correctly sort their food waste, trash and recycling. To promote outreach, we designed and made signs to advertise the audit day. Students stood by the bins during lunches and made announcements about the audit. They also made sure that all the waste was disposed of in the proper bins. We arranged for students with a 6th period study to get out of the study so that they could weigh the materials after lunch.

Having collected the data, we uploaded it to the Arc platform. Now we are able to work to identify areas for improvement and develop an action plan to pursue the improvements.

Below and Right (x2): Students collect and weigh trash to help collect data for our waste audit.



(Turquoise) Above: Waste generated in our school is very low compared to the local and global average.

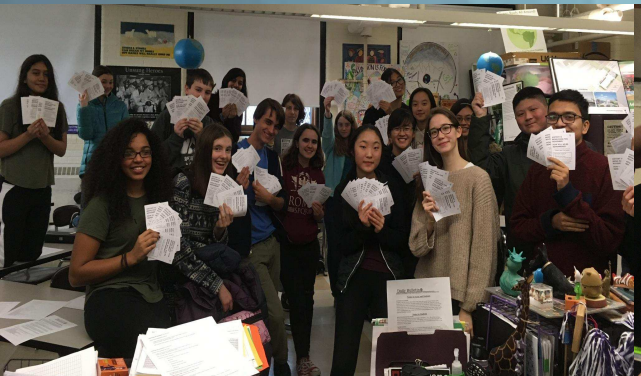
Computing the Data from Audits

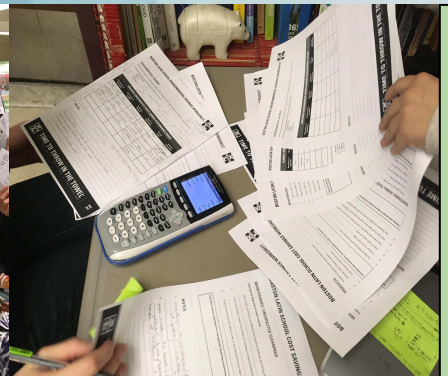
***Transportation*:** Having collected data from surveys, we compiled it all and examined the results. We inserted all the data into the Arc Platform, to hopefully inform others about our transportation use. This data also allows us to see and understand where we need to improve in terms of energy waste in transportation.

***Air Quality*:** With Katherine Walsh, we put the data into the Arc platform and interpreted the results of our audit. We learned that our air quality toxins (VOCs, CO_2) were at a healthy level. One notable fact about our air quality testing was that we needed to wait until the construction project related to the new boiler was completed so that we would not get outlier data, but rather data that reflects our normal air quality conditions. We are invested in tracking the environmental elements which impact student health.

***Energy*:** We have run four energy audits in the past, and although we have not yet conducted another one this year, we are in the process of planning one. We obtained our old energy bills, and input all of the data into the Arc platform.

Monthly garbage	184.16 yd^3 of garbage
Monthly recycling	67.3 yd^3 of recycling
Monthly food waste:	9.181yd^3 of food waste/month
Recycling rate	((67.3 + 9.181)/(184.16 + 67.3 +9.181) = 0.2934(100) =29.34 %
Monthly waste generated per person	=(A/number of students and staff) =0.073664 yd^3 per person

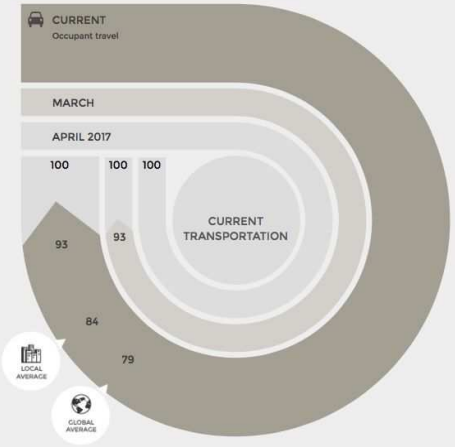


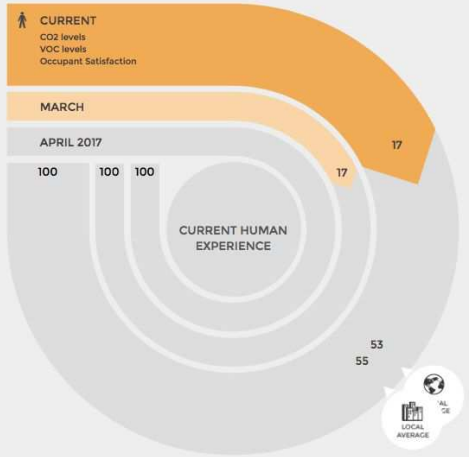


Left: Students hold up flyers promoting the Sunrise Time Capsule Event.

Right: Susan and Zoe analyzes the data collected by the arc platform

Computing the Data from Audits





Water:

We worked with BPS facilities staff to obtain information related to our school's water usage. We analyzed the data and cooperated with our school's administration team to identify areas where we can reduce our water consumption. For example, our school installed a newer heating system that is more water and energy efficient. These improvements will not only reduce our school's energy expense, but also solve the issue of uneven heating. (Prior to the new boiler, some faculty spent the winter with classroom windows open, while others classrooms were too cold)

Trash/Recycling/Food Waste:

(A) Monthly garbage service in cubic yard (garbage dumpster size(s) x number of collections per month x percentage full when emptied or collected)

-**TRASH - 10 yd dumpster collected 5/week = 85% full**

(B) Monthly recycling volume in cubic yards (recycling dumpster sizes(s) x number of collections per month x percentage full when collected)

-RECYCLING - One 10 yard dumpster and at least Ten 96 gallon carts each week - 100% Full

(C) Monthly compostable materials volume [yd^3] (food scrap paper dumpster size(s) x number of collections per month x percentage full when collected)

-FOOD WASTE - **428 lbs of food waste/day** (2-day food waste audit conducted)

(Grey) Above: It represents the amount of students that take public transportation to school. Our school has higher rate compare to the Local and Global average.

(Orange) Below: The graph demonstrates that our CO2 and VOC levels are greater than Local and Global average, thus we are taking steps to reduce it.

Audit Outreach

Goal: Our goal for the audits was to help educate others about the auditing process, and as a result, hopefully encourage change in other schools. We felt that it was important to make our work shareable so as to make a larger impact on the energy savings in our entire school system.

Process: For each audit that we completed (energy, transportation, water, air quality, and waste), we decided to make templates so other students could learn from our process, especially since they will be reaching out to the same people to conduct their audits. The audits provided guiding questions and ideas that would push other to think about more sustainable options in their schools and in their life. We outlined clear steps to follow, so that it would be very easy for other schools and students to begin auditing. We shared our templates with BPS facilities and the Center for Green Schools, and they plan to use them widely.

Achievements: Beyond collecting data, we also encouraged others to become more energy efficient, whether from turning off space heaters, or trying to bring solar panels to their school. We also suggested projects that could spread the word about energy waste. Specifically, for younger children, we came up with fun activities that would help them to engage their peers and get them excited about Arc.

How To Do An ENERGY Audit

1. Identify the **energy problems** in your school.
   - Do teachers leave lights on when their room is empty?
   - Is there an inefficient heating system?
   - Are laptops, computers, or tablets left on?
   - Are space heaters constantly on, despite nobody being present?
   - Does your school have solar panels?
2. Gather information about the current state of the **energy problems**.
   - How many teachers leave their lights on?
   - How many laptops, computers, or tablets does your school have?
   - How many teachers own space heaters?
3. Brainstorm ideas for how to address the issue.
   - Could you create posters?
   - Can you remind your teachers to turn their lights off?
   - Could you make door-knob hangers that promote turning off lights?
4. Schedule a meeting with your principal outlining your ideas about how to address the **energy problems** and asking for permission to start your project.
   a. Modify plans if necessary.
   b. Propose updated plan to principal.
   c. Repeat steps (4a) to (4b) until approved.
5. After establishing an approved plan, collect data about the environmental issue.
   a. What do you expect to find and learn?
   b. Exp. How much energy does your school use in a month?
6. Start a highly visible project to show your findings.
   a. Present your project to your teacher, principal, or school leader.
7. Some things to think about as you finish your project:
   a. What did you observe as you were doing your project?
   b. What did you learn?
   c. Were the findings what you expected?
      i. If not, what was surprising?
   d. How does this relate to what you already knew?
   e. How does this help your school become more environmentally friendly?
   f. How will your school benefit from your project?
   g. What will be the long-term impacts of your project?
   h. Do you think there is anything further that you could do to address this problem?
8. Reflect.
   a. How could you change your project to make it better?

Right: Some of the Energy Efficionados are talking to Katherine Walsh about the Arc Platform
Left: A comprehensive plan on how to set up an Energy Audit so that other schools can follow suit on this sustainable initiative.

Arc Outreach Greenbuild Tour

Pictures:
https://flic.kr/s/aHsm73RPfq

In November 2017 the U.S. Greenbuild International Conference and Expo was hosted in Boston. We took advantage of this unique opportunity and wrote an application to host a Greenbuild tour at our school, explaining why our work as a student group in improving our existing facility would be of interest. We were then approved as a tour site. After that we wrote a script for 27 students to participate in leading the tour and created an educational powerpoint about our youth program and school to show at the start of the tour.

We created 6 tour stations where students presented different green features that we've brought to our school and discussed how the improvements to our school community would impact our score on the Arc platform. On November 6th, we hosted a tour for 48 adults from across the country. The tour group was divided up into 6 groups of 8 adults each, and the groups rotated through the different stations. Each station had several energy features that were discussed by student presenters. At the end of the tour we asked the attendees to take the message about the effectiveness of youth leadership for energy efficiency back across the country to their own schools and communities.

NEWS

YouthCAN Hosts Greenbuild Tour

By Christina Pham (II) & Nadine Han (IV)
Staff Writers

On the evening of Monday, November 6, Boston Latin School's Youth Climate Action Network (YouthCAN) projected its Greenbuild Tour in BLS's dining hall.

The Greenbuild Tour, a program hosted by the United States Green Building Council, had chosen BLS, being the country's oldest high school, as its tour site for this annual conference.

The tour discussed YouthCAN's past achievements in modernizing BLS for the purpose of spreading awareness on environmental sustainability. The school garden, freight farm, salad bar, sage wall in the cafeteria, the automatic water bottle fillers, newly installed automatic hand driers, the globe in the library, 350 trays of vegetation on the school's roof and the Lucid Dashboard at the main entrance as well as the solar panels on the roof are all advancements YouthCAN has installed in the school.

Students of all classes served as tour guides for the visitors. Susan Tang (II), an officer of YouthCAN, discusses her experience as a student tour guide, stating, "I think it went pretty well. The cool. I think that [visitors] really like to go outside and look at the Freight Farm, because it's [...] futuristic looking inside."

BLS YouthCAN was founded in 2007 by eighth grade United States History teacher Ms. Catherine Arnold's students who, propelled by the lack of media coverage on environmental issues, aimed to impart knowledge to the BLS community.

According to the club's official statistics, the school's greenhouse gas emissions have been reduced by 17 percent from July 2009 to June 2013, and its Environmental Protection Agency Energy Star Portfolio Manager score increased from 72 in 2006 to 91 in 2013.

Ms. Arnold says, "It's about trying to teach about this big idea of sustainability. Sustainability isn't really about recycling. Sustainability is about people understanding that you have to live in a way that can continue [...] We want to be educating for sustainability."

This motivated and dedicated club has since participated in many competitions such as the Lexus Eco Challenge, the Federal Green Ribbon Program and the Global Green School Makeover Competition, to win grants to improve the school. These grants have funded the Freight Farm, Lucid Dashboard and towels. BLS YouthCAN also hosts annual events to raise further awareness, such as the Trash Dash at the beginning of the school year, in addition to the annual summit at the Massachusetts Institute

YouthCAN leadership has a discussion in preparation for the event.

they do amazing things. And the thing though is that being young, it's hard for adults to say 'no' to the students," Ms. Arnold explains. "So if you're asking for something important from the city

Above: Our team's GreenBuild outreach tour is featured on the inside cover of our school newspaper, *The Argo*!

Outreach and Activism

Greenbuild Conference and Expo:

This conference served as an opportunity to promote the use of the Arc Platform, as well as allowing adults to understand the importance of engaging students in energy and sustainability efforts in their schools. Addy and Zoe, pictured to the right, presented at this conference and were very well received by the audience of 250 adults.

Addy and Zoe partnered with our District in our presentation about piloting the Arc Platform at our school. We got permission for them to leave school early. They wrote a presentation about what piloting Arc means to us and professionally rehearsed their remarks. The event was streamed live on Facebook by the Arc CEO.

We formed bonds and connections at the Greenbuild Conference. Team members Addy and Zoe were able to speak with several organizations and individuals. We were able to emphasize the importance of the Arc Platform in energy conservation to the 250 attendees at the presentation.

#Stand Up Charlie - Youth Day of Action Event:

We promoted an event called "Stand Up Charlie" on November 7th by circulating event flyers to our membership and youth networks. Then, we attended the event aimed at making Governor Baker hear the youth's demand that he adhere to his promises to do the right thing by furthering environmentally friendly energy sources in Massachusetts. Later that day, we entered the State House as a group and went to the Governor's office, requesting to meet with him. Afterwards, we held a speak-out outside his office. The Governor did not attend.

Climate Legacy, Time Capsule Day of Dedication Event:

We partnered with the Boston Sunrise Movement to publicize their event and shared flyers with school homerooms, our own membership, and online youth networks. We wrote letters for the time capsule and attended the event on Saturday, Nov. 18th. Links to media reports about this event: Dig Boston and Daily Free Press.
Photos here

Ban The Plastic Bag:

We collected petitions, partnered with other youth organizations, and attended strategy meetings for an initiative with Massachusetts Green Network members that proposed the banning of freely distributed plastic bags. We attended meetings at City Hall, and culminated our campaign by signing a letter asking the Boston City Council to ban the plastic bag, and a second letter asking our Mayor to approve the ban. The production of plastic bags requires large amounts of energy, and reusable bags greatly reduce the unnecessary consumption of energy.

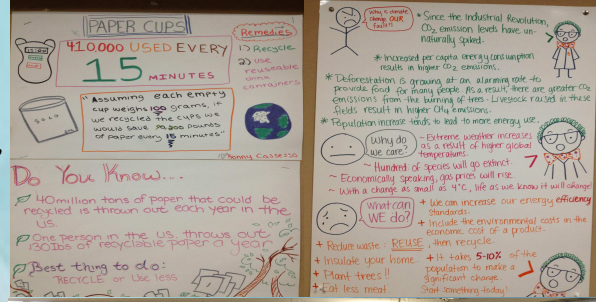
Above: Students from our team (see arrow) attended the US Green Building Council's GREENBUILD Conference and Expo in Boston in early November. They presented to many adults from all over the country.
Below: Students attend the #Stand Up Charlie event to push our governor, Charlie Baker, to uphold his energy commitments.

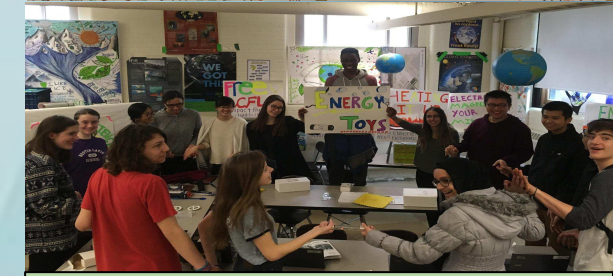
Energy Fair

***Goals*:** The Energy Fair aimed to share our understanding of energy and raise awareness of our team's initiatives. We sought to educate Boston Latin School students about different types of energy, how they work, and how energy relates to everyday life. We also wanted students to know how they can get involved in a variety of energy tracking and energy reduction efforts that are underway in our school and beyond. Opportunities include mentoring elementary students in conducting audits and uploading their data to the Arc Platform based on our model.

***Process*:** We used NEED Energy Kits that we collected over the years, organizing interactive stations for students. These kits addressed topics such as kinetic and potential energy, chemical energy, and exothermic and endothermic energy, among others. We also educated participants with some fun energy games and had them make energy posters.

***Achievements*:** Students were also familiarized with other forms of energy such as electromagnetic, thermal, mechanical, and solar. The exhibits and other activities provided an enjoyable learning experience. We also engaged some of the attendees in our LED drive. Furthermore, we presented two of our Physics teachers, Aaron Osowiecki and Jesse Southwick, with 15 "Kill-a-Watt" meters for their classroom activities. Their students will conduct home energy audits as part of their award-winning Energizing Physics curriculum.





Above: Students create informational posters and in the process they were able to do extensive research and inform their peers of how energy works and its relationship to our everyday lives.

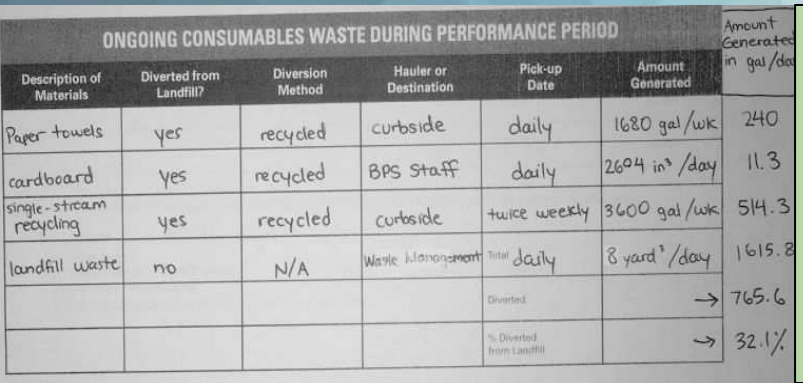
Below: Students take initiative and teach both adults and students alike important energy concepts with the energy models.

Xlerator Hand Dryers

Goal: Our goal was to partner with Excel to reduce the amount of paper waste and energy we generate.

***Excel Hand Dryer Pilot Steps*:** Our team partnered with Excel Dryer Inc. to bring hand dryers to some of our most heavily used bathrooms. We also worked with Excel to create pilot curriculum to guide students in quantifying the cost, environmental impacts, and labor impacts these technologies have. Furthermore, we determined the price of paper towels (from transportation to disposal) and other impacts that paper towel waste produces. Using our pilot curriculum and a promotional film we made with Excel Hand Dryers, featuring six students, the company will make 100 additional hand dryers available nationally (two to any school that agrees to engage students in using the piloted curriculum). They will roll out this initiative at the 2018 Denver Center for Green Schools Conference. We contacted Excel Hand Dryers and arranged to have them attend our GreenBuild Tour on November 7th with a film crew. Together, we worked to design an image for the hand-dryers that promoted a message of sustainability: "One ton of paper consumes 17 trees, 3 cubic yards of landfill space, and pollutes 7 thousand gallons of water".

***Achievements*:** This pilot program was a huge success. We developed a **3 Page Curriculum Pilot** and had **8** Xlerator Hand Dryers installed. There was a slight difficulty in getting them connected to the school's electrical system. However, we communicated with BPS and our school administrators, and now, the hand dryers are up and running, with students using them daily. The dryers are very popular. This was a great way for students to gain understanding of environmental issues and assume ownership for improving some of their building's impacts.



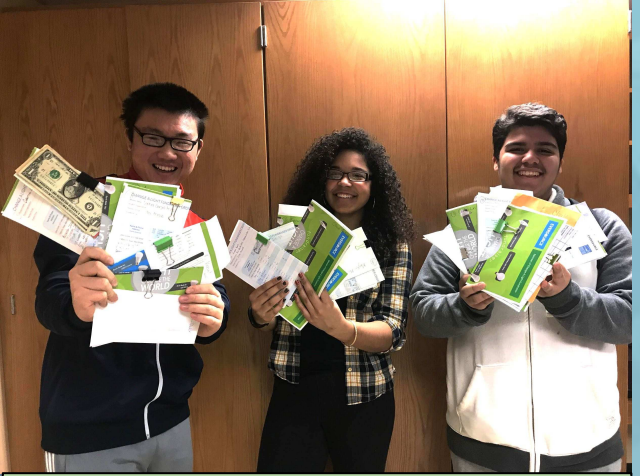
ONGOING CONSUMABLES WASTE DURING PERFORMANCE PERIOD

Description of Materials	Diverted from Landfill?	Diversion Method	Hauler or Destination	Pick-up Date	Amount Generated	Amount Generated in gal/day
Paper towels	yes	recycled	curbside	daily	1680 gal/wk	240
cardboard	yes	recycled	BPS Staff	daily	2604 in³/day	11.3
single-stream recycling	yes	recycled	curbside	twice weekly	3600 gal/wk	514.3
landfill waste	no	N/A	Waste Management	daily	8 yard³/day	1615.8
				Diverted	→	765.6
				% Diverted from Landfill	→	32.1%

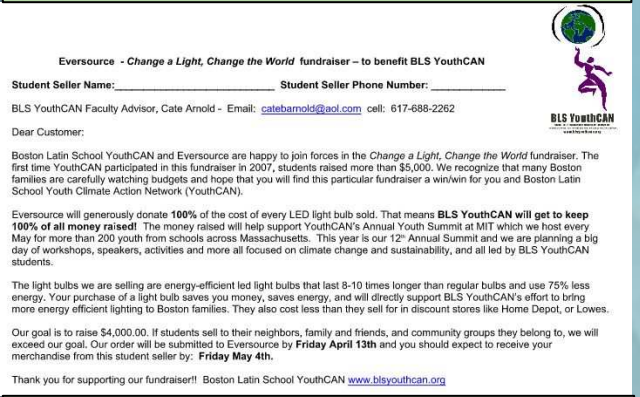
Left: This is the data sheet for the "Ongoing Consumables Waste During Performance Period"

Right: Kayla Butler is standing next to our brand new Xlerator Hand dryer in the bathroom.

Eversource LED Lightbulb Drive



Above: Students hold the flyers and money they raised from our Lightbulb Drive.



Eversource - ***Change a Light, Change the World*** **fundraiser – to benefit BLS YouthCAN**

Student Seller Name:_____ **Student Seller Phone Number:** _____

BLS YouthCAN Faculty Advisor, Cate Arnold - Email: catebarnold@aol.com cell: 617-688-2262

Dear Customer:

Boston Latin School YouthCAN and Eversource are happy to join forces in the *Change a Light, Change the World* fundraiser. The first time YouthCAN participated in this fundraiser in 2007, students raised more than $5,000. We recognize that many Boston families are carefully watching budgets and hope that you will find this particular fundraiser a win/win for you and Boston Latin School Youth Climate Action Network (YouthCAN).

Eversource will generously donate **100%** of the cost of every LED light bulb sold. That means **BLS YouthCAN will get to keep 100% of all money raised!** The money raised will help support YouthCAN's Annual Youth Summit at MIT which we host every May for more than 200 youth from schools across Massachusetts. This year is our 12th Annual Summit and we are planning a big day of workshops, speakers, activities and more all focused on climate change and sustainability, and all led by BLS YouthCAN students.

The light bulbs we are selling are energy-efficient led light bulbs that last 8-10 times longer than regular bulbs and use 75% less energy. Your purchase of a light bulb saves you money, saves energy, and will directly support BLS YouthCAN's effort to bring more energy efficient lighting to Boston families. They also cost less than they sell for in discount stores like Home Depot, or Lowes.

Our goal is to raise $4,000.00. If students sell to their neighbors, family and friends, and community groups they belong to, we will exceed our goal. Our order will be submitted to Eversource by **Friday April 13th** and you should expect to receive your merchandise from this student seller by: **Friday May 4th.**

Thank you for supporting our fundraiser!! Boston Latin School YouthCAN www.blsyouthcan.org

Above: The letter we gave to our community, asking them to purchase our light bulbs.

Goal: Oftentimes students need some immediate and impactful work to further motivate their efforts, essential to igniting a life long passion of promoting sustainable living. We saw the LED Light Bulb Drive as the perfect opportunity to promote carbon footprint awareness and energy efficiency in not only the school community, but also in their parent or guardian's work environment. Our goal was to make our communities more energy efficient, and to educate them about current technologies that they can use to conserve energy. We also wanted to raise funds for our 12th Annual Climate Summit which further promotes energy conservation and sustainability amongst our peers from other schools and within the general public.

Process: We utilized every possible outreach tool available to the Energy Efficionados and the Boston Latin School community to simply spread the word. We incorporated both the scientific workings of energy efficient devices (i.e. LEDs and smart power strips) as well as the enticement of prizes and extra credit from teachers willing to offer it to encourage student participation in the LED drive. Eversource, previously known as NSTAR, generously supplied the bulbs at no cost and worked with us directly in order to further our campaign beyond our school community. Our contact, Mary McCarthy, was very supportive of our campaign, and helped us throughout the process. This partnership allowed us to reach out to many members of our community, as well as to promote our Summit.

Achievement: Our LED Drive was a resounding success, with 40 students participating in outreach and sales. The lightbulb drive ended today! We will be tallying the results of our sales and submitting our order to Eversource just after school vacation. Students were able to inform their families, friends and members of their communities about the pros of switching to LED technology while simultaneously helping people become more energy efficient and sustainable.

7th Grade Energy Assembly

Goal: To educate our school's 7th graders, the newest members of our school community, about sustainability and energy consumption.

Process: We arranged with our school administration to host an assembly aimed at educating the newest students in our building about energy consumption and sustainability with the goal of developing their curiosity about the audits and action plans associated with piloting the Arc Platform. Then, we reached out to two climate activists at our partner groups, Brian Stilwell of the Boston Sunrise Movement, and Alan Palm of the 350 Mass for a Better Future Program. We asked them to speak at our assembly and educate attendees about the impact of their lifestyles on the climate and environment. We wrote a script describing the Arc Platform Pilot and the upcoming audits for our school. We also designed costumes and made signs to represent each audit and assigned team members costumes to wear for the assembly. We had the costumed students come running down through the auditorium as we described each audit and asked student attendees to volunteer to help with that audit. There was also a Kahoot game for the audience to participate in at the end of the assembly to test their understanding about what they had learned and gave prizes to the top three winners.

Achievements: Our assembly was very successful. The **20** students that participated in hosting the event wore audit costumes and signs, making sure that the **430** students who attended could plainly see and understand the impacts we are making on our school. The attendees responded very positively, and we even gained additional members. A challenge that we faced while organizing the Student Engagement Assembly was trying to keep the audience engaged. However, the utilization of audit related costumes and the implementation of the Kahoot! Game during the assembly was appealing to students.

Sustainability	
Played on	22 Nov 2017
Hosted by	YouthCANBLS
Played with	194 players
Played	10 of 10 questions

Overall Performance	
Total correct answers (%)	75.83%
Total incorrect answers (%)	24.17%
Average score (points)	7031.05 points

Feedback	
How fun was it? (out of 5)	3.54 out of 5
Did you learn something?	70.48% Yes
Do you recommend it?	67.33% Yes
How do you feel?	59.35% Positive

Above: Results collected, via Kahoot, from our assembly.
Below: Students in costumes to raise awareness about our audits (energy, air quality, water, transportation, etc.)