

# Student Sustainability Advisory Council

Spring 2016 Recommendations



# Sustainability at Penn State

*“Penn State will be a leader in research, learning, and engagement that facilitates innovation, embraces **diversity and sustainability**, and inspires achievements that will affect the world in positive and enduring ways.”*

- Penn State 2016-2020 Strategic Plan

# Energy

Mission

Developing recommendations

Spring 2016 recommendations

Summary

Key stakeholders contacted

# Energy: Mission

“To determine opportunities for energy reduction, identify sustainable and renewable alternatives, and promote responsible energy usage across Penn State University’s operations, policies, and experience.”

# Developing Recommendations

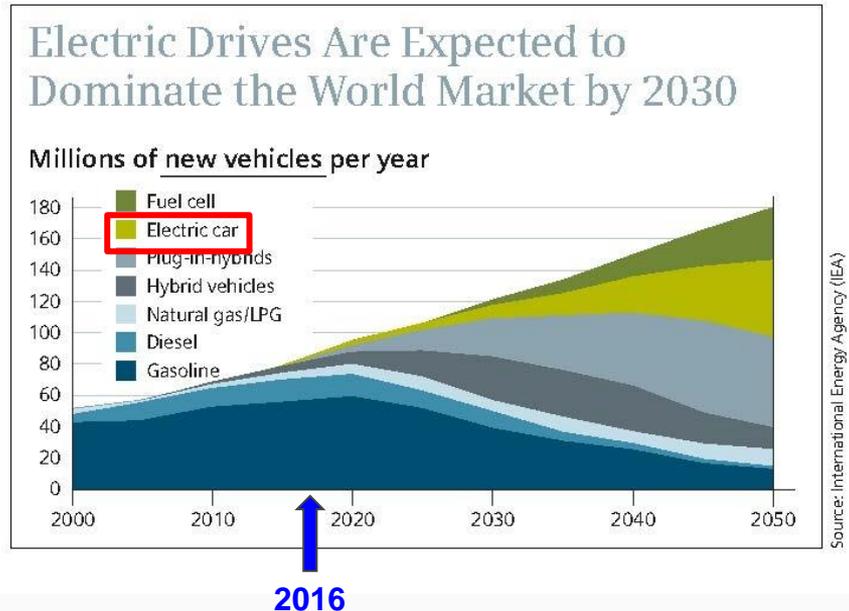
## **EV Charging Stations - Policy BS 21**

Nittany Lion Inn Parking Deck

Large scale solar array/EV charging program cooperative

Recommendation: Continued support

# Context: EV Station Construction Policy



**Developing EV charging station infrastructure as society moves away from carbon-based fuels to electricity-based fuels.**

*“Perhaps the most surprising projection for 2030 is that electrified models, including gas-electric hybrids, could reach 50 percent of new-vehicle sales.”* - McKinsey & Company

# Recommendation: EV Station Construction Policy

A large portion of an EV station implementation budget consists of installation costs.

Implement OPP **Design Standard Revision:**

Introduce construction policy that requires **consideration** of EV charging station or preliminary conduit installation while planning any project that involves subgrade modification at or near parking surfaces.



# Context: Energy Ambassadors

**Energy Ambassadors** - A group of students trained by Paul Moser & Steam Services to run tours of the energy facilities.

Students teaching students

Learn methods of infrastructural energy production and pollution reduction

Create an elite, educated group that is focused on Penn State's energy useage

**Supports President Barron's vision of Penn State as a national leader in energy production and innovation.**

# Recommendation: Energy Ambassadors

**Create a task force to garner support for an Energy Ambassadors program.**

## **Brainstormed Ideas:**

Partner with an internship or research program to train students to give the tours

OPP or Sustainability Institute host the program

Tours for Penn State students, faculty, staff, and the general public

# Context: Carbon Taxing/Electricity Structure

Currently, OPP is responsible for campus' cost of electricity, which leaves the facility users no direct incentive to reduce energy usage.

## **Decentralizing Electricity Bill to Departments:**

Incentivise electricity reduction, leading to better practices

Encourages departments to move servers to data center (more energy efficient)

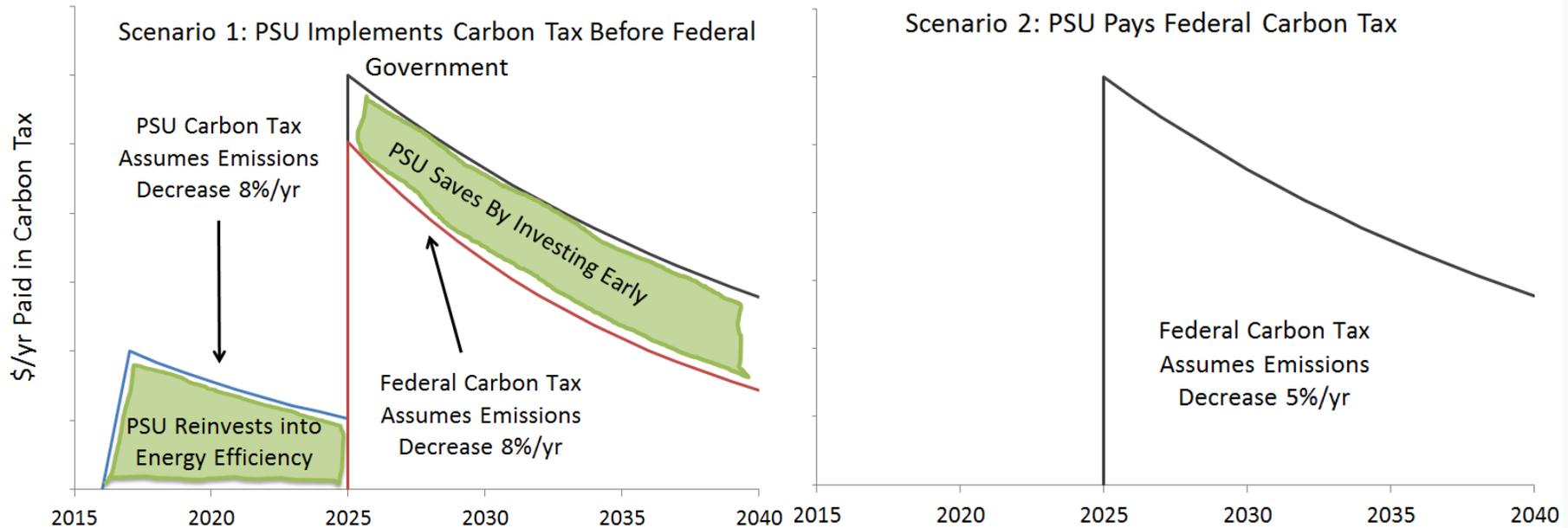
## **Carbon Taxing:**

Mitigate future costs as carbon taxes become more common

Yale imposed an internal carbon tax

Government Carbon Taxes: 5 countries, 1 Canadian province, 1 US City

# Context: Carbon Taxing/Electricity Structure



# Recommendation: Carbon Taxing/Electricity Structure

**Decentralize utility bills to Penn State departments to incentivize savings.**

**Develop a task force to determine if Carbon Taxing will help PSU achieve its emission goals, and what the best structure would be.**

Possibilities:

Departmental rebates equal to the price of carbon & energy saved

Departmental utility bills that are subject to rebates and charges, relative to a baseline energy usage

# Context: Interactive Energy Display Boards

Interest in **displaying building energy usage** to help educate students

Security threat associated with monitoring energy usage

Recent attack on the College of Engineering's database

Future of Penn State's buildings and residence halls

Penn State Behrend - Trippe Hall

## Why Limit Ourselves?

# Recommendation: Interactive Energy Display Board



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# Recommendation: Interactive Energy Display Board

**Make a goal for the 2016-2017 academic year to engage students in their energy usage.**

Begin planning for future implementation of energy displays:

Involve class capstones and research (IST, Engineering, Graphic Design, Psychology, etc.)

Begin storing and sorting relevant data (OPP)

# Energy: Summary

**Continued support for EV Charging Stations**

**New Recommendations**

**EV Station Construction Policy**

**Energy Ambassadors**

**Carbon Taxing/Electricity Structure**

**Interactive Energy Displays**

# Key Stakeholders Contacted

Paul Moser - OPP, Steam Plant Services

Laura Miller - OPP, Senior Energy Engineer

Matt Leah - OPP, Energy Engineer

Steve Maruszewski - OPP, Assistant VP

Rob Cooper - OPP, Director of Energy and Engineering

Steve Oskin - OPP, Continuous Commissioning Engineer

# Fiscal Responsibility

Mission

Spring 2016 recommendations

Key stakeholders contacted

# Mission

“Advise Penn State on how to use its purchasing power to foster sustainability by supporting businesses that produce sustainable goods in a socially responsible manner.”

# Follow-up: Socially Responsible Investing

**Prioritize socially responsible investments that have returns equal to or greater than our current portfolio**

**Create a team within the Office of Investment Management to estimate the financial effects of replacing/reallocating “socially irresponsible investments”**

# Context: Sustainable Purchasing

PSU's supply chain may have larger environmental impacts than the campus

The General Service Administration's supply chain has a 9x larger footprint than their buildings and fleet

PSU should actively consider the sustainability of all purchases - right now price drives purchasing decisions

Energy use for equipment

Environmental impacts of manufacturing a commodity

Lifespan of a product

# Context: Sustainable Purchasing

Product sustainability metrics are not uniform or common

Life Cycle Analysis

Environmental Product Declaration (EPD)

Safer Choice

Energy Star

Tracking the environmental impact of purchases will make carbon taxing PSU's purchases possible in the future

# Recommendation: Sustainable Purchasing

## Add a product sustainability metric to purchasing/procurement RFPs:

Ask vendors/suppliers to submit an alternate add-on with their bids/proposals that offers a way to measure the sustainability of their product/service

## Develop a list of environmental priorities with a method for normalizing each variable to a common metric:

$$\text{Ex)} \quad 20 \text{ gal wastewater} * \frac{1 \text{ lb CO}_2}{160 \text{ gal wastewater}} = 0.125 \text{ lb CO}_2$$

# Fiscal Responsibility: Summary

**Create a team to estimate the financial effects of reallocating funds to socially responsible investments**

**Add a sustainability metric to purchasing documents**

**Determine PSU's environmental priorities and normalize each to a common metric**

# Key Stakeholders Contacted

Richard Fitzgerald and Alexandra Leo, Penn State Procurement

Cuchulain Kelly, Communications Coordinator, Sustainable Purchasing Leadership Council

Jane Bare, US EPA Director, Life Cycle Analysis Research Center

Dr. Andrew Zydney, Previous CH E Dept. Head

Lydia Vandenberg, Penn State Sustainability Institute

# Diversity

Mission

Spring 2016 recommendations

Summary

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# Diversity: Mission

“Our mission is to diversify the sustainability conversation at Penn State in order to better address social justice issues. Furthermore, we seek to boost multicultural awareness and enhance education around diversity issues at the university.”

# Recommendation Research

Similar sentiments shared across meetings with stakeholders involved in wide-ranging diversity efforts.

Lack of multicultural awareness

Boost efforts to increase exposure to diversity, race, and issues that face people of color

# Diversity: Pursued in PSU Sustainability Definition

**“Sustainability is the simultaneous pursuit of human health and happiness, environmental quality, and economic well-being for current and future generations”**

# Recommendation Research

**The Breakfast Club**

WHEN: EVERY FRIDAY at 11am

Paul Rob Cultural Center ROOM 200

The Breakfast Club will be a group conversation in which students will challenge themselves to discuss issues through the lens of social justice, inclusion, and racial developmental theory.

We will address current events related to race and politics, the upcoming 2016 presidential election, and any other topics the group chooses to discuss.

ESL ESOL CALIFORNIA



THE PAUL ROBESON CULTURAL CENTER PRESENTS

**PRISON INDUSTRIAL COMPLEX PANEL**

NOVEMBER 12TH @ 7:00PM

FLEX HUB-ROBESON CENTER THEATER

**TONIGHT!**

**BAKARI KITWANA**  
(AUTHOR/MODERATOR, THE STOP EXTERMINATION!)

**NIAZ KASRAVI**  
(DIRECTOR OF HEALTH CARE/INMATE PROGRAM)

**JASIRI X**  
(HIP HOP ARTIST/ACTIVIST, ONE WOOD)

**YUSEF SALAAM**  
(WORLDLY COMPOSER & SOUNDTRACK, MEMBER OF CENTRAL PARK 5)

**AMANDA KLONSKY**  
(PROGRAM DIRECTOR, WHITE FOLIAGE ARTS & LITERARY PROGRAM)

**LOS WILES**  
(MUSICIAN, THE CENTER)

# Recommendations

## **Review United States (US)/International Cultures (IL) course content**

The following criterion should be added to the list of criteria that are used to designate a course as US or IL

*For US and IL: Increase student understanding of the nature of social justice, and equity in the United States at the societal, institutional, and individual levels.*

Establish assessment subcommittee to design an ongoing assessment plan

Future courses should include 50% of the content that fall under US or IL criteria

# Recommendations

## **MorningStar Solar Home... needs a “home”**

Foster diverse exchanges amongst visitors to one of the most heterogeneous, collaborative projects on campus

Student Affairs should support these underutilized, experiential resources by including SEC and MS in future design plans

Similar to Stone Valley

University should advocate for the site in their upcoming Penn State Capital Campaign

# Recommendations

## **Support summer bridge programs**

PREF, ASE, Millennium Scholars and Underground programs need continued assistance to help students of color adjust to Penn State

Programs are proven to better prepare disadvantaged students to succeed

# Diversity: Summary

**US/IL content designation and ongoing review**

**MorningStar Solar Home under Student Affairs**

**Support for bridge programs**

# Key Stakeholders Contacted

Carlos Wiley, Director, Paul Robeson Cultural Center

Marcus Whitehurst, Vice Provost, Educational Equity

Derek James, Coordinator of Multicultural Programs, College of Ag. Sci.

Moses Davis, Director, Multicultural Resource Center

Deanna Nagle, President, United Students Against Sweatshops

Jessica Linder, President, Minorities in Agriculture, Natural Resources and Related Sciences

# Waste

Mission

Research

Spring 2016 recommendations

Summary

Key stakeholders contacted

# Waste: Mission

“To make sustainable waste management more relevant and easily accessible to the student body through policy and physical changes at Penn State.”

# Past Recommendation

Introduced outdoor recycling plan

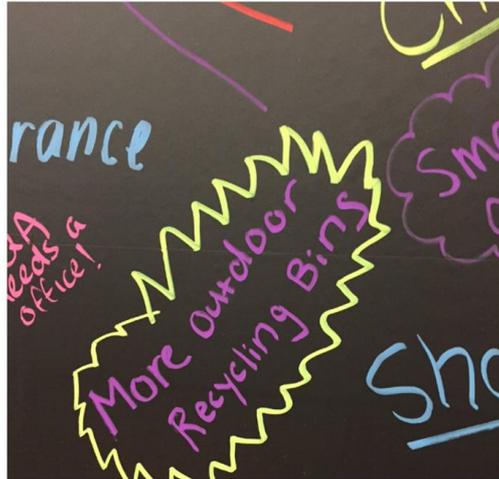
Followed through this semester with more research

# Student Feedback - UPUA What to Fix



WhatToFix PennState  
@wtfPSU

More outdoor recycling bins? We agree!  
Tell us What to Fix today in the HUB on  
the first floor!



.@wtfPSU There's nowhere to  
throw this away. We need recycling  
outside and between buildings!



# Recommendation Research

Northwestern University  
Outdoor Recycling Program,  
2008

Placed bins in “high traffic,  
high-profile areas”

Bins have become the  
campus standard

The screenshot shows the Northwestern University website's news section. The header is purple with the university name and navigation links for LIBRARY, MAPS, PARKING, SHUTTLES, and BOOKSTORE. A search bar is also present. Below the header is a navigation bar with links for About, Academics, Admissions, Campus Life, Research, and Giving. The main content area is titled 'NEWS' and includes a sidebar with links to News Home, Photo Galleries, Northwestern in the News, Past Stories, Resources, Social Media, and Subscribe. The main article is titled 'NORTHWESTERN PITCHES IN FOR BETTER CAMPUS RECYCLING' and is dated June 4, 2008, by Judy Moore. The article text reads: 'EVANSTON, Ill. --- Twenty-eight new and improved outdoor recycling/trash units are being installed in high traffic areas across Northwestern University's Evanston campus by the University's grounds crew. The project should be completed by this summer. The recently purchased containers were prompted by a formal proposal issued by the Associated Student Recycling Cooperative (ASRC), a Northwestern student group, as a way to enhance the University's recycling and maintenance efforts in its initiative to be a leader in sustainability. "The containers that were chosen will increase recycling visibility and participation as well as provide consistency in containers used and seen across campus grounds," said

# Recommendation Research

During the Outdoor Audit conducted April 5-7, the following trash cans locations were sorted:

<b>Trash Can Locations</b>	<b>Number of Trash Cans</b>
Shortlidge	9
Pattee Mall (upper)	6
Curtin Rd Bus Stops	5
Fisher plaza	4
IST Ramp	3
Forum	6
Lower Allen, Old Main, Pugh	6
<b>Total</b>	<b>39</b>

# Recommendation Research

Of the 580 lb of trash sorted...

Type of Waste	LBS	Percentage
Plastics	220	37.90%
Cans	10	1.70%
Glass	15	2.60%
Paper	19	3.30%
Occ	8	1.40%
Textiles	2	0.30%
Compost	144	24.80%
Trash	117	27.90%
water	45	

	LBS
Miscellaneous plastic	83
Plastic film	65
Plastic bottles	72

...approximately 40% of what was in the trash bins was plastic!



# Recommendation

## Pilot Program

Convert ~50% of trash cans in high traffic areas to recycling bins (15-20 bins)

“New” recycling bins will be moved and paired with trash bins

1 for 1 switch = Net zero gain

Initial focus on all types of **plastic**

Already have OPP approval

# In the Future...

Convert 10-20% of the 256 trash cans throughout Core Campus

Co-mingle aluminum as well

For Example...



# Outside the HUB



# Cost Analysis

Currently around 256 trash bins on core campus and 410 total

Recycling costs \$25/ton, while trash costs \$67/ton

Based on audit, 1.88 lbs of plastic were generated per bin per day

**If 20 trash bins were replaced with plastic recycling bins, the University would save \$290 of the cost annually**

Cost of to Dispose of as <b>Trash</b> per Year (20 Bins)	Cost to Dispose of as <b>Recyclables</b> per Year (20 Bins)
\$459.75	\$171.55

# Waste: Summary

**One-for-one replacement of trash bins with plastic recycling bins in high traffic areas**

**Pair trash and recycling bins**

Increase recycling rate

Decrease contamination

# Key Stakeholders Contacted

Nadine Davitt, OPP

Ryan McCaughey, OPP

Tom Flynn, OPP

Kelly Harris, OPP

# Education

Mission

Past recommendations

Spring 2016 recommendations

Summary

Key stakeholders contacted

# Education: Mission

“To develop innovative ways to engage the Penn State student and faculty population in sustainable behaviors, and inform of the benefit of such behaviors; for the planet, for the university, and for oneself.”

# Past Recommendations

## East Halls In-Room Waste Bin Pilot Program

- Survey distributed via ARHS
- Trying to find where problem lies
  - Bins provided, recycling education?

# Recommendations

## **HUB Portal- Waste Free Facility**

Background info:

- Show students where their interests fall into campus
- Where Higher Grounds currently stands
- Steps have been taken!
- Penn State working with Gallagher and Associates

# Recommendations

## **HUB Portal- Waste Free Facility**

Paperfree HUB Portal

Not accessible to print in the HUB Portal

No flyers in the HUB Portal

Email Information Access

All information obtained by students can be saved on a dashboard and sent via email

# Recommendations

## **Digital Signage**

Centralized system for digital signage

One format for the signs across each college

New Digital Signage accessibility

Student organizations can post on signage in major buildings

Eliminates paper waste with student organization flyers

# Cost Benefit Analysis

Current Cost	Recommendation Cost
<p>Paper is on the board for 30 days with an average of people looking at it 10hrs/day</p> <p>= \$.27 day/board</p>	<p>Electronic Board including start up cost and price of purchase averages at</p> <p>= \$.66 day/screen large, .22 day/screen small</p>

# Education: Summary

**HUB Portal- Waste Free Facility**

**Centralized System for Digital Signage**

**Increased Digital Signage Accessibility**

# Key Stakeholders Contacted

Mary G. Edgington, Senior Director of Union and Student Activities

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- Penn State 2016-2020 Strategic Plan