



Pennsylvania Housing Research Center Magazine

2026-27



In this issue

- 3** 2027 PHRC Housing Conference
- 4** Hankin Chair Update
- 5** 2026 NAHB Student Competition
- 6** Renovating Residential Pennsylvania
- 7** PHRC Membership
- 8-9** 2026-27 Webinars
- 10** High-Performance Housing
- 11** 2026 Hankin Distinguished Lecture
- 12** PHRC YouTube Channel

PHRC Associate Director Update

Hard to believe another year has flown by! As the leaves start turning here in State College, the PHRC team is gearing up for a busy season, and honestly, we couldn't be more excited to share it all with you.



Chris Hine, associate director

This magazine is always one of our favorite traditions. It's our chance to pull back the curtain a bit: what we've been building, who's behind it, and where we're headed next. And this year, there's plenty to catch you up on.

Let's start with a bittersweet one. After two great years with the PHRC, Pam Shuman is heading off to her next chapter, with her last day here on September 18. Anyone who has caught one of Pam's presentations knows she has a gift for making technical topics click for real audiences. She's been a genuine asset to this team and a strong educational voice for Pennsylvania's residential industry, and we're going to miss her contributions. Join us in wishing her nothing but good things ahead!

Meanwhile, we've been growing our presence in a new spot: YouTube! Our channel, @PHRCPennState, keeps expanding, with fresh videos landing regularly in our Toolbox Tips playlist. We'll also be uploading our webinar recordings roughly one week after we deliver them live, so keep an eye out and share them with anyone who could use a quick, practical watch. Found something useful? Do us a favor and like and subscribe, it genuinely helps more people find us. And speaking of webinars, we've added two additional sessions to this year's lineup for a total of 12. Head to bit.ly/PHRCWebinars to register and to receive reminders of upcoming webinars.

Speaking of what's ahead, save the date! The 2027 PHRC Housing Conference is set for March 2 and 3. Mark your calendars carefully though, because we're switching things up: This one runs Tuesday and Wednesday instead of our usual Wednesday and Thursday format. The planning process is well underway, so expect it to be a great one.

As always, our doors (and inboxes) are wide open. Have a question, an idea, or just want to talk shop? Reach out anytime. The residential construction industry is always evolving, with new codes, materials, and methods coming along all the time, and the PHRC is proud to be a resource you can lean on to work through it all with fresh insights and a little steady ground to stand on. Here's to a great year ahead!

2027 PHRC Housing Conference

Save the Date: March 2–3, 2027

The Penn Stater Hotel & Conference Center
State College, PA



bit.ly/2027PHRCHousingConference

The 2027 PHRC Housing Conference will highlight best practices, regulation, and innovation in the residential construction industry. Invited speakers will present on a wide-range of topics, including indoor environmental quality, codes and construction, the house as a system, materials and installation, and land development and planning.

Registration opens in November!

This conference brings together all sectors of the housing industry including builders, design professionals, remodelers, code officials, educators, and product manufacturers. Typically, continuing education is available in the form of

American Institute of Architects (AIA) learning units, International Code Council (ICC) contact hours or continuing education units (CEUs), Pennsylvania Department of Labor and Industry (L&I) contact hours, National Association of the Remodeling Industry (NARI) CEUs, and Pennsylvania professional development hours (PDHs) for licensed professional engineers in Pennsylvania. Additionally, PDHs for registered landscape architects are available for certain sessions. There will be up to 11 hours of continuing education available for attending the full conference.



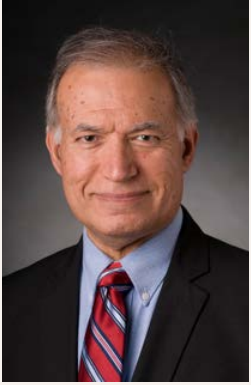
Sponsorship Opportunities

New this year!

Exhibitor sponsors will have the opportunity to exhibit during both hot breakfasts and lunches where all attendees will be gathered together in one space. For sponsorship questions, contact Darrin Wright at dtw153@psu.edu.



Hankin Chair Update



*Hankin Chair
Ali Memari*

As always, it is a pleasure to have the opportunity to share a brief report on the state of our activities in support of the residential construction (RC) program at Penn State. The program has had another successful year in its main areas of activity, that is, teaching, research, and outreach. The success of our program is because of the excellent work by the dedicated faculty and PHRC staff involved in contributing to the RC program. The overarching educational program consists of the 22-credit residential construction minor, which includes multiple courses related to residential building design and construction, construction management of residential buildings, passive house principles, and residential subdivision design. While over the past several years, we have had over 20 students annually enrolled in the residential construction minor program, the number has significantly increased over the past couple of years to about 40 students, which shows the popularity of this RC Minor program among architecture, architectural engineering, and civil engineering students. The RC program also provides opportunities for students to participate

in the National Association of Home Builders Student Competition. The participation of Penn State students is explained separately in the magazine.

Aside from offering such coursework and other opportunities for our undergraduate students, the RC program also offers research opportunities to graduate students. The research projects that students work on help the graduate students earn master's and doctoral degrees, while contributing to the advancement of the state-of-the-art in residential construction materials, components, systems, and methods for improved sustainability, energy efficiency, and hazard mitigation, among others. The results of graduate students' research are generally published in scholarly journals and conference proceedings.

The third area of the RC program is related to outreach, where we organize an annual housing conference that is discussed separately in the magazine and a biennial academic conference, Residential Building Design & Construction Conference (RBDCC). The program has held eight conferences in the RBDCC series so far. The eighth RBDCC, which was held March 27–28, was another success, with 38 presentations and 53 papers published in the proceedings. The papers submitted to the conference go through a peer review process followed by revision by the authors and in-house editing prior to publication in the proceedings. The proceedings of the past eight RBDCC conferences are available on PHRC's website (www.phrc.psu.edu/Publications/Past-Conference-Proceedings.aspx) and provide a collection of contributions related to various topics related to issues of interest in residential building materials, architecture, engineering design, construction technology innovation, sustainability, affordability, health, social aspects, renewable energy, energy efficiency, building science, and hazard mitigation, among others.

Another outreach activity of the RC program is the Annual Hankin Distinguished Lecture, which is held in honor of the late Bernard Hankin and his family, whose endowment helped start the RC program 45 years ago. For the 2025 lecture, Dennis Steigerwalt, president of the Housing Innovation Alliance, presented his lecture titled, "The Future of Housing is Now: A Blueprint for Collaborative Innovation." All the past lectures are recorded and available on the PHRC website (<https://bit.ly/HankinLecture>).

The growth and success of our RC program rely on the dedication of the students, the PHRC staff, and the faculty and staff of the Department of Civil and Environmental Engineering and the Department of Architectural Engineering, as well as the industry sponsors and supporters of the program. We are highly indebted to their support and look forward to seeing their increasing involvement and engagement in the program activities.

Penn State NAHB Student Chapter Competes at 2026 International Builders' Show

The Penn State student chapter of the National Association of Home Builders (NAHB) proudly competed in the Production Homes category at the 2026 NAHB Student Competition, held during the International Builders' Show (IBS) in Orlando, Florida. This prestigious event brought together 28 universities from across the nation, challenging student teams to solve a real-world residential construction management problem.



The 2026 competition site was a 93.32-acre parcel on Oleander Drive SW in Lilburn, Georgia, within the Atlanta Metropolitan Statistical Area. Zoned Open Space Conservation, the site gave students the challenge of balancing density with meaningful open space preservation. Tasked with transforming the property into a residential development, the Penn State team, competing under the name Centre Homes, produced a comprehensive proposal for Riverside Estates, a 188 lot, four phase production home community.

Their plan featured four distinct home models, ranging from 2,428 to 3,613 square feet, each designed to reflect the character of the surrounding Lilburn community while offering energy efficient construction

and thoughtful customization options. The site design incorporated walking trails, pickleball courts, a recreational center, and preserved natural areas along the Yellow River, with native, climate-adapted landscaping suited to the region.

Beyond design, the team conducted in-depth market research, financial modeling, risk assessment, and land development planning to create a well-rounded and competitive proposal. Under the base case scenario, the project was modeled to generate an unlevered internal rate of return of 25.19 percent, supported by phased absorption, lot specific pricing premiums, and disciplined cost control across a four-year build out running from March 2026 through June 2030. The presentation team included Paris Pavelchik, architectural engineering; Jaclyn Lewis, architectural engineering; Paul Sussex, civil engineering; William Leety, civil engineering; Kohshin Noma, architectural engineering; Samara Cornejo, electrical engineering; and Ehlauna Penn, architectural engineering.

Looking ahead, the 2027 competition team is already digging into the new Problem Statement, which centers on a 24.24-acre property in Collin County, Texas, part of the fast-growing Dallas-Fort Worth Metroplex. The project comes with some interesting twists, and we're excited to see what the team comes up with. If you would like to help send this year's team to the competition, please consider supporting them through the 2026 Crowdfunding Campaign. Your contribution helps cover travel, registration, and other costs that make this hands-on experience possible for our students. Team travel support was generously provided by the National Housing Endowment IBS Travel Award, the University Park Allocation Committee, the Hankin Foundation, the PHRC, and the generous donors who contributed to the 2025 Crowdfunding Campaign.

Support Penn State's NAHB Student Chapter!

bit.ly/NAHBgive2026



Renovating Residential Pennsylvania

by Pam Shuman

As Pennsylvania's housing stock continues to age, residential renovations are increasingly focused on performance, durability, and long-term value rather than aesthetics alone. More than 1.4 million housing units in the Commonwealth were built before 1940, and over 60 percent of homes were constructed before 1970, creating significant demand for modernization, preservation, and energy-efficiency improvements (Pennsylvania Department of Community and Economic Development [DCED], 2025; Spotlight PA, 2026).

Homeowners are responding to these challenges through increased investment in renovation projects. Pennsylvania ranked eighth in the nation for remodeling spending during the fourth quarter of 2025, with homeowners investing approximately \$7.7 billion in remodeling activity (Pennsylvania Association of Realtors [PAR], 2025). This trend reflects both the rising cost of housing and the desire to improve existing homes rather than relocate.

The need for renovation extends beyond maintaining older homes. Pennsylvania faces growing housing affordability and supply challenges. According to the Pennsylvania



Housing Finance Agency (PHFA, 2023), many households struggle with housing costs, while aging homes often require significant repairs and upgrades to remain safe, healthy, and energy efficient. State projections indicate Pennsylvania will need approximately 460,000 additional housing units by 2040 while also replacing an estimated 230,000 aging or deteriorating units (DCED, 2025). These projections highlight the importance of preserving and improving existing housing stock as part of a broader housing strategy.

Weatherization and energy-efficiency upgrades have become particularly important renovation priorities. Air sealing, insulation improvements, high-performance windows and doors, HVAC modernization, and building envelope enhancements can significantly improve comfort, reduce energy consumption, and extend the service life of older homes. These strategies are especially valuable in Pennsylvania's climate, where homes must withstand cold winters, moisture exposure, and repeated freeze-thaw cycles. Many homeowners are also incorporating resilience measures that improve durability and reduce future maintenance costs.

Preservation remains another critical consideration. Pennsylvania's historic farmhouses, row homes, and early twentieth-century neighborhoods contribute to the character of communities across the Commonwealth. Today's renovation professionals are increasingly challenged to balance historic preservation goals with modern building performance standards. When executed thoughtfully, preservation-focused renovations can maintain



architectural character while improving occupant comfort, durability, and energy efficiency.

Looking ahead, renovation will play a vital role in addressing Pennsylvania's housing needs. As homeowners, contractors, and communities seek solutions for aging housing stock, successful projects will increasingly integrate preservation, weatherization, energy efficiency, and high-performance building strategies. These approaches not only protect Pennsylvania's architectural heritage but also help ensure that the Commonwealth's homes remain safe, efficient, affordable, and resilient for future generations.

References

Pennsylvania Association of Realtors. (2025). *Pennsylvania ranked No. 8 for remodeling spending in Q4 2025*. <https://www.parealtors.org/blog/pennsylvania-ranked-no-8-for-remodeling-spending-q4-2025/>

Pennsylvania Department of Community and Economic Development. (2025). *Pennsylvania Housing Action Plan*. Commonwealth of Pennsylvania. <https://dced.pa.gov/housing-and-development/pennsylvania-housing-action-plan/>

Pennsylvania Housing Finance Agency. (2023). *Pennsylvania housing study*. https://www.phfa.org/forms/housing_study/2023/phfa2023report_final.pdf

Spotlight PA. (2026, January). *Pennsylvania's aging housing stock and future housing needs*. <https://www.spotlightpa.org/news/2026/01/pennsylvania-shapiro-housing-crisis-plan-housing/>

Amazing Builders. (n.d.). *Residential renovation project* [Photograph]. Amazing Builders. <https://amazingbuilderspa.com/gallery/>

Pennsylvania Department of Community and Economic Development. (2025). *Historic Pennsylvania housing and community development* [Photograph]. Pennsylvania Housing Action Plan. <https://dced.pa.gov/housing-and-development/pennsylvania-housing-action-plan/>

More Than Membership

Connecting Pennsylvania's Residential Construction Industry

If you work in Pennsylvania's residential construction industry, there is a good chance you have encountered the PHRC without realizing just how much the organization has to offer. Located at Penn State, with access to the University's resources and expertise, PHRC serves Pennsylvania's residential construction industry through education, training, and research.

Practical Information for the Industry

PHRC keeps the industry up to date on the latest building codes, energy efficiency requirements, and new products and construction methods. Members can receive an additional speaking engagement each year from the PHRC.

Connecting Industry and the Next Generation

PHRC's work also extends to the future of Pennsylvania's residential construction industry. Through its involvement with the Penn State NAHB student chapter, PHRC connects students with residential construction professionals and provides opportunities to gain practical experience, develop industry relationships, and compete in national competitions.

So, What Does Membership Mean?

PHRC Membership provides an opportunity for companies, associations, and individuals to be a part of bettering the residential construction industry in Pennsylvania.

The 2026 membership program includes Bronze, Silver, Gold, and Platinum levels, as well as membership opportunities for associations and individuals. Benefits vary by level and include conference registration discounts, recognition through PHRC communications, speaking and educational opportunities, sponsorship benefits, and support for student scholarships.

Membership supports PHRC's broader mission of providing education, information, resources, and connections to Pennsylvania's residential construction industry.

Be Part of the PHRC Community

We invite you to get involved with the PHRC. PHRC Membership is more than a list of benefits. It is an investment in education, industry resources, students, and the future of residential construction in Pennsylvania.

**Visit our website
today to learn more
about becoming
a PHRC member!**



2026–27 Webinar Schedule

Tune in every second Tuesday of the month, 1–2 p.m. ET, and occasionally on the last Thursday of the month, 11 a.m.–noon ET, for free webinars! Live webinars are approved for American Institute of Architects (AIA) learning units, International Code Council (ICC) contact hours or continuing education units (CEUs), Pennsylvania Department of Labor and Industry (L&I) contact hours, National Association of the Remodeling Industry (NARI) CEUs, and Pennsylvania professional development hours (PDHs) for licensed professional engineers in Pennsylvania and include a certificate for \$25. Past webinars are available to view on our website under Industry.

Beyond R-Values: Understanding Insulation and Fenestration Criteria Compliance Path in Pennsylvania

September 8 @ 1 p.m.

This webinar compares the two prescriptive compliance paths in the 2021 IRC for residential energy efficiency in Pennsylvania: the Insulation and Fenestration Criteria Path and the R-Value Alternative Path. Through practical calculation examples, participants will learn to determine assembly U-factors, evaluate fenestration requirements, and verify compliance with Table N1102.1.2 in Climate Zones 4 and 5.

Tight Homes, Fresh Air: Balancing Air Sealing and Whole-House Ventilation

September 24 @ 11 a.m.

As homes become tighter and more energy efficient, proper ventilation is essential to protecting occupant health and building durability. This webinar explains how air sealing and whole house mechanical ventilation systems work together to reduce indoor pollutants, manage moisture, limit mold risk, and support occupant well-being, while maintaining energy efficiency and code compliance.

Achieving Higher R-Values in Residential Construction

October 13 @ 1 p.m.

This webinar explores practical insulation strategies for new construction and renovation projects in Pennsylvania, focusing on improving thermal performance, reducing energy consumption, and enhancing occupant comfort. Attendees will examine the relationship between insulation, air sealing, and thermal bridging, and review cost effective approaches for upgrading older homes and optimizing building enclosure performance.

Beyond the Basement: Understanding Foundation Options for Modern Residential Construction

October 29 @ 11 a.m.

This course reviews traditional and emerging residential foundation systems, including full basements, conditioned crawlspaces, slab on grade construction, frost protected shallow foundations, and helical pile systems. Participants will weigh the advantages and disadvantages of each system and learn how foundation decisions affect structural safety, moisture management, and long-term building durability.

Finishing Concrete with Type IL Cement and SCMs

November 10 @ 1 p.m.

Concrete finishers are increasingly working with mixtures that use Type IL Portland limestone cement and supplementary cementitious materials such as slag cement and fly ash. This presentation explains how these mixtures may behave differently during placement, finishing, and curing, and offers guidance on timing, planning, and field practices for successful results in all weather conditions.

Window Replacement and Code Compliance in Residential Remodeling

December 8 @ 1 p.m.

This webinar examines how the 2021 International Residential Code applies to window replacement in existing Pennsylvania homes, covering common exemptions, safety glazing, emergency escape requirements, and energy performance considerations. Participants will gain practical strategies for achieving code compliant, durable, and weather-resistant window replacements in residential remodeling projects.



Approved
Continuing
Education



*Register for upcoming
webinars, or view past
webinars on our website*



bit.ly/PHRCWebinars

Radon Risks in Pennsylvania, Testing Methods, and Mitigation Strategies

January 12 @ 1 p.m.

Pennsylvania has some of the highest predicted radon levels in the nation, making radon awareness an important consideration for residential construction, renovation, and occupancy. This webinar covers radon science, health risks, testing methods, and Pennsylvania specific concerns, along with construction and mitigation strategies that reduce indoor radon concentrations.

Considerations for Success in the Residential Native Landscape: Legibility, Wildlife, & Maintenance

February 9 @ 1 p.m.

Learn how to create or restore existing landscape design for residential applications that will thrive in Pennsylvania. The session will address site conditions including climate, light, and soil. Attendees will understand how design decisions impact long-term maintenance and aesthetics of landscape design.

The Oversizing Problem: Right-Sizing HVAC for High-Performance Homes

March 25 @ 11 a.m.

Modern energy codes change the load calculation, not just R-values. This webinar will show how airtightness, insulation, and other energy-efficiency requirements affect heating and cooling loads and why traditional rule-of-thumb sizing methods produce oversized equipment in these homes. The session will walk through how to size HVAC systems that actually match the house—and what that gets you: better comfort, lower energy use, and equipment that runs the way it was designed to.

Residential Renovation Strategies in Pennsylvania: Codes, Compliance, and Building Performance

April 13 @ 1 p.m.

This webinar provides a practical overview of residential renovation strategies in Pennsylvania, focusing on the Uniform Construction Code, permit requirements, and coordination with local code officials for older homes. Attendees will also explore weatherization and building performance improvements, including air sealing, insulation upgrades, HVAC enhancements, and moisture management.

Managing Indoor Humidity for Improved Indoor Environmental Quality

April 29 @ 11 a.m.

Humidity plays a critical role in indoor environmental quality, influencing occupant comfort, health, durability, and building performance. This webinar examines common sources of residential moisture and explores practical design, construction, and operational strategies for managing indoor humidity to reduce condensation, mold growth, and material degradation.

Daylighting in Residential Design

May 11 @ 1 p.m.

Daylighting is the control of natural light in a space to reduce the use of artificial lighting and save energy, while supporting occupant comfort and well-being. This webinar covers how climate, site conditions, and home design affect daylighting potential in Pennsylvania, and how to balance natural light with heat gain and loss, seasonal variation, and glare control.

High-Performance Homes That Don't Break the Budget

by Darrin Wright

Homebuyers are looking for more than nice finishes and an attractive floor plan as they seek comfort, energy efficiency, durability, and affordability. How can we deliver those desires without making homes unaffordable? Let's look at air sealing, framing, insulation, and mechanical systems.

Start with the building envelope—the walls, roof, foundation, windows, and exterior doors—is one of the most important parts of a high-performance home. A better envelope reduces heating and



cooling loads, but it can also make a noticeable difference in comfort and durability.

Start with air sealing to improve home performance. Locate the air barrier of the home and understand its role in the building enclosure.

Every house has penetrations for plumbing, electrical wiring, ductwork, exhaust fans, windows, doors, and dozens of other components. Individually, the gaps around these penetrations may not look like much, but together they can add up to a significant amount of air leakage. It is easier to deal with these areas during construction than after the house is finished. Have a plan for where the air barrier is going to be and make sure all subcontractors understand it. A little coordination during construction can prevent a lot of problems later.

Next, look at the house's framing, as more lumber does not always equal a better building. In some cases, wood is placed in places where it isn't needed, which costs money and leaves less room for insulation. Advanced framing doesn't have to completely change the way crews frame a house. It can be as simple as using two-stud corners, ladder blocking at interior wall intersections, properly sizing headers, or looking for other places where unnecessary framing can be eliminated. Start with a few details and build from there.

Before spending money on more insulation, make sure the insulation already going into the house is doing its job. The R-value printed on the package assumes the insulation is installed correctly. Gaps, compression, voids, and poorly fitted insulation around wiring, plumbing, and electrical boxes can all reduce its actual performance. Good workmanship can improve performance without adding much material cost. For builders looking to take the next step, exterior continuous insulation and other wall assemblies can also reduce thermal bridging through the framing. Whatever system is used, create a continuous thermal boundary and make sure it works together with the air barrier.

As the building envelope improves, the heating and cooling requirements of the house change. A well-insulated, tighter home should require less heating and cooling than a similar home, which is less insulated and leaky. That means it is important to size HVAC equipment based on the actual loads of the house instead of relying on rules of thumb or simply installing the same size equipment used on previous projects. Properly sized HVAC equipment can provide better comfort and humidity control and may also reduce both equipment and operating costs. Additionally, ventilation becomes increasingly important as homes get tighter. The goal is to control where the air comes from and how it moves through the home rather than relying on random leakage through the building envelope.

High-performance construction is about getting more out of the materials and systems that are already going into the home. Better planning, details, and installation can go a long way toward delivering homes that are more comfortable, efficient, durable, and resilient without breaking the budget.

Thank you to our 2026 PHRC Members!

Platinum



Hankin Group

Gold



Berks Homes

Bronze

Code.sys Code Consulting, Inc.
Energy Code Diagnostics, LLC
Lezzer Lumber
MRD Lumber Company
Parry Custom Homes
Sukonik Building Companies
UpStreet Architects, Inc.

Association

Blair-Bedford Builders Association
BIA of Lancaster
BIA of Philadelphia
Builders Association of Central PA
Carbon Builders Association
Central Keystone COG
Central Susquehanna Builders Association
HBA of Bucks & Montgomery Counties
HBA of Chester & Delaware Counties
Indiana Armstrong Builders Association
Lehigh Valley Association
Pocono Builders Association
Wayne Pike BIA
West Branch Susquehanna Builders Association
York Builders Association

Silver



Comfort Specialists

Individual

Joanna Beres
Christine Brill
Neal Diehl
Steve Fleming
Jim Franey
Richard Hankin
Dean Hilliard
Gary Lenker
Max Pedergrana
Todd Smeigh
David Stubbs



Pennsylvania Building Association (PBA)



Pennsylvania Concrete Masonry Association (PCMA)



Pennsylvania Manufactured Housing Association (PMHA)



S&A Homes



2026 Hankin Distinguished Lecture

Todd Usher,
Addison Homes

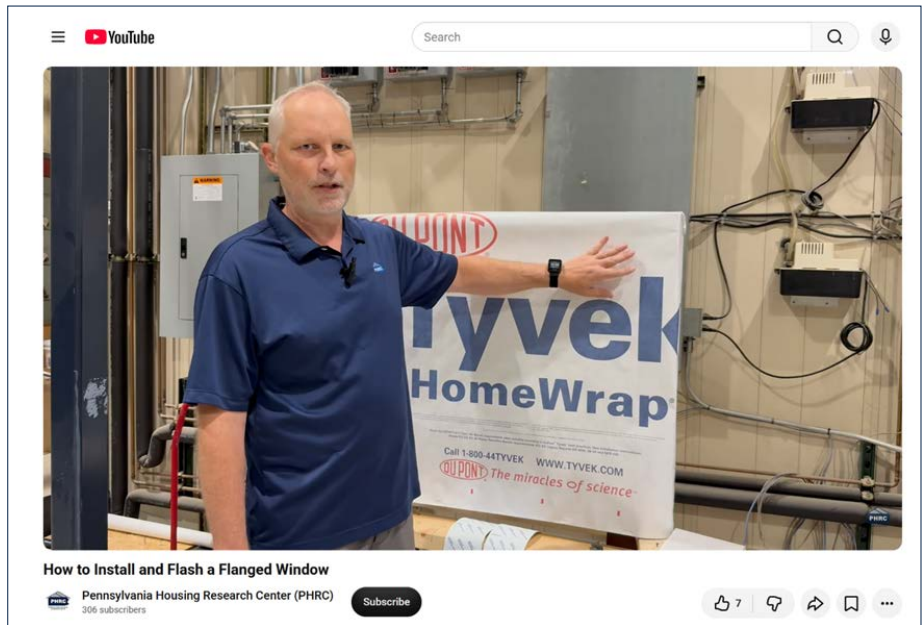
“Building Better, Doing Better—a Model for Client Delight”

Nov. 11 at 4 p.m. EST
Robb Hall, Hintz Family Alumni Center

Just Press Play!

Have you subscribed to PHRC's YouTube channel? Don't miss out on new content that includes:

- **Toolbox Tips:** Short, focused videos covering specific code provisions and essential details.
- **Full Webinars:** Watch our complete recorded webinars in one convenient place.
- **Promotional Videos:** Stay up-to-date with the latest PHRC updates and industry news.



You can find us by searching @PHRCPennState or simply scan the QR code to dive right in!



Pennsylvania Housing Research Center
The Pennsylvania State University
116 Lidia Manson Building
3127 Research Drive
State College, PA 16801
814-865-2341
phrc@psu.edu
PHRC.psu.edu

@PHRCPennState



The PHRC collaboratively engages with the residential construction industry to catalyze advancements in homebuilding through education, training, innovation, research, and dissemination. The PHRC envisions a residential construction industry equipped with the knowledge, skills, and technology to build better homes.

Director: **Ali Memari**

Associate Director: **Chris Hine**

High-Performance Housing Specialist: **Darrin Wright**

Housing Affordability Specialist: **Rachel Fawcett**

Administrative Assistant: **Danielle Nattermann**

Financial & Communications Coordinator: **Mindy Boffemmyer**