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Niharika Kishore, Master of Urban Planning student

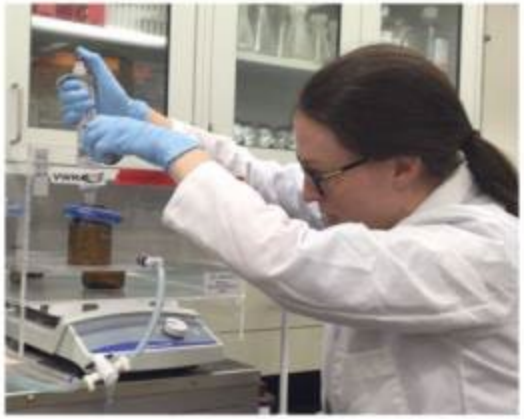
Morgan Johnston, Director of Sustainability, F&S

Institute for Sustainability, Energy, and Environment

INSTITUTE FOR SUSTAINABILITY, ENERGY, AND ENVIRONMENT

August 2016

ABOUT ISEE



ACTIONABLE RESEARCH

CAMPUS SUSTAINABILITY

EDUCATION & OUTREACH

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American College & University Presidents' Climate Commitment

February, 2008

"This new plan is ambitious, and it positions Illinois at the forefront of tackling the profound sustainability challenges that face humanity, including climate change and clean energy…The costs of inaction are tremendous, as climate change threatens not only the environment but also the very future of our students."

– Barb Wilson, Interim Chancellor

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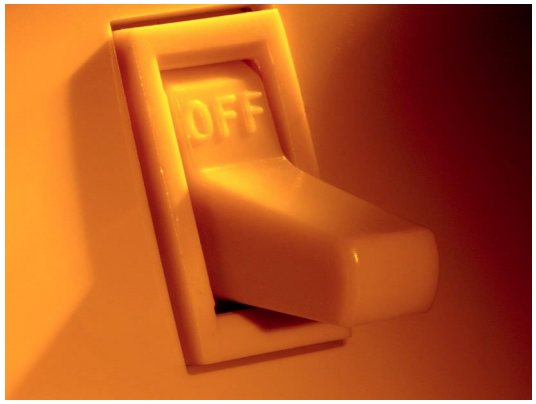

Energy Conservation & Building Standards

Energy Generation, Purchasing, & Distribution

Transportation

Purchasing, Waste, & Recycling

Water and Stormwater

Agriculture, Land Use, Food, and Sequestration

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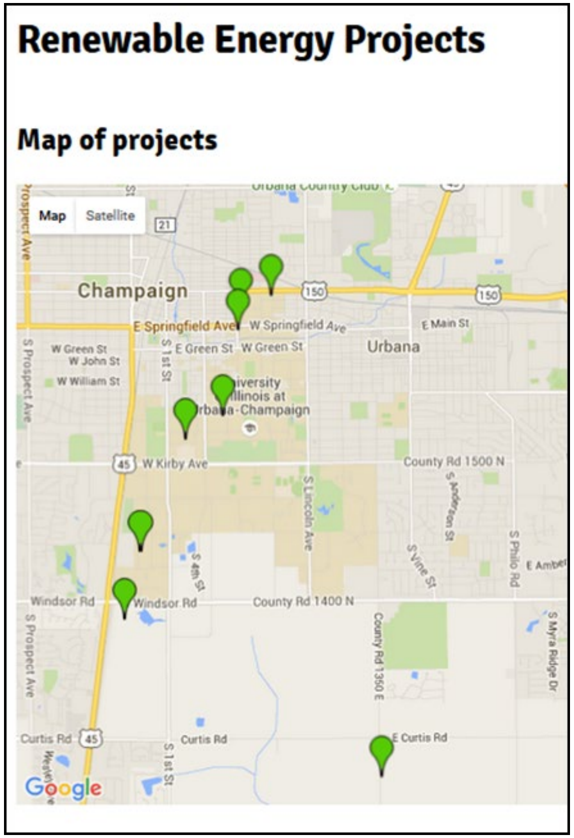
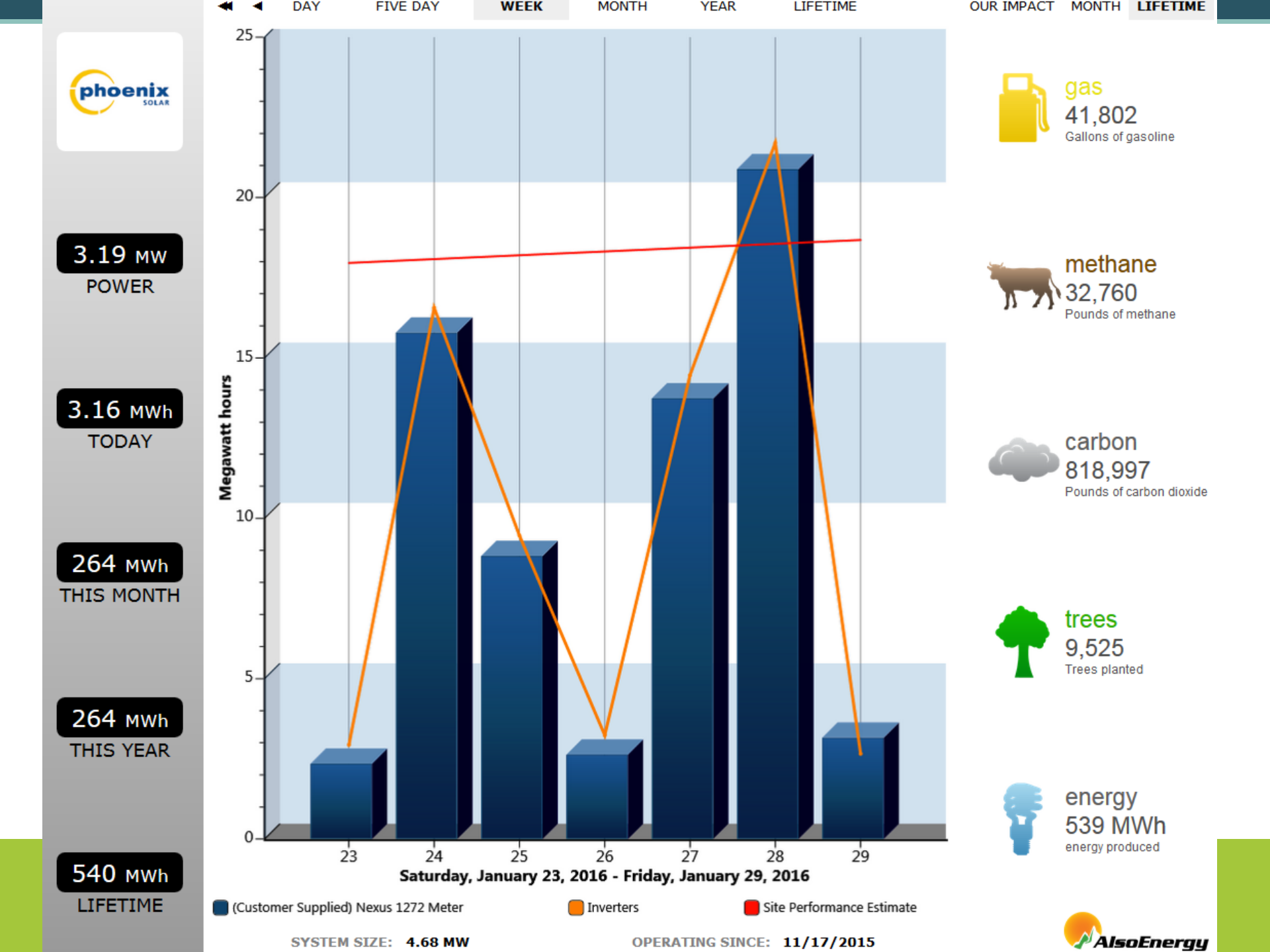
- Solar PV
- Solar thermal
- Geothermal
- Biomass
- Wind
- Renewable Energy Certificates
- Power Purchase Agreements




DAY
FIVE DAY
WEEK
MONTH
YEAR
LIFETIME
OUR IMPACT
MONTH
LIFETIME
phoenix SOLAR
3.19 MW
POWER
3.16 MWh
TODAY
264 MWh
THIS MONTH
264 MWh
THIS YEAR
540 MWh
LIFETIME
Megawatt hours
25
20
15
10
5
0
23
24
25
26
27
28
29
Saturday, January 23, 2016 - Friday, January 29, 2016
(Customer Supplied) Nexus 1272 Meter
Inverters
Site Performance Estimate
SYSTEM SIZE: 4.68 MW
OPERATING SINCE: 11/17/2015
gas
41,802
Gallons of gasoline
methane
32,760
Pounds of methane
carbon
818,997
Pounds of carbon dioxide
trees
9,525
Trees planted
energy
539 MWh
energy produced
AlsoEnergy

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- 2006 Business Instructional Facility
- 2014 Electrical and Computer Engineering Building – in progress
- Ground Mounted PVs at Building Research Council, & Solar Farm
- Uni High Gym
- Future buildings/retrofits

ROOFTOP SOLAR OBJECTIVES

- “Expand on-campus solar energy production.
  - By FY20, produce at least 12,500 MWh/year, and
  - by FY25 at least 25,000 MWh/year, from solar installations on campus property.
  - These targets represent 5% and 10% of our expected 2050 electricity demand, respectively.”
- We have 7,865 MWh/year currently installed.
- We need 4,635 MWh/year more by the end of FY20.

https://uofi.app.box.com/files/0/f/2802975201/iSEE_-_Solar_Working_Group_Box_Folder_2014

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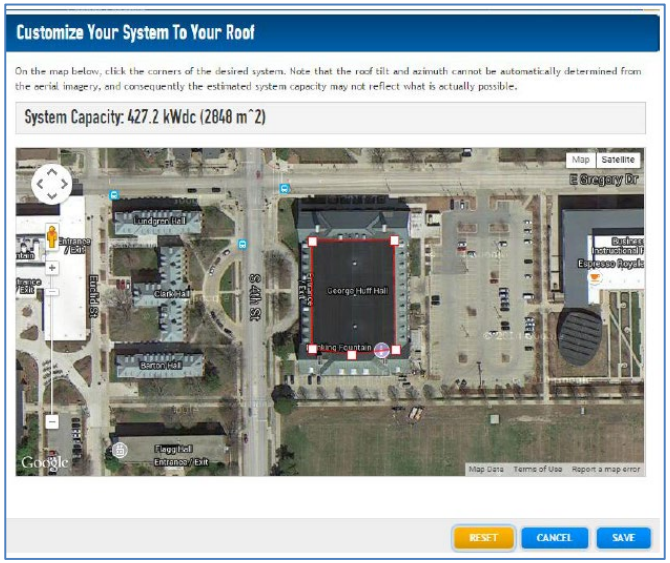
1. Rooftop Photovoltaic Master List – Brendan McDonnell reviewed all campus facilities for rooftop solar potential in PVWatts.
2. Architecture Review Committee first cut – yes, no, or maybe for large buildings
3. Building Maintenance Foreman and “roofing guru” – Corey Weil facilitated
4. Project Plan Development – Niharika Kishore coordinating now



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Year	Location	Name-plate capacity (MW)	Annual generation (MWh)
FY10	Business Instructional Facility	0.033	45
FY13	Building Research Council	0.015	19.6
FY14	ARC solar thermal	???	???
FY16	Solar Farm	5.870	7800
FY16	Ikenberry 3 rooftop solar	0.033	45
FY17-19	Energy Farm Building awning	unknown	
FY17-19	BIF rooftop	unknown	
FY16-19	ECE rooftop	0.300	399
FY16-19	NCPD roof and structure	1.200	1595
FY16-19	other installations	1.482	2597
FY20	**Total Goal**	**8.933**	**12500**

Aerial view of each building

Rough timeline

- FY17 Project development and sourcing funds
  - Meeting with potential buildings
  - Writing the RFP
  - Seeking funding
- FY18 Request for Proposals (RFP)
- FY19 Installation completed
- FY20 Obtain 12,500 MWH/year

Discussion Questions

- Can we include your building in this project proposal?
- What benefits do you see for your department from having the rooftop solar?
- What resources could you contribute to this effort?
- Are there building specific needs we should be aware of?

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Questions from Library

- How will the solar PV panels be affixed to the roof?
- Who will provide load calculations for the dead loading and snow, wind, etc. loading?
- Each of the three vaults hold more than 1.5 million volumes of print material per vault. What added risk will the Library incur with potential roof leaks?
- How often will the equipment need to be accessed?
- Who will be responsible for repairing the roof if the existing membrane is damaged during installation or in the future?
- What additional equipment beyond the roof top PV panels will need to be installed on the roof and/or inside the building?
- If inside the building, can the equipment be installed in the mechanical rooms?
- What is the timeframe for the project?