

# PENNSYLVANIA HOUSING RESEARCH CENTER MAGAZINE

PHRC.PSU.EDU



## FALL 2018

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## PA CODE UPDATE ON OCTOBER 1

Greetings from the entire Pennsylvania Housing Research Center team! And Happy birthday, PHRC! This year marks the 30<sup>th</sup> year of operation for the PHRC with no signs of slowing down. To say that the PHRC has been busy over the past year would be a bit of an understatement. Starting in the fall of 2017 and running into the summer of 2018, our team has been enveloped in activities ranging from the 26<sup>th</sup> PHRC Housing Conference, 4<sup>th</sup> RBDCC, NAHB and DOE Race to Zero student competitions, teaching all across the Commonwealth, and of course, the October 1 code update. This magazine, formerly referred to as our newsletter, outlines some of the critical outcomes of our activities over the past year. It also looks ahead to the full slate of activities coming up in 2018 and 2019, including code-related training.



*Brian Wolfgang, associate director*

While summer is usually a time to catch up on program development and reporting, summer 2018 has been one of the busiest to date for the PHRC team. As you are aware, Pennsylvania has adopted the majority of code provisions contained in the 2015 International Code Council (ICC) Model Codes. These new code provisions take effect on October 1, 2018. Transitioning from the base 2009 codes to the 2015 versions means there will be a significant amount of changes in the enforceable code. This scale of code update has not been experienced since the early days of the PA Uniform Construction Code (PA UCC). Our team has been busy at work producing new training content and updating our menu of existing training programs. We are positioning the PHRC as the go-to resource as builders, contractors, and design professionals gear up for these changes.

On top of code update training, the PHRC team is also deep into the planning for the 27<sup>th</sup> PHRC Housing Conference. This event will be hosted on March 13-14, 2019 at the Penn Stater Hotel & Conference Center in State College. Once we reach this conference, the Commonwealth will be more than five months into the new residential code changes. We anticipate that this event will be a great opportunity to take a step back and look at what is working, what questions still need answers, and where do we go next. This two-day event will feature engaging speakers and timely content. More information will become available throughout the fall with early bird registration opening on December 3, 2018.

**Save the date—March 13-14, 2019!**

Finally, I wanted to take a moment to thank the individuals and companies that support the PHRC, including PHRC members, Industry Advisory Council members, the Hankin Family, and Penn State's Department of Civil & Environmental Engineering and College of Engineering. We look forward to a productive year ahead!



*PHRC staff and instructors at their fall training meeting*

# PHRC HOUSING CONFERENCE | 3/13-14

**SAVE THE DATE** | The 27<sup>th</sup> Annual PHRC Housing Conference highlights best practices, regulation, research, and innovation in the residential construction industry.

- Early Bird Registration opens December 3, 2018
- Standard Registration opens January 14, 2019
- PHRC & PBA Members receive a registration discount
- Continuing education available for all sessions



## MARCH 13—14, 2019 | THE PENN STATER HOTEL & CONFERENCE CENTER

This two-day event with multiple tracks such as codes, design application, construction management, land development, etc. provides information and updates on issues of interest to the residential construction industry. Invited speakers present on a wide-range of topics about regulation and best practices in the industry. Topics may include blower doors, air sealing best practices, the 2018 Pennsylvania Alternative Residential Energy Provisions, ventilation best practices, a UCC Q&A, and more!



*"This was my first time attending [in 2018], and I was very impressed by the entire conference. The staff, venue, educational tracts, and food were first rate. I plan to make this an annual must do."*

- Robert De Vries, technical services manager of Nu-Wool

*"One of the best run conferences I have ever attended either as an attendee or an exhibitor. I look forward to next year."*

- Reid Rowlands, partner of World Class Supply

*"I am a better builder for having attended these conferences. My clients enjoy a home that not only looks great but is comfortable, cozy, safe, healthy, durable, and saves money. Less money spent on utilities and maintenance leaves more resources for the important features families most desire. My customers trust that I stay up to date on the latest home building technologies, PHRC helps me earn that trust."*

- John Holahan, president of Liberty Homes Custom Builders



## 2018 PENNSYLVANIA ALTERNATIVE RESIDENTIAL ENERGY PROVISIONS

The development of the 2018 Pennsylvania Alternative Residential Energy Provisions (PA-Alt) was led by the PHRC with guidance from a subcommittee of the PHRC Industry Advisory Council. Under the guidance of the PA Department of Labor and Industry, the PA-Alt was developed with the intent of being simpler to build to and easier to enforce; more rational and flexible; focused on Pennsylvania in terms of climatic and other conditions; and equivalent to the provisions of the IECC. It is important to note that a choice needs to be made by the builder or design professional between the 2018 PA-Alt, the 2015 IRC, and the 2015 IECC.

### DOWNLOAD THE PA-ALT

<http://bit.ly/2018PA-Alt>

2018  
Pennsylvania  
Alternative  
Residential  
Energy  
Provisions



# WEBINAR SCHEDULE | 2018-2019

Tune in every 2<sup>nd</sup> Tuesday of the month from 1:00-2:00 p.m. for free webinars! Live webinars are approved for AIA, ICC, L&I, NARI, and PDH continuing education credit for a \$20 certificate. Past webinars are available to view on our website under "Industry."

## JOIN WEBINARS

[phrc.psu.edu/Industry-Education/Webinar-Index.aspx](http://phrc.psu.edu/Industry-Education/Webinar-Index.aspx)



### AUGUST 14

#### PA RESIDENTIAL CODE UPDATE OVERVIEW

New code provisions will take effect on October 1, 2018. Transitioning from the base 2009 codes to the 2015 versions means there will be a significant amount of changes in the enforceable code. While some of these changes are mostly administrative, some of them may warrant changes in building practices and design techniques and will have an impact on home performance, occupant safety, and affordability.

### AUGUST 28

#### RESIDENTIAL ENERGY CODE UPDATE

This session will provide an overview of the changes to the energy-related provisions in the UCC that will become enforceable on October 1, 2018 as well as the overall impact on home performance and energy efficiency. There are significant differences between the current 2009 base energy code and the 2015 IRC Chapter 11 and the residential portion of the 2015 IECC.

### SEPTEMBER 11

#### WHOLE HOUSE MECHANICAL VENTILATION

We will review the prescriptive requirements for mechanical ventilation, why mechanical ventilation is important, and some potential solutions for achieving this requirement.

### SEPTEMBER 25

#### BLOWER DOORS FOR BUILDERS

Beyond visual inspection, Section R402.4.1.2 of the 2015 IECC requires testing and verification of the building's air leakage rate to meet the mandatory 5 air changes per hour at 50 Pascals (5 ACH50) or less. Builders must have a third party approved by their local code jurisdiction complete a blower door test and submit the air leakage results. We will provide an overview of the general logistics of completing a blower door test for typical residential construction projects to assist builders in scheduling and planning for this mandatory requirement.

### OCTOBER 9

#### PA ALTERNATIVE RESIDENTIAL ENERGY PROVISIONS (PA-ALT) UPDATE

With the adoption of the majority of code provisions contained in the 2015 ICC Model Codes, the PA-Alt was required to be updated, and we will review this update. It was developed with the intent of being simpler to build and easier to enforce; more rational and flexible; focused on Pennsylvania in terms of climatic and other conditions; and equivalent to the provisions of the IECC in terms of energy efficiency.

### NOVEMBER 13

#### AIR SEALING FOR 5 ACH50

We will look at areas of concern for air leakage and review several techniques to potentially seal those areas. Pennsylvania's prescriptive air leakage requirements have recently been changed from 7 ACH50 to 5 ACH50. Builders may have to modify their air sealing package to comply with the prescriptive air infiltration requirements.

### DECEMBER 11

#### HERS AND THE ERI PATH

Through the Energy Rating Index (ERI) path on October 1, 2018, builders have the option of a new energy code compliance path under the PA UCC. This compliance option allows builders to utilize a HERS (Home Energy Rating System) score to demonstrate compliance with the enforceable energy code.

### JANUARY 8

#### SOLAR PV IN PA: INTRO TO THE DESIGN OF NEW CONSTRUCTION AND RETROFIT RESIDENTIAL SYSTEMS

Building off our Energy Auditing 101 webinar in January 2018, we will provide an overview of how to design new construction and retrofit solar photovoltaic systems for Pennsylvania homes. This will include how to assess anticipated or actual home energy usage to evaluate sizing needs, how to conduct a solar site assessment for roof- or ground-mount applications, how to use tools like PVWatts for anticipated system

output for grid-tied and off-grid systems, and how to place roof-mounted solar photovoltaic panels to comply with 2015 IRC 605.11 requirements.

### FEBRUARY 12

#### FORCED AIR HVAC SYSTEMS: IT'S MORE THAN JUST HOT AIR

The design of an HVAC forced air system goes beyond just heat calculations. We will look at forced air distribution systems from the air handler to diffusion grill. We will discuss efficient use of duct work and understanding why choosing the correct diffuser is important to the distribution of conditioned air into a space.

### MARCH 13-14

#### PHRC HOUSING CONFERENCE

No webinar in March due to conference.

### APRIL 9

#### MANUFACTURED STONE VENEER: STICKING TO THE BASICS

We will take a closer look at the basics of wall performance and apply these concepts to manufactured stone veneer. Although aesthetics and cost tend to dominate the conversation, cladding performance in relation to moisture and durability should also be considered. While the challenges associated with exterior plaster in the form of stucco have been well documented, the conversation has not extended much toward manufactured stone veneer.

### MAY 14

#### INTRO TO THE PASSIVE HOUSE STANDARD FOR THE PA RESIDENTIAL CONSTRUCTION INDUSTRY

This webinar will provide an introduction of this standard, including an overview of the international Passive House standard (PHI) and the Passive House Institute of the US (PHIUS) standard, the design principles behind each of them, and details on Pennsylvania case studies built to these standards. It will also include an overview of the certification process for the homes, as well as Passive House designers, builders, raters, and verifiers.

# AVAILABLE WORKSHOPS

The PHRC annually offers various training workshops typically through the PA Construction Codes Academy (PCCA). Continuing education credits are awarded based upon the topic. If interested in offering a workshop, contact Tracy, tdorman@enr.psu.edu.

## REGISTER FOR WORKSHOPS

[phrc.psu.edu/Industry-Education/Workshop-Index.aspx](http://phrc.psu.edu/Industry-Education/Workshop-Index.aspx)

**SEPTEMBER 12, 2018**

### IRC 101T: INTERNATIONAL RESIDENTIAL CODE UPDATE

*Woodlands Inn in Wilkes-Barre, Luzerne County*

This course will help prepare attendees for the 2015 IRC and will discuss the amendments specific to PA based on the results of the PA UCC Review & Advisory Council recommendations.

**SEPTEMBER 13, 2018**

### IRC 101T: INTERNATIONAL RESIDENTIAL CODE UPDATE

*Best Western in Bethlehem, Lehigh County*

**SEPTEMBER 26, 2018**

### IRC 101T: INTERNATIONAL RESIDENTIAL CODE UPDATE

*Clarion Hotel in Exton, Chester County*

**SEPTEMBER 27, 2018**

### IRC 101T: INTERNATIONAL RESIDENTIAL CODE UPDATE

*Clarion Hotel in New Cumberland, York County*

**OCTOBER 3, 2018**

### IRC 101T: INTERNATIONAL RESIDENTIAL CODE UPDATE

*Holiday Inn in Williamsport, Lycoming County*

**OCTOBER 4, 2018**

### IRC 101T: INTERNATIONAL RESIDENTIAL CODE UPDATE

*Holiday Inn Express in Meadville, Crawford County*

**OCTOBER 22-25, 2018**

### RESIDENTIAL BUILDING ACADEMY

*Clarion Hotel in New Cumberland, York County*

This four-day program is a comprehensive review of the 2015 International Residential Code (IRC) Chapters 1-10. It includes examples, exercises, and case studies designed to illustrate daily practices performed by a Residential Building Inspector or Plans Examiner.

**OCTOBER 23, 2018**

### IRC 101T: INTERNATIONAL RESIDENTIAL CODE UPDATE

*Ramada Hotel in Greensburg, Westmoreland County*

**OCTOBER 24, 2018**

### IRC 101T: INTERNATIONAL RESIDENTIAL CODE UPDATE

*Hilton Garden Inn in Moon Township, Allegheny County*

**NOVEMBER 5-8, 2018**

### RESIDENTIAL ELECTRICAL ACADEMY

*Clarion Hotel in New Cumberland, York County*

This four-day program is a comprehensive review of the 2015 IRC, chapters 34-43. It includes examples, exercises, and case studies designed to illustrate daily practices performed by a Residential Electrical Inspector or Plans Examiner.

**JANUARY 14-17, 2019**

### RESIDENTIAL PLUMBING ACADEMY

*Clarion Hotel in New Cumberland, York County*

This four-day program is a comprehensive review of the 2015 IRC Chapters 25-33. It includes examples, exercises, and case studies designed to illustrate daily practices performed by a Residential Plumbing Inspector or Plans Examiner.

**FEBRUARY 18-21, 2019**

### RESIDENTIAL MECHANICAL ACADEMY

*Clarion Hotel in New Cumberland, York County*

This four-day program is a comprehensive review of the 2015 IRC Chapters 12-24. It includes examples, exercises, and case studies designed to illustrate daily practices performed by a Residential Mechanical Inspector or Plans Examiner.

**MARCH 5-6, 2019**

### RESIDENTIAL ENERGY ACADEMY

*Clarion Hotel in New Cumberland, York County*

This two-day program is a comprehensive review of the residential portion of Chapters 1-4 of the 2015 International Energy Conservation Code (IECC). It includes examples, exercises, and case studies designed to illustrate daily practices performed by a Residential Energy Inspector or Plans Examiner.

**MARCH 13-14, 2019**

### PCCA SYMPOSIA: CENTRAL

*The Penn Stater Hotel in State College, Centre County*

**MARCH 27, 2019**

### PCCA SYMPOSIA: EAST

*Crowne Plaza in King of Prussia, Montgomery County*

**APRIL 3, 2019**

### PCCA SYMPOSIA: WEST

*Doubletree Hotel in Monroeville, Allegheny County*

**APRIL 23-24, 2019**

### IECC 101: INTERNATIONAL ENERGY CONSERVATION CODE ESSENTIALS

*Clarion Hotel in New Cumberland, York County*

This two-day course provides a comprehensive overview of the commercial building provisions of the 2015 IECC. Practice exams are included at the end of each day to help attendees retain information and prepare to take the Commercial Energy Inspector or Commercial Energy Plans Examiner test.

# BECOME A MEMBER

Join the PHRC as a member today! PHRC Membership Fees support the outreach activities of the PHRC, Penn State students involved in the NAHB Student Chapter, graduate students conducting research with the PHRC, and more.

<b>PLATINUM</b>	<b>\$5,000</b>
<b>GOLD</b>	<b>\$2,000</b>
<b>SILVER</b>	<b>\$1,000</b>
<b>BRONZE</b>	<b>\$500</b>
<b>ASSOCIATION</b>	<b>\$150</b>
<b>INDIVIDUAL</b>	<b>\$100</b>

## AS A PHRC MEMBER, YOUR BENEFITS INCLUDE...

- **Additional speaking engagement**
- **Annual conference discounts**
- **Workshop discounts**
- **Advertising in annual magazine, conference program, and on PHRC website**

*Benefits vary between Membership Levels*

**CONTACT TRACY, TDORMAN@ENGR.PSU.EDU, 814-865-2341, TO BECOME A PHRC MEMBER**

# 2018 MEMBERS

## GOLD



DOW Building Solutions



Hankin Group



YBC: Your Building Centers

## SILVER

PA Concrete Masonry Association  
 PA Housing Finance Agency  
 PA Manufactured Housing Association  
 S&A Homes

## BRONZE

The Duck Harbor Company  
 Liberty Homes Custom Builders  
 Sukonik Building Companies  
 Upstreet Architects, Inc.

## ASSOCIATION

BIA of Lancaster County  
 BIA of Philadelphia  
 Blair-Bedford Builders Association  
 Builders Association of Central PA  
 Builders Association of Metro Pittsburgh  
 Builders Association of Northwest PA  
 Carbon Builders Association  
 HBA of Chester and Delaware Counties  
 HBA of Metro Harrisburg  
 Indiana-Armstrong Builders Association  
 Lebanon County Builders Association  
 Moon Township

Pocono Builders Association  
 Somerset County Builders Association  
 Township of Adams  
 Tri-County Builders Association  
 Wayne Pike BIA  
 West Branch Susquehanna Builders Association  
 Willistown Township  
 York Builders Association

## INDIVIDUAL

Steve Balkey  
 John Brooks  
 Thomas Crean  
 Lee Golanski  
 Mark Grassi  
 Alan Hawman  
 Dean Hilliard  
 Richard Hotchkiss  
 Pete Houtz  
 John Hudak  
 Jon Kautz  
 Anthony Lawrence  
 Clem Malot  
 Thomas McCosby  
 Tim Palaski  
 Roy Pedersen  
 Bob Price  
 Lee Rackus  
 Hershel Ruhmel  
 Todd Smeigh  
 Tommy Songer  
 Frank Thompson

# 2018 HANKIN DISTINGUISHED LECTURE



Carlos Martín, Senior Fellow at the Urban Institute

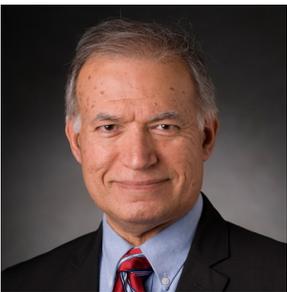
## THE GLOBAL TRENDS SHAPING AMERICA'S FUTURE HOMEBUILDING | CARLOS MARTÍN

The demand for housing in the United States remains strong—and in some cases, the lack of housing has reached crisis proportions. Numerous factors shape the industry's inability to supply that housing. Some of these factors also have far-reaching consequences beyond the industry and, in turn, are shaped by much broader social and economic change. Just in 2017 alone, national policies and global commerce have shaped the pace of homebuilding and the qualities of the homes that the industry produces. The 2018 Hankin Distinguished Lecture will focus on supply-side challenges that have seen particular turmoil in the past year, including labor markets and skills; material prices and availability; technological innovation; building and business regulations; and industry composition and firm capacity.

The Hankin Distinguished Lecture Series invites world-class speakers to Penn State to address students, faculty, staff, and industry professionals. The lecture is free and open to the public with a reception to follow. The lecture series was established in 2006 in honor of the late Bernard Hankin and his family for their continuous and dedicated support of the Residential Construction program at Penn State.

**WEDNESDAY, NOVEMBER 7, 2018 @ 4:00 p.m. | HUB AUDITORIUM**

## HANKIN CHAIR UPDATE



Ali Memari, Hankin Chair

Another highly successful year for our residential construction education and research program and PHRC outreach activities, thanks to the dedication

of our PHRC staff, undergraduate and graduate students, sponsors of our program, and all those who help and support us in one way or another!

With an expanding education program offering multiple courses related to residential construction, an increasing number of students are enrolling in our Residential Construction minor, with 21 students who have been awarded it already. Our Residential Construction research program identifies some of the most important and timely issues of research need relevant to housing and residential construction. Currently, we have active research related to the retrofit of existing homes to passive house standards, development of infrared thermography approach to determine thermal resistance properties of building envelope systems, evaluation and retrofit design of existing homes for combined hurricane wind and flood effects, and application of 3D printing technology to concrete construction, including housing.

**6** Our students proudly took first place in

two competitions this year. One student team brought the National Champion trophy back to Penn State by placing 1<sup>st</sup> out of 34 teams in the NAHB Student Competition during the International Builders Show. Another student team won first place in the Suburban Single-Family Housing Contest of the U.S. Department of Energy's Race to Zero Student Design Competition. Besides students' high level of effort, enthusiasm, and innovation to work on these two competitions, another factor for their impressive wins has been the dedication of our coaches, Brian Wolfgang and Chris Hine for the NAHB Student Competition and Sarah Klinetob Lowe and Chris Hazel for the Race to Zero team.

Our Hankin Distinguished Lecture was a highlight of the year, thanks to our speaker Peter Gluck, an architect, who is the founder and principal of GLUCK+, for his very interesting presentation on November 8, 2017 titled, "It's all about context." You can view his lecture online.

We are pleased with the outcome of the Inaugural PHRC Residential Construction Career Fair to support recruitment of students into the housing industry. This event created the opportunity for the leading industry professionals to meet some of the best and brightest students with an interest in the residential sector. Moving forward, the event will occur annually in November during the week of the Hankin Distinguished Lecture and NAHB Student Chapter Awards Banquet.

As a part of our outreach activities, PHRC organized and hosted the 26<sup>th</sup> Annual Housing Conference, which is one of the well-established trademarks of the program. The Residential Building Design and Construction (RBDC) Conference, continues to grow nationally and internationally. The 4<sup>th</sup> RBDC Conference with 109 abstracts submitted shows more than a 100 percent increase compared with abstracts submitted to the 3<sup>rd</sup> conference. About 50 papers were submitted for inclusion in the proceedings. This event brought researchers from 13 different countries to share their R&D efforts related to housing and residential construction. Besides the opportunity for exchange of ideas, this expertise forum assisted builders, designers, material manufacturers, and code officials to become more familiar with the latest developments and advancements in this field. The goal and hope continues to be that this conference series will impact the home building industry for improved health, safety, serviceability, sustainability, energy efficiency, resiliency, and cost-effectiveness.



Residential Building Design & Construction Conference keynote

# 2018 NAHB STUDENT COMPETITION



*Penn State NAHB Student Competition presentation team*

The Penn State student chapter of the National Association of Home Builders (NAHB) won first place in the four-year program category of the NAHB Student Competition on January 10, 2018. Fifty-four teams representing universities, colleges, high schools, and career technical schools across the United States participated in the annual competition at the 2018 NAHB International Builders' Show in Orlando, Florida. The competition challenges student teams to solve a real-life construction management problem and develop a proposal for a residential subdivision. The provided competition site was a 72-acre tract in Okemos, Michigan, directly outside of Lansing. The Penn State team developed a 96-page proposal for a 114-unit, single-family subdivision that included four different floor plans built to meet the gold rating

from the National Green Building Standard. The proposal also included thoroughly vetted market, financial, and risk analyses and a land development plan.

The 2017-18 team presenters included: Giuseppe Ciotti, civil engineering, as the team leader and project manager; Emma Dickson, civil engineering and economics, as the land development specialist; Drew Kreamer, architectural engineering, as the chief architect; Delaney Padgett, civil engineering, as the sustainability specialist; Chris Sukonik, risk management - real estate option, as the sales and marketing specialist; and Emily Weiland, finance and Spanish, as the financial analyst. Additional team members included: Mike Hoysan, civil engineering; Josh Kappel, architectural engineering; Lauren Lesniakowski, architectural engineering; Weiyu Peng, architectural engineering; and Phil Zeffiro, actuarial science.

The student team was coached by staff of the PHRC: Brian Wolfgang, associate director, and Chris Hine, housing and



*Penn State NAHB Student Competition team and advisers*

land development specialist. "The success of this year's team can be attributed to diversity of knowledge and skill sets, veteran leadership, and a determined, collaborative approach. These students are destined to be successful in their future careers," said Wolfgang.

Team travel support was generously provided by the Toll Brothers IBS Travel Grant, the National Housing Endowment IBS Travel Award, and the University Park Allocation Committee.



*One of four Penn State NAHB Student Competition house designs*

# 2018 DOE RACE TO ZERO COMPETITION



*Final rendering of the New American Home, Ripple design*

The Penn State student team won first place in the Suburban Single-Family Housing Contest of the U.S. Department of Energy Race to Zero Student Design Competition on April 22. One of 40 teams representing 34 institutions and five countries, the Penn State team qualified as finalists to attend the competition at the National Renewable Energy Laboratory in Golden, Colorado on April 20-22, 2018. This year's competition

began with students from 84 teams, representing 68 collegiate institutions across nine countries before the selection of finalists.

Penn State partnered with a regional production builder, S&A Homes, to redesign their most popular single-family detached-home design to meet the Zero Energy Ready Home (ZERH) design standard. Over seven months, the student team periodically met with Bob Shoemaker, tech services construction manager of S&A Homes, to learn about the company's process of design and construction and to review their competition project with him. In late September, students attended a site visit through an under-construction home at a local development with Tom Jacobs, land manager of S&A Homes, to better understand construction details for their home design. The students' final ZERH design utilized two of S&A Homes' top-selling home models to create a new, feasible, high performance home that is accessible and sustainable for home buyers throughout the south and central Pennsylvania regions.



*Penn State team placing 1st at the 2018 DOE Race to Zero Competition*

Requiring an interdisciplinary team to produce a successful design, the project team consisted of students from architectural engineering, architecture, civil engineering, energy engineering, and mechanical engineering.

"Working with team members of different disciplines in the way that you would in the industry has made this competition an incredibly valuable experience," said Carly Asadi, leader of the energy and solar PV analysis subteam.

Support for the competition was generously provided by the West Penn Power Sustainable Energy Fund and Brokloff Endowment for Innovations in the College of Engineering.



*Penn State team on a site visit to S&A Homes development*

# PHRC CAREER FAIR | 11/7

## 2<sup>ND</sup> ANNUAL RESIDENTIAL CONSTRUCTION CAREER FAIR

We are excited to continue the opportunity for the leading residential construction builders, designers, material manufacturers, code officials, and more to meet some of the best and brightest students with an interest in the residential sector through majors like architectural engineering, architecture, civil engineering, energy engineering, finance, etc. This mix and mingle style event is open to all Penn State students. Companies interested in participating, contact Tracy, tdorman@enr.psu.edu.

**WEDNESDAY, NOVEMBER 7, 2018 @ 10:00 a.m. - 1:00 p.m. | HERITAGE HALL, HUB**

### Thank you to Berks Homes for sponsoring the new Student Lounge!

Attending companies include Benjamin Obdyke, Berks Homes, D.R. Horton, Inc., Lezzer Lumber, NVR, Toll Brothers, and more. Join these companies, and register today!

**REGISTER | [www.cvent.com/d/7gq5lf](http://www.cvent.com/d/7gq5lf)**



## Berks Homes



# PENNSYLVANIA HOUSING RESEARCH CENTER

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The PHRC serves the home building industry and the residents of Pennsylvania by improving the quality and affordability of housing. We conduct applied research, foster the development and commercialization of innovative technologies, and transfer appropriate technologies to the housing community.

Director | **Ali Memari**  
Associate Director | **Brian Wolfgang**  
Housing & Land Development Specialist | **Chris Hine**  
Housing Systems Specialist | **Sarah Klinetob Lowe**  
Training & Events Coordinator | **Tracy Dorman**  
Budgets & Publications Coordinator | **Rachel Fawcett**