School District of Philadelphia: Community Partnerships for a Greener Future

Presenters: School District of Philadelphia, Keep Philadelphia Beautiful, RecycleBank, and Bryn Mawr College

GreenFutures: Get Excited

Supporting the vision that every student can learn and every school can be great.

Presented by Megan Garner

The Backstory

- Modeled after Philadelphia's "GreenWorks" and other sustainability programs
- 5 guiding principles:
  Education; Efficiencies; Engagement; Environment; and Equity
- crafted by passionate staff and stakeholders with a genuine common desire to make public schools great – and, green
- Measurable objectives and outcomes

Partnership Case Studies

Comprehensive Recycling Program

- City of Philadelphia Recycling Department
- Keep Philadelphia Beautiful
- Recyclebank

One Consistent Message

- Cobranding
- BINventory PSA
- Educational Outreach Program

Partnership Case Studies

Bryn Mawr College

EfS Committee Participation

Praxis Program

- Intern
- Business case study
- Activity Sheets

Partnership Case Studies

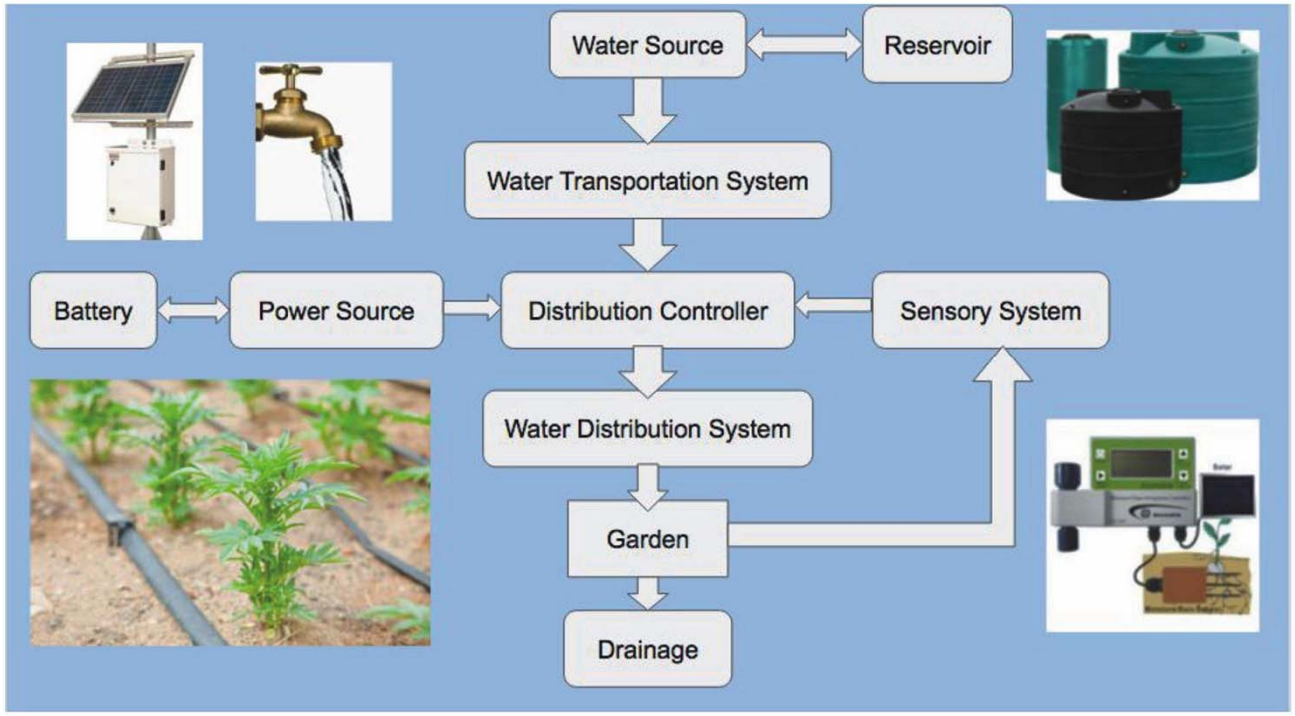
Penn Alexander and Penn Eco-Reps

- Eco-Schools USA - Consumption and Waste Pathway
- Composting Program

Partnership Case Studies

SLA-Beeber & Drexel

Engineering students in Drexel University's Paul Peck Scholars Program are currently collaborating with students and faculty at SLA@Beeber to create an automated irrigation system for the school's several garden beds.



What Next?

- Release GreenFutues written plan
- Launch Website
- Continue with Subcommittee meetings
- Monitor Actions & Track Metrics
- Annual Report

Call to Action!

- Ideas
- Funding
- Volunteers

Thank You!

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Join the GreenFutures Mailing List!

http://bit.ly/GreenFutures_Mail

Office of Strategic Partnerships
www.philaosp.weebly.com
Phone: 215-400-5339

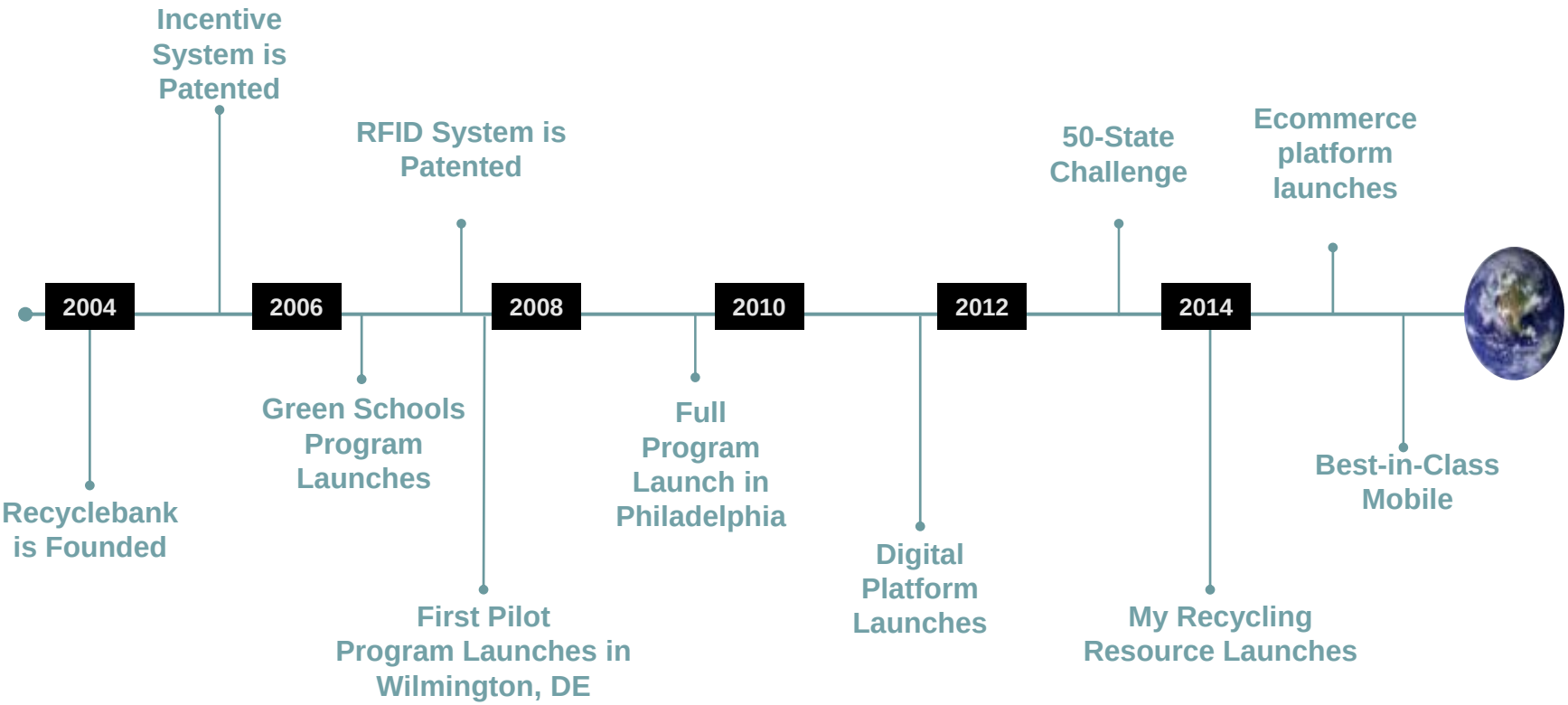
Office of Grant Development
www.sdpgrants.weebly.com
Phone: 215-400-4150

A Public - Private Partnership

February 26, 2016

Recyclebank History

For over a decade, we've been singularly focused on changing residential behaviors around waste



OUR PATENTED, PROVEN APPROACH

Here's how we adapt scientific models to deliver behavior change at scale

REACH
(triggers)

Multi-channel platform delivering action on the ground and online to reach residents

EDUCATE
(ability)

Fun, interactive tools that inform and inspire action

INCENT
(motivation)

Relevant rewards and recognition help motivate consumers to participate

A MULTICHANNEL APPROACH

We'll keep recycling top of mind for residents by reaching them online, offline and in the community.

31% OPEN RATE
For 45.9 Million Emails Sent In 2015

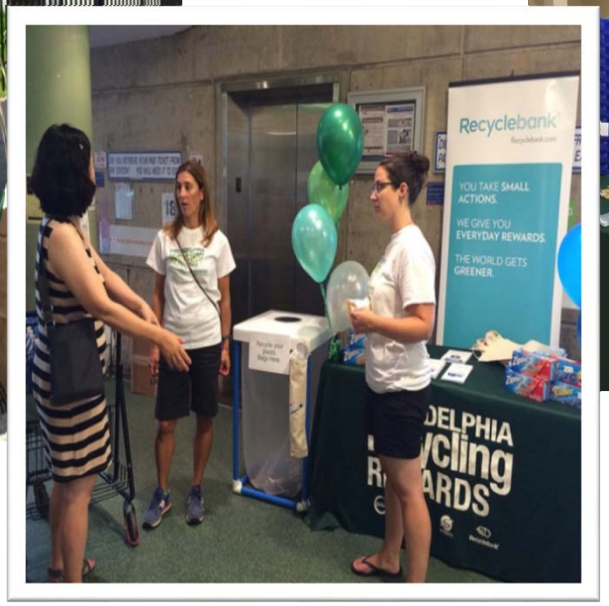
9.8+ MILLION
Monthly Page Views in Q4 2015

300,599
Current Likes on Facebook

13 MINUTES
Time-on-Site for Educational Content

In the Community

In Philadelphia, we work closely with the Streets Department, and partner with many other city agencies and community based organizations to work on a number of initiatives and help the city achieve their recycling goals.



Partnership: School District of Philadelphia

- GreenFutures: Consumption & Waste Committee
- School Presentation Outreach
- Resource

Partnership: Universities

- **Multi-family Rental Properties**
- 2-6 units receive trash/recycling pick up from the City
- Transient
- Less invested in their community
- Blurred lines between landlord and tenant responsibilities

Allison Sands
Community Outreach Coordinator
asands@recyclebank.com
267-516-0099

Keep Philadelphia Beautiful: The Nonprofit Story

Keep Philadelphia Beautiful: Background Information

Strategic Partners

- Keep America Beautiful
- Keep Pennsylvania Beautiful
- Philadelphia Streets Department
- The School District of Philadelphia

Key Programming Areas

- Environmental Education
- Tool / Resource to Community Based Organizations
- Community Beautification Events

The Ecosystem: KPB's Role as a Nonprofit City Partner

- KPB is part of a network of nonprofit partners throughout Philadelphia City government
  - Departments engage nonprofit partners in different ways, and with different goals
  - Nonprofits are sometimes established by the City
  - Just one way in which government functions are performed in partnership with private entities (Lester Salamon, Tools of Government)
- How does this play out for Keep Philadelphia Beautiful?
  - Cross-departmental partnership on programs and events
  - Solid Waste Recycling & Advisory Committee
  - Cheerleader / Promoter

Case Study: Streets Dept & NGOs

PHILADELPHIA RECYCLING

- KAB and KPB partnerships
- Recycling bin distribution
- Workshops with CBOs
- Direct assistance to CBOs
- Philly Spring Clean-up: prime example of engagement with NGOs
  - Corporate sponsors: (Dow, Waste Management, Recyclebank, etc.)
  - 700+ projects (primarily through civics), 14,000+ volunteers

Case Study: GreenFutures & KPB

- Strategic planning support
- Resource development
  - Including fundraising
- Partnership development
- Outreach to schools

So, how do these partnerships differ? Or not?

- Funding realities
- But play a similar role:
  - Education and Outreach
  - Program planning and implementation support
  - Connector
  - Cheerleader

So about that 501c3 status…

Advantages

- Diminished influence of bureaucracy / greater freedom to innovate
- Ability to fundraise / forge partnerships on behalf of the City
- Independence (ability to say “we’re not the City”)… but still experience the benefits of being part of the system

Challenges

- “Clout” of a phila.gov email address
- Advocacy
- Independence
  - How, when, and why to forge independence
  - Overstepping bounds versus wanting to make strongest impact possible
- Multiple masters

Stay In Touch!

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@michelle92486

www.keepphiladelphiabeautiful.org
www.facebook.com/keepphiladelphiabeautiful
www.instagram.com/beautifulPHL

Mathematics and Sustainability
PHENND Conference

Victor Donnay
Department of Mathematics
Bryn Mawr College
vdonnay@brynmawr.edu

February 26, 2016

References/materials at: https://goo.gl/4FILcR

Assignment: Connections Paragraphs

Take a HW problem and describe how the mathematics involved might be used to address a real world problem.

Post your paragraph on Blackboard. Read three other students' posts.

Calculus 1 and 2.

Traditional Question:
Airplane A is going east at 420 mph.
Airplane B is going north at 375 mph.
How fast are they moving apart from one another?

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Airplane A is going east at 420 mph.

Airplane B is going north at 375 mph.

How fast are they moving apart from one another?

Real World Connection:

Consider two children born to families in different socio-econom
into a middle class family; one into a family living in deep poverty. The vocabulary of the child with the middle class parents increases at 350 words per year. The vocabulary of the child living in poverty increases at 150 words per year.

At what rate is the difference in the size of their vocabularies growing?

Math and Sustainability

- Interdisciplinary topic.
- Authentic issue facing the world.
- Opportunities for Community Based/Service Learning

Solar Panels on Campus

Firefox File Edit View History Bookmarks Tools Window Help (1:02) Fri 9:27 PM Victor Donnay

Enphase Energy – Enlighten | Bryn Mawr College

https://enlighten.enphaseenergy.com/systems/132956/graphs?range=last7Days&view=

Bryn Mawr College | Pennsylvania Voter ID Law Is S... | Enphase Energy | Enphase Energy – Enlighten | B...

[e] Enlighten Manager

SYSTEM ACCOUNT SUPPORT

My Account Help

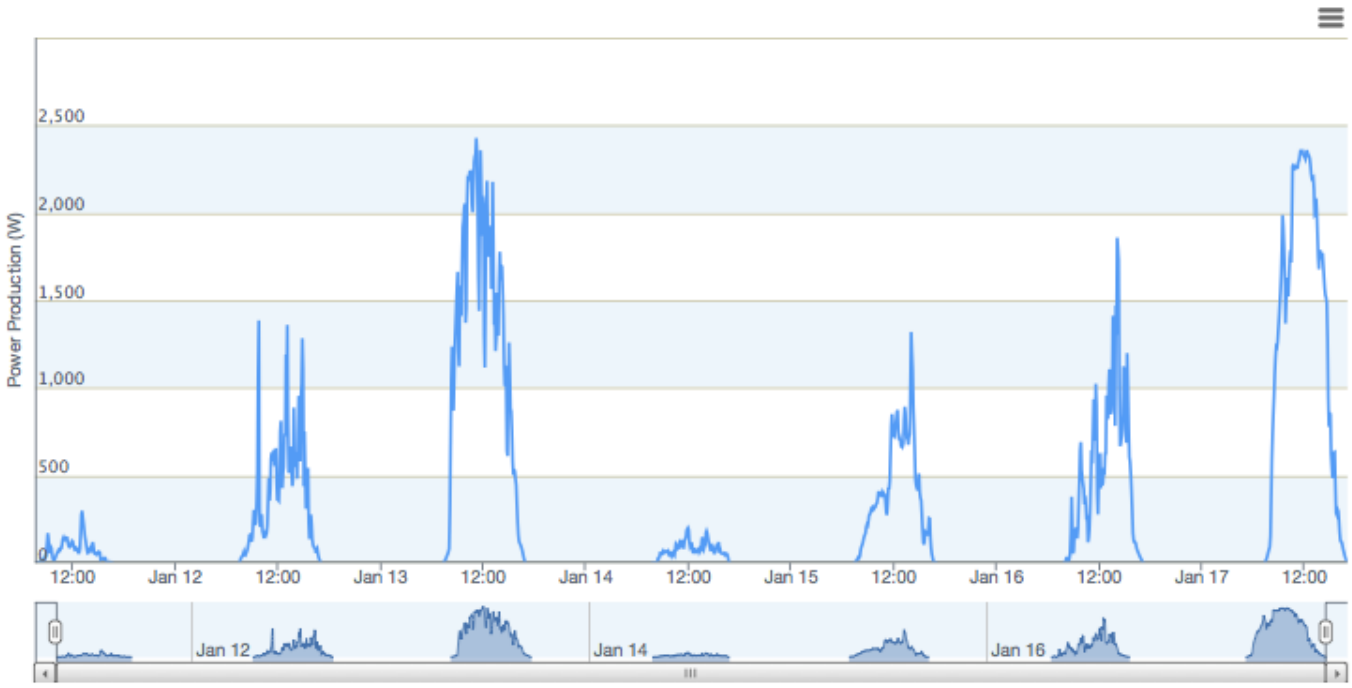
MyEnlighten View

GREENENERGY

Bryn Mawr College Full System

View Graph Reports Devices Events

Power: Past 7 Days Jan 11, 2014 - Jan 17, 2014



Maximum Produced
2.43 kW

14 Microinverters
Philadelphia, PA
30°F
System Normal

Full System

Energy Status

Today
13.0 kWh
Peak Power: **2.36** kW at 12:15 PM
Latest Power: **3** W at 5:00 PM

Past 7 Days
39.2 kWh

Month To Date
95.7 kWh

Lifetime
4.91 MWh

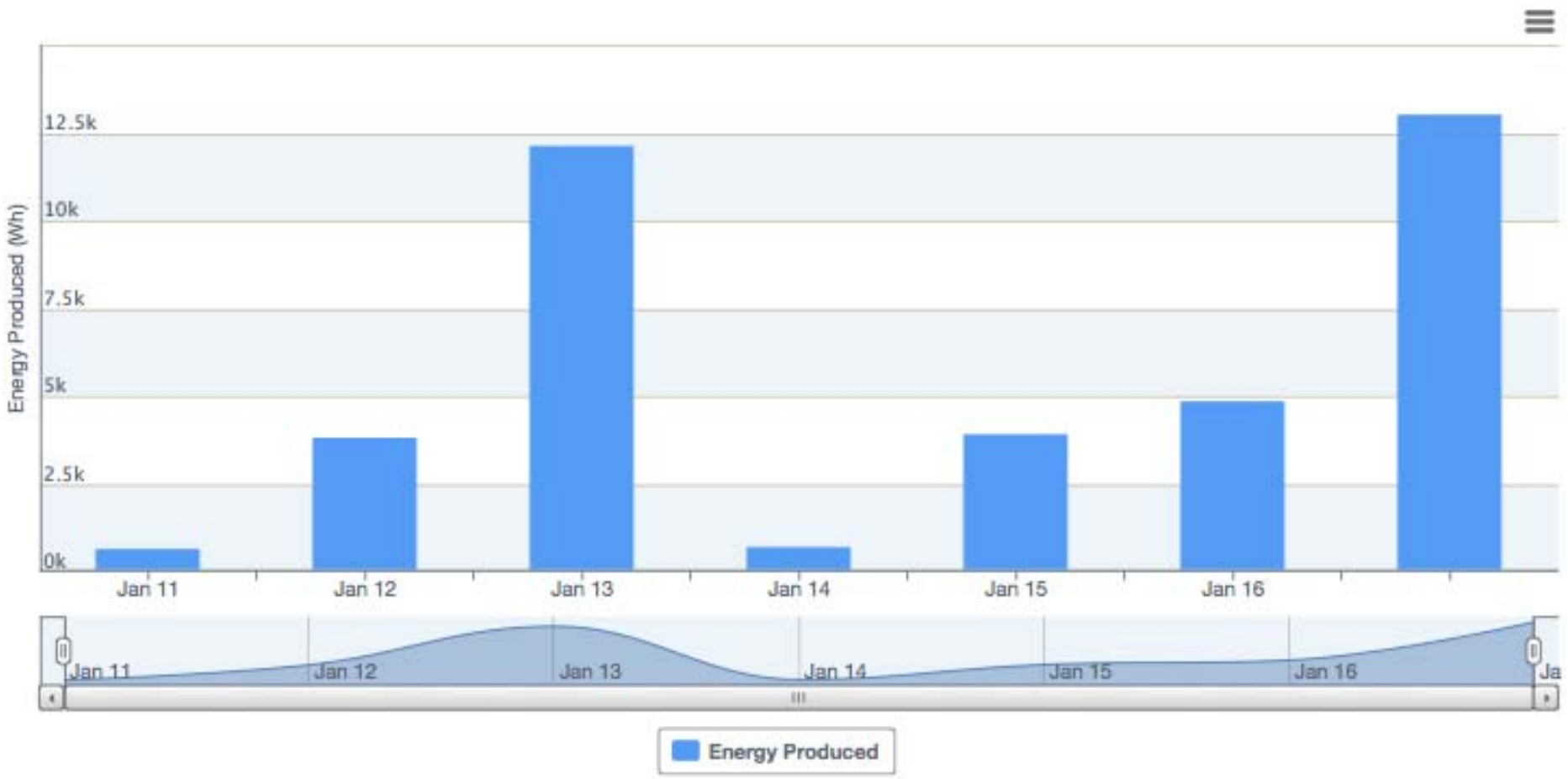
Feedback

[e] enphase ENERGY

Bryn Mawr College Full System

View | Graph | Reports | Devices

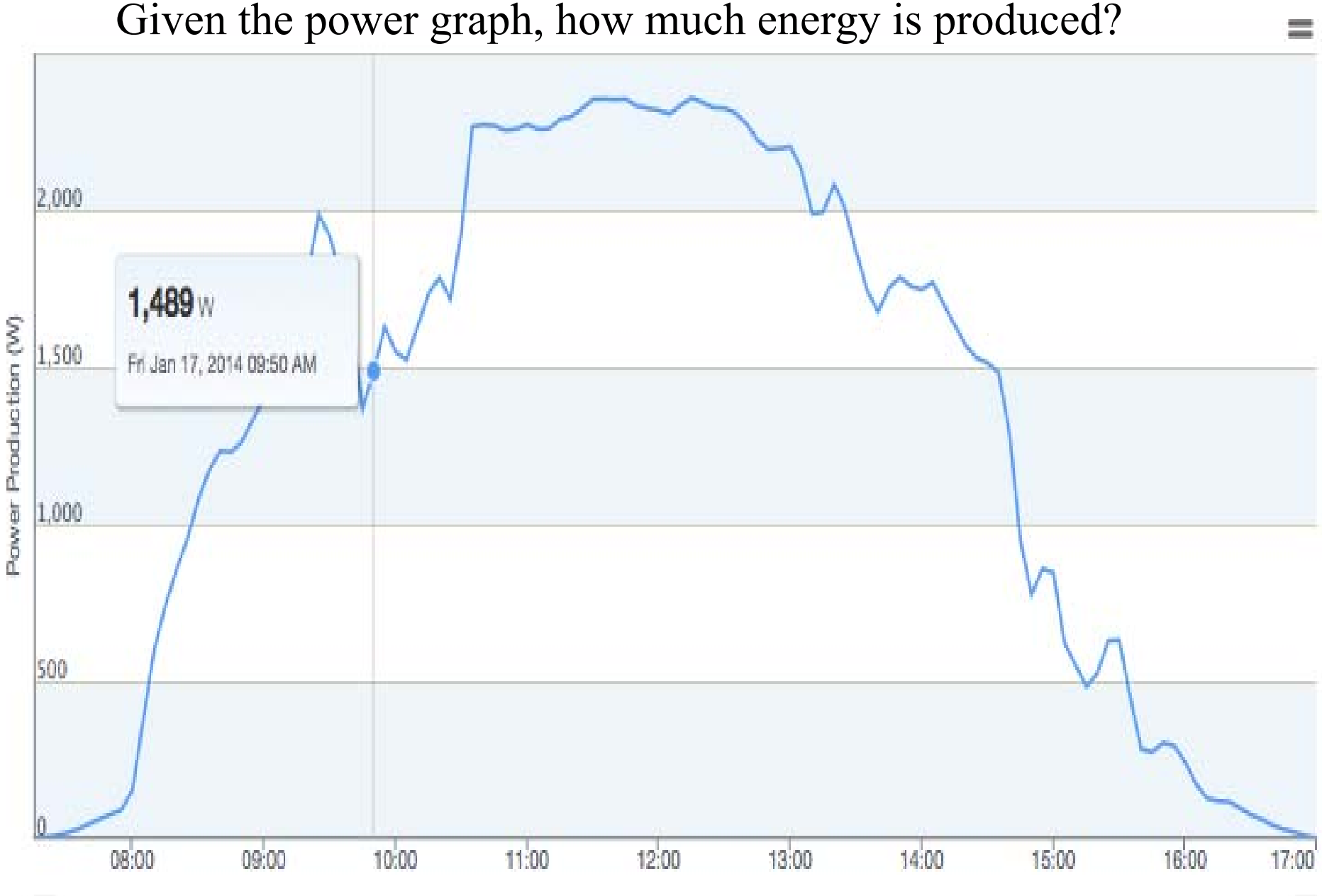
Energy: Past 7 Days Jan 11, 2014 – Jan 17, 2014



Maximum Produced
13.0 kWh

Total Energy
39.2 kWh

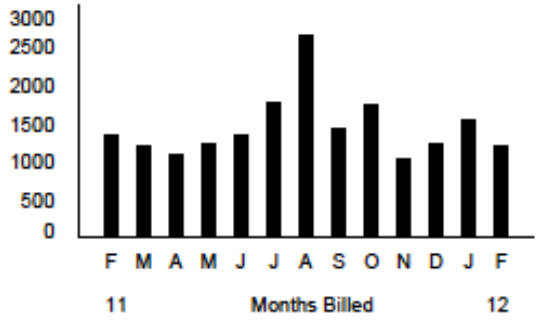
What is the relationship between power and energy?
Given the power graph, how much energy is produced?



Home Electrical Bill

Electric Residential Service - Current Period Detail					Service 01/05/2012 to 02/06/2012 - 32 days
Customer charge					$7.20
Generation Charges	1,179	kWh	X	$0.09180	108.23
Transmission Charges	1,179	kWh	X	0.00740	8.72
Wind Energy Service Charge	300	kWh	X	0.02540	7.62
Distribution Charges	1,179	kWh	X	0.06000	70.74
State Tax Adjustment					-0.04
Total Current Charges					**$202.47**

13-Month Usage (Total kWh)



Your Usage Profile

Period	Usage	Avg Daily Usage	Days	Avg Daily Temp
Current Month	**1,179**	**36.8**	**32**	**39**
Last Month	1,519	47.4	32	42
Last Year	1,332	41.6	32	29

Avg kWh per Month	1,442
Total Annual kWh Usage	17,305

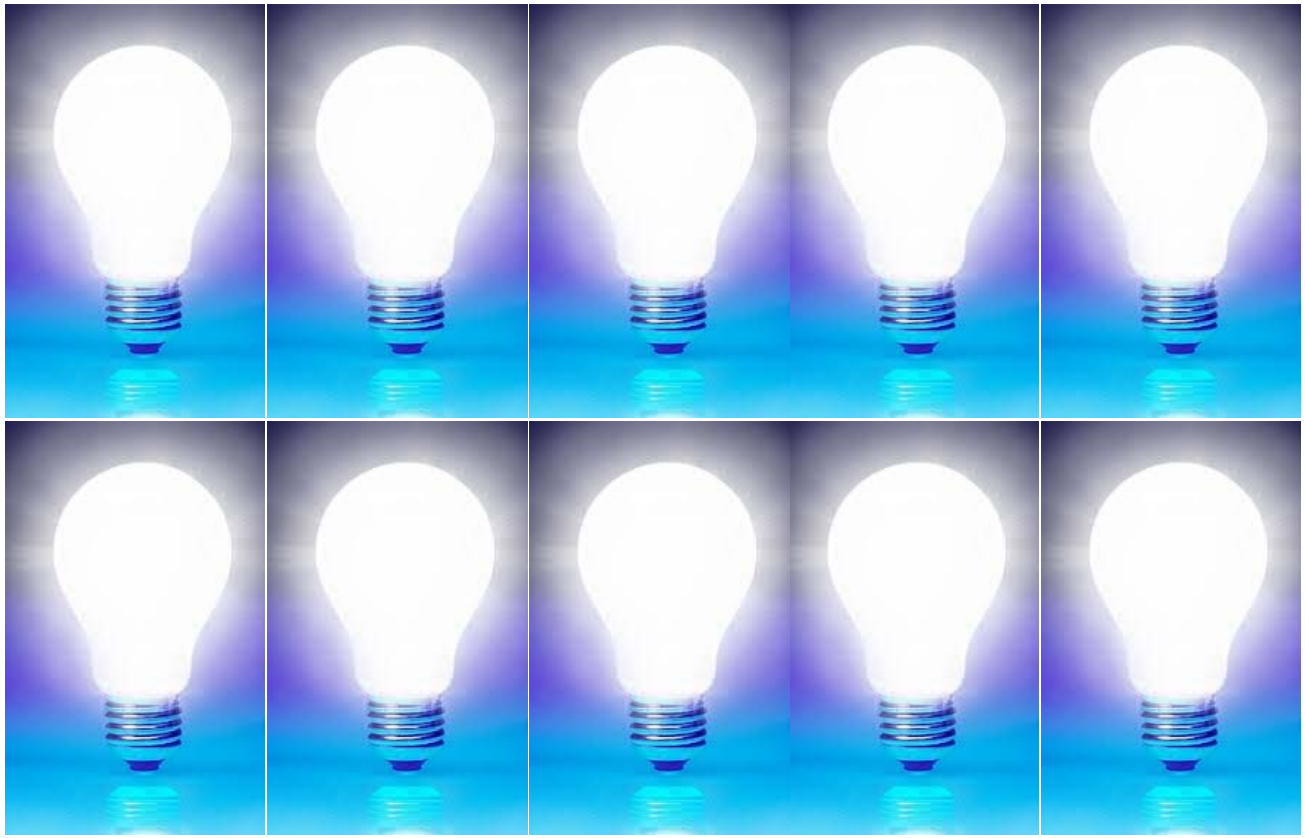
Units are kWh = Kilowatt hours

Examine Lesson Plan about Solar Energy

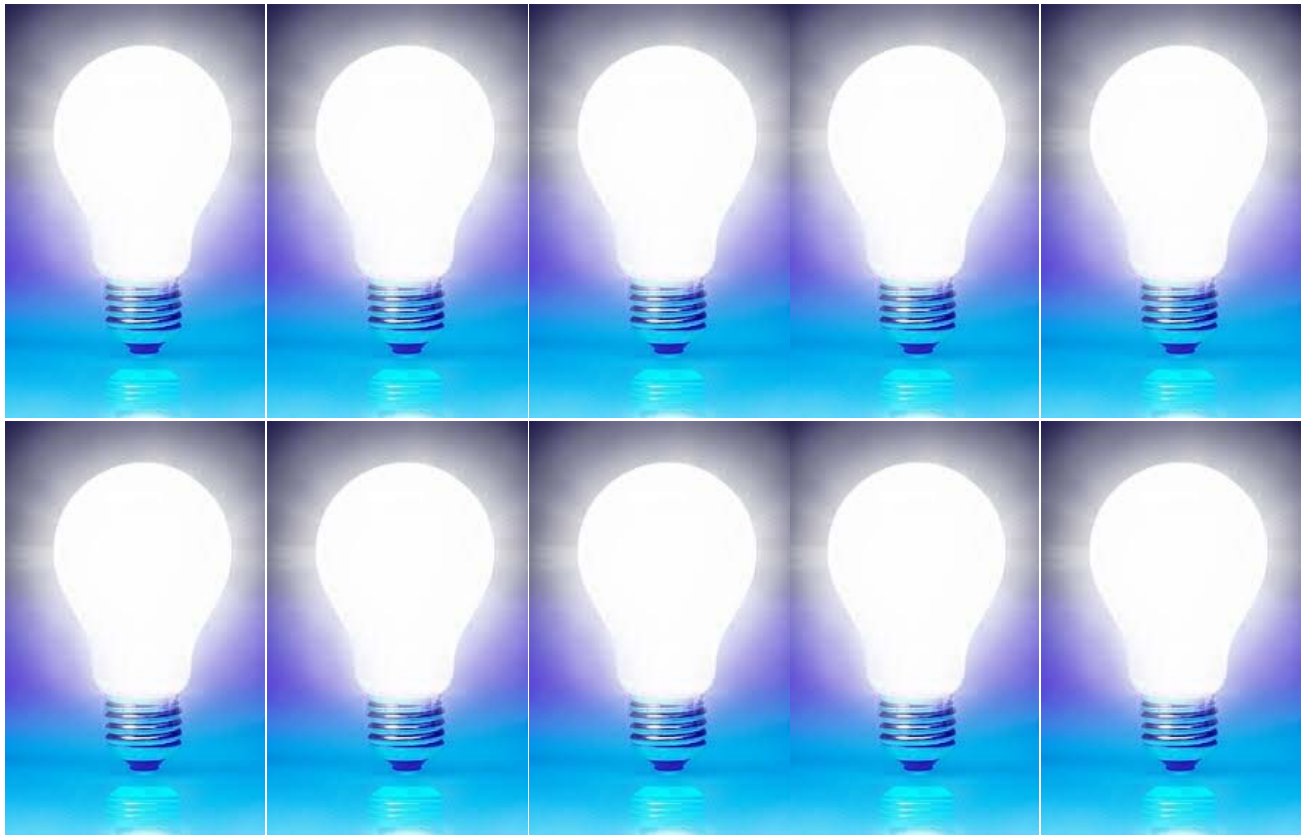
100 watt

Power

10 x 100 watt = 1000 watts = 1 kw = 1 kilowatt



10 x 100 watt = 1000 watts = 1 kw



Lights on for 5 hours:

Energy used = 1 kw x 5 hours = 5 kw-hours = 5 kwh

a. If a household is using 3 kW (kilowatt) of power continuously from 1pm to 5 pm (see Figure 1), how much energy is used?

..

b. What is the area = height x width under the power curve for $1 \leq t \leq 5$? Give the units for this area that you get by multiplying the units for the height by the units for the width.

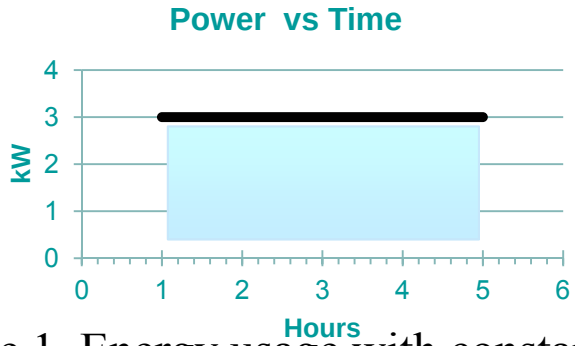
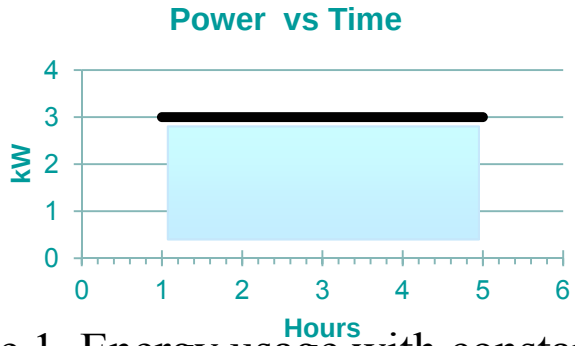


Figure 1. Energy usage with constant power.

a. If a household is using 3 kW (kilowatt) of power continuously from 1pm to 5 pm (see Figure 1), how much energy is used?

$$3 \text{ kW} \times 4 \text{ hours} = 12 \text{ kW} - \text{hours} = 12 \text{ kWh}$$

b. What is the area = height x width under the power curve for $1 \leq t \leq 5$? Give the units for this area that you get by multiplying the units for the height by the units for the width.



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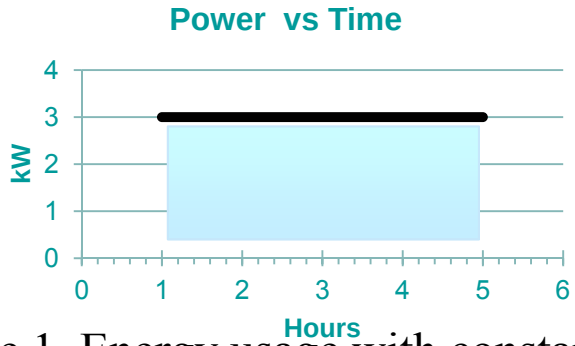
Area = height x width
= 3 kW x 4 hrs
= 12 kW-hours
= 12 kWh



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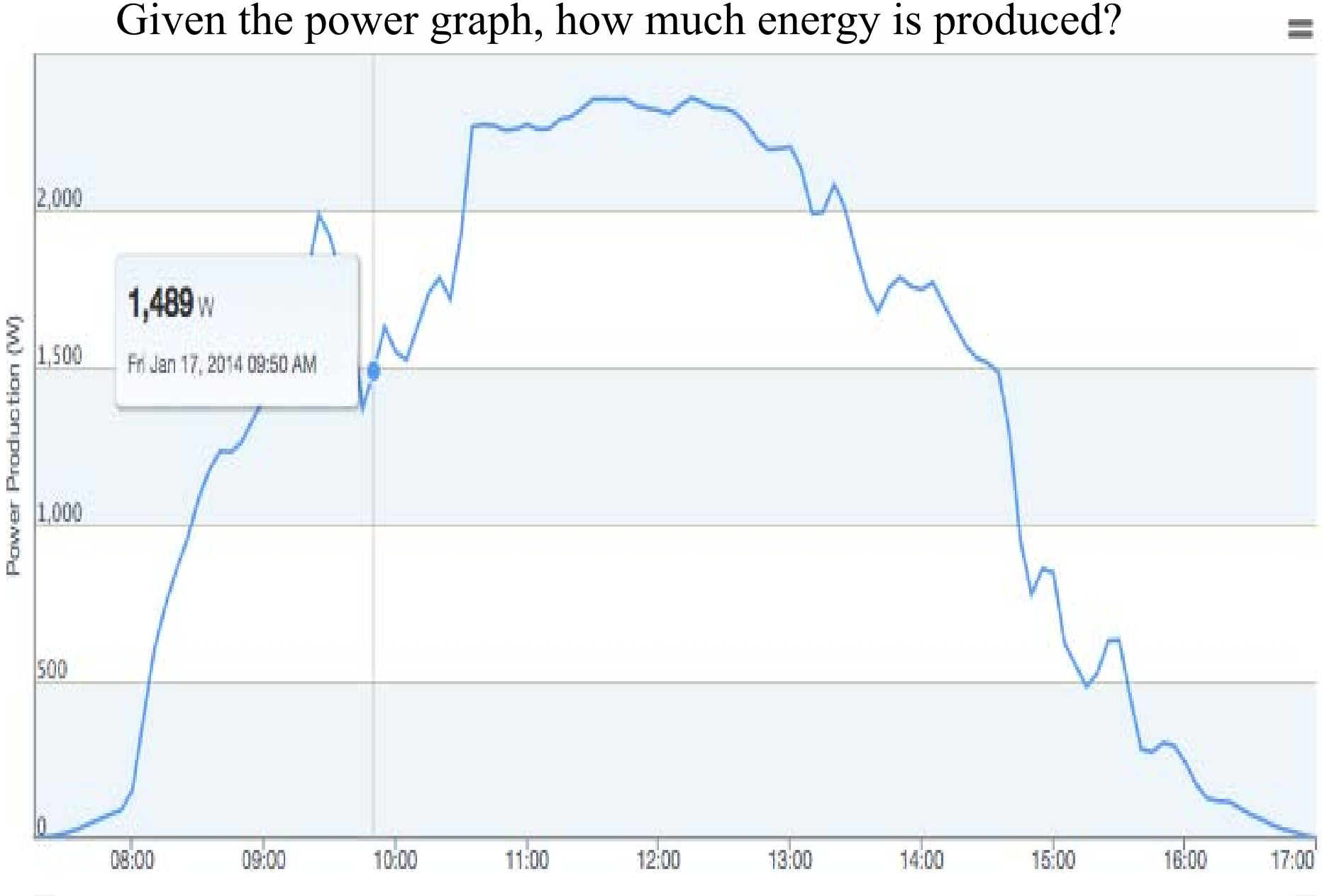


Key Concept of the Lesson

Key Concept of the Lesson

Area under curve has important meaning

Key Concept of the Lesson

Area under curve has important meaning

Integration

Math Modeling and Sustainability Course

Taught at various levels:

- Gen Ed,
- Math major course;
- Senior seminar
- Institute for Secondary math and science teachers

Service Learning: student projects in partnership with community

Sustainability Service Learning Projects (Praxis)

Waste:

- Trays in dining hall
- Composting
- Trash audits
- Landfill or Incinerator
- Trash system at School District

Energy:

- Energy savings in buildings from conservation mode
- Pay back time for LED bulbs
- On/Off switch for Chemistry hoods
- Energy footprint for Science building renovation
- Alternative Energy for recreation center
- Energy Savings at Retirement Community (LED bulbs, better windows)
- EPA Portfolio manager energy monitoring system

Other: Paperless admissions system, Level of safety for bike

Student Reaction

“I liked that the projects we worked on were meaningful and that this course was extremely applied in nature. It was nice to do something that affected our college and/or community directly”

“ The end results of all the projects were pretty satisfying; it made you feel like you were

making a contribution and that you might actually be able to affect something.”

Quantitative Reasoning, Math Modeling

“the math involved in most of these applications was pretty basic”

“… there were more numbers than mathematics involved in our projects.”

Using Sustainability to Incorporate Service-Learning Into a Mathematics Course: A Case Study, Victor Donnay, PRIMUS, Volume 23, Number 6, 1 May 2013 , pp. 519-537(19)

.

Best math senior conference everrr! — with Sebastian Tilson, Tapashi Narine, Alisha Pradhan, Hoang Ha, Victor Donnay, Lynne Ammar, Julia Yoo, Wendy Shengyun Huang, Linda Yoo and Dorothy Shu.

Tag Photo · Add Location

Like · Comment · Stop Notifications · Share

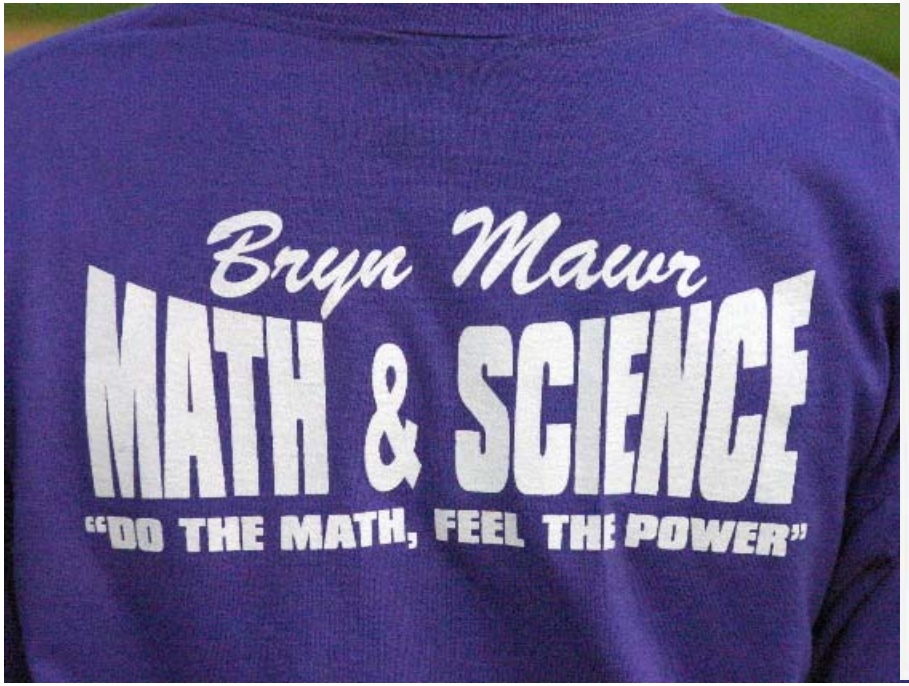
Alisha Pradhan, Lynne Ammar and Linda Yoo like this.

2 shares

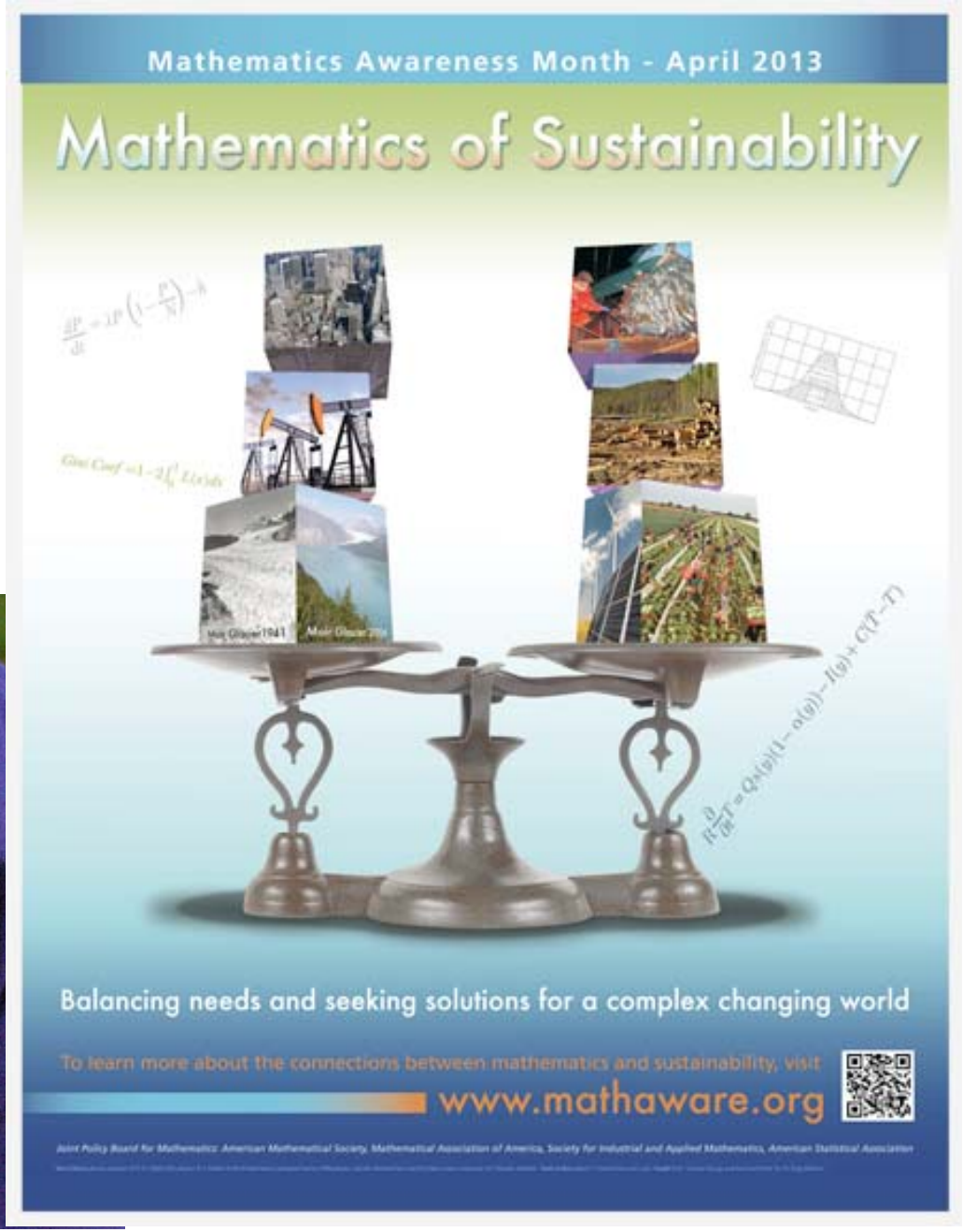
Lynne Ammar Thanks Julia lol
December 12, 2012 at 12:59am · Like

Wendy Shengyun Huang A great semester with you~
December 12, 2012 at 10:31am · Like

Yashaswini Singh This has been my favorite math class in all 4 years! :')
December 12, 2012 at 1:27pm · Like · 3



http://www.mathaware.org/mam/2013/



Haverford 2011

Recreation and Environmental Education Center

Math and Sustainability:

Cost – Benefit Analysis for Commissioners

Bethany Giblin, Amy Veprauskas, Jenny Sichel, Teresa Palasits

PROCLAMATION

WHEREAS: the Board of Commissioners takes great pride in recognizing those people who perform outstanding contributions for the good of the township and its residents; and

WHEREAS: the Community Recreation Environmental Center will be a showcase for the residents of Haverford Township for many years, contributing to residents' health; as well as educating the residents about ways to preserve the environment and appreciate nature; and

WHEREAS: the Board of Commissioners adopted a Climate Action Plan in 2008 to serve as a model of leadership in reducing the carbon footprint in the township, and this past June, approved that a geothermal system be included in the design of the Community Center; and

WHEREAS: Katie Link and Yufan Wang, students at Bryn Mawr College, worked diligently under the direction of Professor Victor Dunnay in assisting Tim Denny to make the deadline in successfully applying for a $300,000 grant from the Pennsylvania Energy Department Authority, to help fund the geothermal system - which will save over $2 million dollars in energy costs; as well as greatly reducing the carbon footprint over the lifetime of the building.

NOW, THEREFORE BE IT PROCLAIMED, that the Board of Commissioners wish to formally thank Katie Link and Yufan Wang and acknowledge their extraordinary effort on this project and wish them every success as they continue their life's pursuits.

TOWNSHIP OF HAVERFORD

BY: WILLIAM F. WECHSLER
President

Attest: Lawrence J. Gentile
Township Manager/Secretary

Mechanics

Finding Projects

Student voice in selecting their project

Managing Expectations

Linking to learning goals

Keeping track of student progress

Final presentation/ report


BRYN MAWR
COLLEGE
CAREER & PROFESSIONAL DEVELOPMENT
CIVIC ENGAGEMENT
CPD
CE
Leadership, Innovation, & Liberal Arts Center
LILAC
Conceptual Thinking
Reflective Practice
Exploration
Experiential Learning
Implementation
COMPETENCIES
Connection
Communication
Cultural Competency
Self-Discovery Assessments
Service Opportunities
Social Responsibility
Prepares liberal arts students to be effective, self-aware leaders in their chosen life pursuits.
Alumnae Engagement
Internships & Externships
Leadership Development
Community Engagement
GRADUATE & PROFESSIONAL SCHOOL
ENGAGED CITIZENS
EMPLOYMENT

Related Rates:

1. A cylindrical tank with radius 5m is being filled with water at a rate of $3m^3/min$. How fast is the height of the water increasing?

Real World: How fast is sea level rising if the ice in Greenland is melting at a rate of 195 $km^3/year$

Incorporate Sustainability Modules Into Math and Statistics Courses

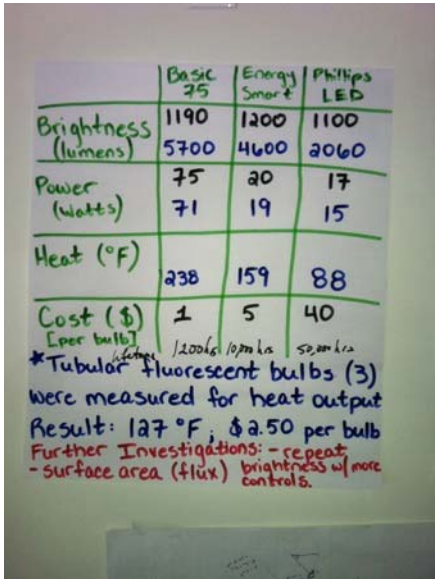
Tom Pfaff, Ithaca College

http://www.sustainabilitymath.org/

Teaching units on sustainability for a variety of courses

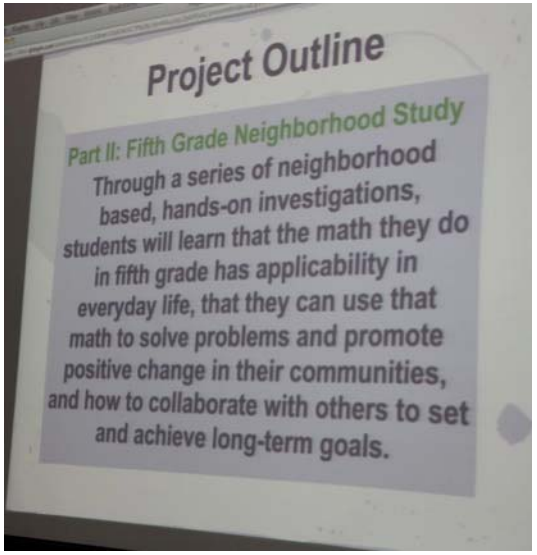
Math and Sustainability Summer Institute for Teachers

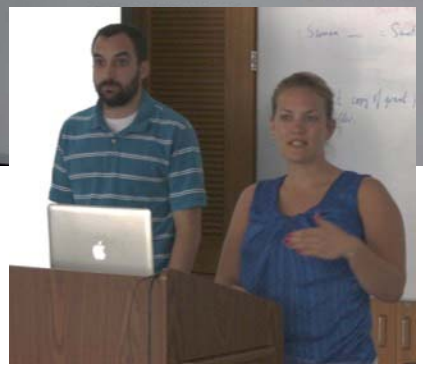
All materials from this institute available free at:
https://docs.google.com/document/d/1Ma9wYo83i10OLBf6R8WdYov0pd534n0yZbcObScYMUw/edit



Is it “worth it” to change bulbs?

Math and Sustainability Summer Institute for Teachers





Ideas for Students

Read articles about sustainability
Have visits from Sustainability Professionals
Field Trips
Teacher Internships with Sustainability organiz.