PHRC

The Pennsylvania Housing Research Center

PHRC Year in Review
July 2009 – June 2010

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July 2010

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1. Introduction

The purpose of this document is to provide a summary of activities the Pennsylvania Housing Research Center has pursued and products that have been delivered between July 1, 2009 and June 30, 2010. Additionally, the document is intended to provide the reader an understanding of the amount and source of funds the PHRC has received during the reporting period.

Each year, the Pennsylvania Housing Research Center (PHRC) seeks to conduct a series of projects that collectively satisfy the following criteria. Projects should:

- meet the needs of the residential construction industry and the housing consumer in Pennsylvania;
- be consistent with the mission and goals of the PHRC;
- be affordable and feasible, given the resources available and the prevailing constraints on time, expertise and facilities; and
- be a balanced program of projects that address both the long- and the short-term needs of all segments of the industry.

The projects undertaken were developed with input and assistance from the PHRC's Industry Advisory Council (IAC) and the Operations Committee. These bodies consist of manufacturers, suppliers, builders, remodelers, and industry associations as well as building code organizations and state agencies. After a thorough discourse at the spring IAC meeting, the members of the IAC voted on projects they felt were the highest priority for the industry.

The result of this input was the "*PHRC Project Plan, July 2009 – June 2010*" which outlined projects that the PHRC would undertake during this time period. The plan included only those projects that were to receive funds provided to the PHRC by the Commonwealth of Pennsylvania. In most cases, we have attempted to use state funding to leverage outside support; in other cases the work is considered important enough to warrant full state support. It should also be recognized that the PHRC undertook a wide array of additional projects that did not receive any state funds. Those projects are included in this report but are identified as having no support from the Commonwealth of Pennsylvania.

The PHRC receives funds from multiple sources including funds collected under Act 157 of 2006 which established a two dollar fee collected for each building permit to support the activities at the PHRC. To assure that programs funded in whole or part with Act 157 monies meet the needs of the construction industry, Act 157 requires that education, training and other activities provided by the PHRC be approved by its industry advisory committee.

Please note that with the collection of monies under Act 157 of 2006, there is not an accurate estimate of the exact amounts of funding available during this period. Because of this, this plan is somewhat conservative in that it only considers funds on hand. Any remaining funds will be carried over for future projects. If there is less funding collected than expected, the project plan will need to be abridged. We plan to continue with our previous initiatives in the areas of training and education, modular housing, manufactured housing, and applied research.

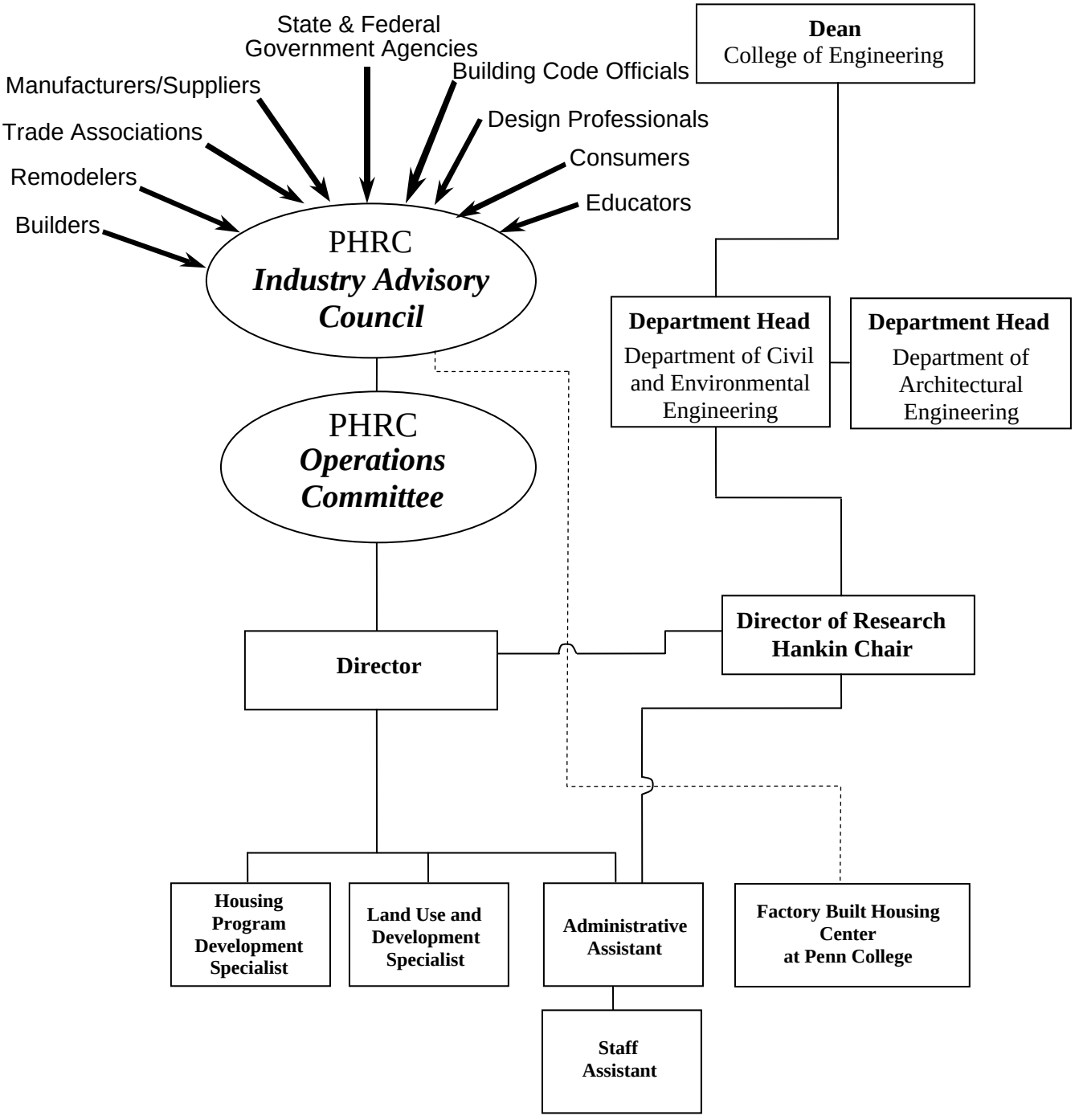


Figure 1: PHRC Organizational Chart

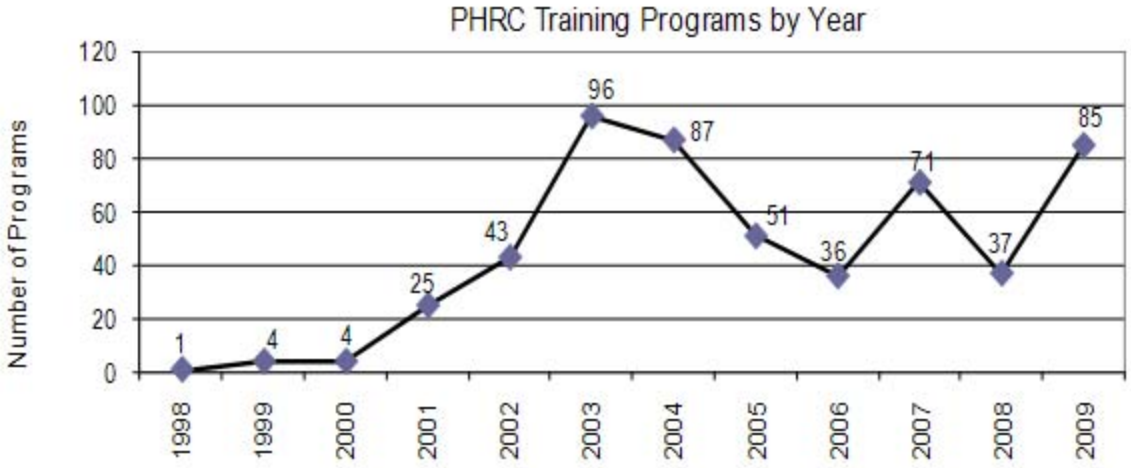
2. Training, Education and Outreach Activities

The PHRC offers a wide array of activities to educate and transfer appropriate technologies to the construction industry. Counting the training and less formal speaker service and presentations at conferences, the PHRC has provided educational services to over 3,451 individuals during this reporting period.

Workshops and Training – The PHRC delivered 85 technical workshops to 3,534 builders, remodelers, educators, code officials design professionals and planners during this reporting period (please see Table 1 below for detail).

Table 1: PHRC Training Programs Held July 1, 2009 – June 30, 2010

PHRC Training Programs Delivered			
PROGRAM		**Activities for 2009-2010**	
		# of Programs	# of Attendees
Blueprint Reading Program	BP1	1	3
Comprehensive IRC Program	CO1	2	26
International Residential Code Inspection Essentials	CO2	2	52
IRC's Plumbing Requirements	CO3	2	33
IRC's Mechanical Requirements	CO4	2	20
Commercial Building Provisions of the IECC	CO5C	2	45
Residential Energy Essentials	CO5R	2	25
2006 IRC Update Program	CO6	40	1,476
Custom Programs	CP	8	420
Residential Deck	D1	2	72
Electrical Essentials Academy	EE1	2	27
Mechanical Compliance Program	MC2	2	38
Two Family Dwellings and Multi-Family Housing	MF1	4	123
Residential Sprinkler	SP1	1	11
Wall Bracing Program	WB1	3	26
Webinars	W1	10	1,137
Total Programs Held		**85**	**3,534**



The following is a description of new programs that were developed or held during this reporting period:

Training, Technical Assistance & Outreach: The PHRC has a mandate to transfer knowledge by providing the necessary training and education to the wide variety of groups that make up the housing industry. The projects that are described below are in response to the recommendations that flow out of the PHRC's Industry Advisory Council and reflect the current needs within the housing industry.

PHRC Training Provided Through Industry Partnerships

Description: The PHRC has developed and maintains a wide array of training for all sectors of the construction industry with a focus on residential construction. These programs are intended to address technical issues facing the industry. Additionally the PHRC will customize programs to better meet a need of an industry partner. Each program is developed with a particular audience which may include builders, remodelers, trade contractors, design professionals, teachers, building code officials, etc.

These programs are intended to be offered through our industry partners, which may include trade associations such as the Pennsylvania Builders Association or their 42 local associations, professional associations, building code associations, as well as the Pennsylvania Construction Code Academy (PCCA).

General Audience Programs

1.	**International Residential Code Essentials**	**2 day**
2.	**International Residential Code Inspection Essentials**	**2 day**
3.	**IRC Plumbing Essentials**	**2 day**
4.	**IRC Mechanical Essentials**	**2 day**
5.	**Pennsylvania's New Energy Requirements for Code Officials**	**1 day**
6.	**Commercial Energy Provisions (IECC)**	**2 day**
7.	**Residential Energy Essentials**	**2 day**
8.	**IRC 2009 Update Program**	**1 day**
9.	**Electrical Essentials Academy**	**4 day**
10.	**Residential Deck Design Construction and Inspection**	**1 day**
11.	**Design and Construction of Wood Frame Buildings**	**2 day**

12.	**Two Family Dwellings and Multi-Family Housing**	**1 day**
13.	**Mechanical Compliance Program**	**1 day**
14.	**Blueprint Reading Program**	**1 day**
15.	**Residential Sprinkler**	**2 day**
16.	**2009 Wall Bracing**	**2 day**

New Program Development

Description: The PHRC developed the following new training programs. These programs address issues challenging the residential construction industry (builders, remodelers, building code officials, materials suppliers, etc.) During this period the following programs were developed:

1. **Residential Mechanical Plan Reviews and Inspections** – The need for this program is two-fold. The first is the need of new building code officials to have more in-depth knowledge of mechanical systems since, many of them come into code enforcement from other areas of the construction industry and are not familiar with mechanical requirements and proper installation issues. Additionally, a recent DOE funded study conducted by the PHRC found generally poor performing HVAC systems across the Commonwealth. This was generally attributed to poorly constructed ducts. This program provided new and experienced building code officials the background they need to effectively administer and enforce the mechanical requirements in the IRC.

2. **Multi-Family Program** – There are specific requirements for multi-family structures built under the IRC that require special attention by the building code official. The program highlights such issues as fire separation requirements and accessibility. This program focused on effective plan review and inspection practices and provided an understanding of fire-rated assemblies.

3. **IRC Update Program** - Every three years the UCC updates its building code to the most recent version of the ICC's International Residential Code (IRC). This program highlighted the most significant changes between the 2006 and 2009 IRC, and identified potential impacts to builders, designers and building code officials.

Builder Briefs

Description: Continuation of the series of short technical documents - two to four pages in length - that address specific issues that have been identified by builders or remodelers. These documents are intended to be quick to read with much information presented graphically or pictorially. The following research brief was written during this period: Insulated Concrete Masonry Below-grade Walls, RB0109.

18th Annual PA Housing and Land Development Conference – For the past 18 years, the conference has served as a forum to discuss and resolve challenges facing the various sectors of the residential construction industry. This year it was held February 10 and 11, 2010 in Cranberry, PA. The first day of

the conference focused on technical issues related to the delivery of houses and the latest information on emerging technologies and how to resolve problems facing the industry. It was attended by 119 individuals. Some of the topics included:

- 2009 IRC Code Changes
- Improving Energy Performance of Existing Homes
- Window Technology – Separating Reality from Sales Myths
- Changes in IRC 2009 Wall Bracing Requirements
- Green Building Case Studies—What's Worked and What Hasn't
- Residential Decks
- Residential Sprinklers
- On-site Energy Generation
- Residential Lighting
- IRC Duct Testing

The second day was changed to a training day. These programs were attended by 120 people. Because of the winter storm the previous day, there were an additional 16 attendees who cancelled or did not show for the conference. The following training programs were offered:

- Designing and Inspecting Residential Sprinklers – full day
- Residential Mechanical Performance – improving system compliance and code compliance – full day
- Improving the Energy Efficiency of Existing Houses – ½ day
- Modular Construction – successful transition from the factory to occupancy

Webinars – The PHRC's Industry Advisory Council has requested the development and deployment of web-based training. There is a need for technical programs with a lower cost delivery mechanism than a formal classroom setting. This initiative is intended to develop interactive web-based training that can be available live and archived for future viewing. These programs are scheduled on the second Tuesday of every month. During this reporting period, ten programs were held:

- Conte, M. – *Factory-Built Structures – Part I, Manufactured Housing* – July 14, 2009 (~83 attendees)
- Conte, M. – *Factory-Built Structures - Part 2, Industrialized/Modular Housing* – August 11, 2009 (~70 attendees)
- Turns, M. – *Verification Required – Duct Leakage Testing Requirements for the 2009 IRC*
- Conte, M. – *Emerging Regulation of Commercial Modular Construction* - October 20, 2009 (~28 attendees)
- Fortney, M. – *Building a Durable No Step Entrance* - November 5, 2009 (~70 attendees)
- Fortney, M. – *Building Habitable Attics and Five Floor Buildings Under the IRC* - December 15, 2009 (~76 attendees)
- Fortney, M. – *Changes in IRC 2009 Wall Bracing* - January 12, 2010 (~273 attendees)
- Turns, M. – *Performing Air Tightness Testing* – March 4, 2010 (~201 attendees)
- Lau, A. – *Zero Energy Houses in PA – A Technical Review* – April 13, 2010 (~122 attendees)

Speaker Service – As a service to the home building and remodeling industry in Pennsylvania, the PHRC offers a speaker service to local and regional associations. This service is provided at no charge to the local builders associations and other interested groups. The PHRC offers short (20 to 45 minute)

sessions, often technical, that address some of the issues or problems that builders and remodelers may be facing. Since July, the following presentations have been made by the PHRC:

- Turns, M., S*timulus for the rest of us – Over view of energy tax incentives*, Gettysburg, PA, July 24, 2009 (~ 45 attendees)
- Turns, M., *IRC Update: Sneak Peek*, York County Builders Association, York, PA, September 21, 2009 (~ 40 attendees)
- Turns, M., AE470: *Energy Efficient House Design and Construction*, October 12, 2009 (20 people)
- Turns, M., AE470, Demonstration of blower door, duct blaster and IR camera, November 20, 2009 (20 people)
- Fortney, M., *Improving the energy efficiency of your house*, Johnstown, PA, November 30, 2009 (30 attendees)
- Turns, M., *IRC Transition Sneak Peak*, Huntingdon County BA, January 7, 2010 (40 people)
- Turns, M., *Tax Credits and Other Energy Incentives for Consumers*, Central PA Home Show, March 13, 2010 (10 people)
- Turns, M., *IRC Transition Sneak Peak*, Mill Hall, PA, April 12, 2010 (~ 20 People)

Conference Presentations:

- Kasal, B., *Modeling of composite layered laminated arches*. International Conference Computational Modeling and Advanced Simulations, Jun 30 – July 3, 2009 Bratislava, Slovak Republic
- Turns, M., *Performance Testing Requirements in the 2009 IRC*, PCCA Symposium, Concordville, PA, February 17, 2010
- Fortney, M., *Habitable Attics and Bonus Rooms*, PCCA Symposium, Concordville, PA, February 17, 2010
- Fortney, M., *Ledger Attachment and Flashing*, PCCA Symposium, Concordville, PA, February 17, 2010
- Fortney, M., *Continuous Studs and the 2009 IRC*, PCCA Symposium, Concordville, PA, February 17, 2010
- Fortney, M., *Implementing the 2009 IECC*, Affordable Comfort Conference NJ, Atlantic City, NJ, March, 4, 2010
- Kasal, B., *Wall Bracing*, PCCA Symposium, Concordville, PA, February 17, 2010

Web Site – The PHRC maintains a web site (www.engr.psu.edu/phrc) to help disseminate information. An executive summary from each of the reports as well as builder, research and technical briefs are available on-line.

Pennsylvania Focus Committees:

- Pennsylvania Builders Association (PBA)—(Training and Education Committee, Land Development Task Force, Housing Finance Committee, and PHRC Committee)
- Advisory Council for the Modular Housing Training Institute (MHTI)
- Advisory Council for the Manufactured Housing Resource Center (MHRC)
- Builder Association of Central Pennsylvania
- Pennsylvania Concrete Masonry Association, Codes Committee

National and International Focus Committees:

- National Consortium of Housing Research Centers
- RILEM, Technical Committee TC 215 AST Chair
- National Institute for Building Sciences (NIBS)
- International Council for Research and Innovation in Building and Construction – Working Commission W-18 – Timber Structures
- Affordable Comfort Incorporated, 2010 Conference Planning Committee & Track Leader
- International Scientific Committee for the International Conference on Structural Health Assessment of Timber Structures - SHATIS'11, Lisbon, Portugal
- Editorial Board Wood Science Journal
- Editorial Advisory Committee, Materials and Structures
- Guest-Editor, Journal of Architectural Engineering – Housing Issue

3. Publications

The PHRC produces a wide array of publications to provide technical information to the construction industry and to disseminate results of research projects.

Standards:

Fortney, M., *2009 PA Alternative Residential Energy Provisions,* September 2009.

Reports:

Wolfgang, B. *Hygro-Thermal Performance of Imperfectly Protected Below-Grade Walls with Interior Insulation*. Report to Dow Building Solutions, December 2009.

Builder Briefs:

Kasal, B., Repka, N., *Insulated Concrete Masonry Below-grade Walls,* RB0109, August 2009.

Research Papers:

Research publications not only disseminate the technical information to the public but increase the state, national and international reputation of the PHRC. As such, they are an important component of our mission.

Horvath, B., I. Peszlen, P. Peralta, B. Kasal, and L. Li. 2010. *Mechanical properties of young genetically engineered Aspen with modified lignin content and/or structure*. Wood and Fiber Science. In print.

Horvath, B., I. Peszlen, P. Peralta, B. Kasal, and L. Li. 2010. *Effect of lignin genetic modification on wood anatomy of aspen trees*. IAWA Journal, Vol. 31 (1), 2010: 29–38.

Kasal, B. (Editor). 2009. *State-of-the-art in in-situ assessment of timber*. RILEM TC AST 215 Special Publication. Springer Verlag/RILEM Paris (in print).

Memari, A. M., Kasal, B., Manbeck, H. B., and Adams, A. R., 2009. *Lateral Load Resistance Evaluation of Wood and Steel Stud Partition Shear Walls.* ASCE Journal of Architectural Engineering, Vol. 15, No. 4, December 2009, pp. 122-130.

Heiduschke, A., B. Kasal, and P. Haller. 2009. *Shake table tests of small- and full-scale laminated timber frames with moment connections.* Bulletin of Earthquake Engineering. Springer Verlag. Vol 7. No 1.: 323-339.

Kasal, R.W. Anthony. 2009. *Semi-destructive techniques for in-situ evaluation of historic wood structures.* In B. Kasal, R. Anthony, and M. Drdacky (editors). 2009. RILEM/NSF International Engineering Research and Education Workshop "In-situ Evaluation of Masonry and Wood Historic Structures: Challenges and Opportunities". RILEM Publications SARL, Paris. Pro062. e-ISBN: 978-2-35158-068-4.: 57-65.

Kasal, R.W. Anthony. 2009. *Education in engineering evaluation and rehabilitation of historic structures.* B. Kasal, R. Anthony, and M. Drdacky (editors). 2009. RILEM/NSF International Engineering Research and Education Workshop "In-situ Evaluation of Masonry and Wood Historic Structures: Challenges and Opportunities". RILEM Publications SARL, Paris. Pro062. e-ISBN: 978-2-35158-068-4.: 3 – 7.

Kasal, R. Anthony, and M. Drdacky (editors). 2009. RILEM/NSF International Engineering Research and Education Workshop "In-situ Evaluation of Masonry and Wood Historic Structures: Challenges and Opportunities". RILEM Publications SARL, Paris. Pro062. e-ISBN: 978-2-35158-068-4. 130 p.

Blass, R., and B. Kasal. 2009. *Modeling of composite layered laminated arches*. In Proceedings from Computational Modeling and Advanced Simulations, Jun 30 – July 3, 2009 Bratislava, Slovak Republic. (CD Publication).

Kasal, B. 2009. *Local reinforcement of wood with composite materials*. Czech Technical University, Prague. 30p. ISBN 978-80-01-04275-5.

Fischer, C., and B. Kasal. 2009. *Analysis of light-frame, low-rise buildings under simulated lateral wind loads.* Wind and Structures, Vol. 12, No. 2.

4. Research Activities

Guidelines for Efficient Basement Insulation – This project was built from two previous projects conducted by the PHRC involving sophisticated testing of the performance of basement wall systems. This project synthesized the results of previous work to develop simplified guidelines for energy-efficient and healthy basement insulation based on the latest knowledge. Typical basement insulation details have been developed and their positive and negative attributes assessed. The target audience for this document is builders, design professionals as well as building code officials.

REPORT: Experiments were conducted testing several interior insulation strategies comparing permeable and non-permeable insulations under basement-like conditions. Available materials and publications regarding basement insulation systems were collected and studied.

A series of three Builder Briefs were developed that synthesizes previous research findings as well as current literature. The Builder Brief series covers fundamentals of below-grade building physics, relevant material properties of common components of basement wall systems, as well as a presentation of typical basement wall system configurations. The final brief will include comparisons between typical wall systems, including a discussion with regard to cost and risk implications associated with each system.

The Guidelines for Efficient Basement Insulation are expected to be completed by the end of August 2010.

Land Development

The land development process is a key component of providing affordable homes; however, there is no single group looking at land development practices in Pennsylvania. These initiatives are part of the PHRC's long-term effort to provide technical input and guidance and leadership to these issues. The following program and tasks have been identified by builders and the PHRC Operations Committee as a high priority project for Pennsylvania's home building industry. It should be noted that the Land Development Specialist position at the PHRC is currently vacant. Once this position is filled additional activities will be included as contingency projects. The following tasks will be undertaken:

Pennsylvania Standards for Residential Site Development – The residential development standards project was finalized in April 2007. These are a set of consensus standards that allow for the most up-to-date design innovations and provide flexibility needed for sustainable land development. The initiatives that will be undertaken will increase the awareness of the standards and encourage the adoption by municipalities within the Commonwealth.

REPORT: The PHRC has been distributing the standards electronically and via CD.

Applied Projects

These groups of projects are application oriented and have a direct need by the residential construction industry. This includes the development and support of standards, and longer term initiatives.

Impacts of the Uniform Construction Code – This project, partially funded by the Center for Rural Pennsylvania, sought to provide a clearer picture of the enforcement methods used by Pennsylvania municipalities and associated costs. This included a determination of which municipalities are enforcing the UCC and how they are enforcing it. An analysis of building permit fees was performed to determine the average and range of building permit fees, as well as differences in fees between rural and urban municipalities.

REPORT: The PHRC implemented a survey to assess many of the above goals, and garnered over 1,400 responses representing 60% of opt-in municipalities. The final report was written and submitted to the Center for Rural Pennsylvania on April 3rd. It will be reviewed by their board at their June meeting, and published soon thereafter. Some key findings include the following items. Enforcement by 3rd-party agencies is the dominant method, more so in rural than urban municipalities. There was a wide range and high level of variability in the board of appeals and UCC fee data. There were no consistent trends that would lead to the conclusion that one enforcement method results in lower costs than another. UCC fees were significantly (22-37%) higher in urban municipalities than in rural. There was significant disagreement between what municipalities reported and what L&I records indicated regarding the presence of amendments to the UCC. Over 20 percent of rural, and over 50 percent of urban municipalities, claim to enforce an amendment to the UCC. Urban municipalities have a higher prevalence of amendments. DCED cooperation with the U.S. Census Bureau has filled in the gaps in the Census building permit data in Pennsylvania. DCED permits are about 10 percent higher than Census estimates. Overall, municipal ISO ratings have improved dramatically since the implementation of the UCC; however, the impact on homeowner's insurance premiums is probably not large.

For more information contact Mike Turns at 814-863-0623 or miketurns@psu.edu.

MHTI & MHRC Support – Two programs focusing on training for the factory-built housing industries have been developed. The first is the Modular Housing Training Institute (MHTI) and the second is the Manufactured Housing Resource Center (MHRC). The MHTI program currently provides a two-day training program that focuses on the on-site completion of modular houses. The program is intended for builders, installation crews, code officials, as well as industry representatives. The MHRC currently provides training for the on-site completion of manufactured or HUD Code housing. The program is intended for retailers, installers, manufacturers, as well as building code officials. In recognition of the importance of factory-built housing to PA, a Ben Franklin award has been made to enable employment of a full-time Director of MHTI and MHRC.

REPORT: No activity during this reporting period due to organization losing funding.

Support of Standards – The PHRC has developed three standards to respond to industry demand. These include Pennsylvania's Alternative Residential Energy Provisions, Pennsylvania Standards for Residential Site Development Standards and Foundation Systems for Relocated Manufactured Housing. Each of these standards requires training and timely technical assistance for local governments, builders/developers, design professionals, contractors, etc. All of these standards are available electronically for free and hard copies are available for a fee.

1. Pennsylvania's Alternative Residential Energy Provisions - 2009: Education was provided through various building code training programs and technical assistance will be provided through telephone and email support by the PHRC.
2. Pennsylvania Standards for Residential Site Development Standards: Please see the Land Development section.
3. Foundation Systems for Relocated Manufactured Housing: The PHRC delivered a one-hour training program for building code officials and contractors. This is posted on the PHRC's web site for open viewing.

Analysis of Zero Energy Homes – Technical, Constructability, and Public Policy Challenges – Politicians are paying increasing attention to issues of global warming, rising fuel prices, and our country's dependence on foreign oil, making the possibility of far-reaching energy legislation in the near future very real. If deep cuts in energy consumption were mandated, how would home builders respond? With economic feasibility in mind, this project would look at how far modified designs and off-the-shelf technologies could take a home in cloudy Pennsylvania toward the goal of producing as much energy as it consumes. Cost mitigating factors and relevant policy issues will also be discussed in this research report.

REPORT: This project resulted in a presentation of the findings at the PA Housing Conference, as well as a webinar. Both of these are available for viewing at the PHRC web site.

Development of the 2009 Alternative Residential Energy Provisions – In November 1999, the Pennsylvania Legislature passed ACT 45, known as the Uniform Construction Code (UCC), into law mandating a statewide building code across Pennsylvania. Act 45 requires the Pennsylvania Department of Labor and Industry (DLI) to promulgate regulations to implement the requirements of the legislation and, in addition, to consider the development of alternative prescriptive methods for energy conservation that account for the various climatic regions within the Commonwealth. In deriving these energy standards, the DLI was to seek to balance energy savings with initial construction costs.

The PHRC developed the *Pennsylvania Alternative Residential Energy Provisions* (PA-Alt) for consideration by DLI to meet their legislated mandate. 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 International Energy Conservation Code (IECC).

The initial version of the PA-Alt was developed in 2000 and was based on the 2000 IECC and IRC. The second version was updated to the 2003 IECC. The third iteration of the PA-Alt is equivalent to the 2006 IECC.

REPORT: The PHRC updated this document to be aligned with the new 2009 International Energy Conservation Code (IECC). A Steering Committee composed of builders and code officials met via

conference call to provide input on problematic aspects of the 2009 IECC that should be addressed through the 2009 PA-Alt. A detailed computer analysis was conducted to document equivalence of the code and evaluate potential tradeoffs.

The 2009 PA–Alt was posted on the PHRC web site in mid-September and hard copies have been printed. Additionally a compliance worksheet was developed and posted the PHRC web site.

5. Funding

The PHRC receives funding from diverse sources including contracts, grants, membership fees, fees for services as well as funds collected under Act 157 of 2006. The grants and contracts include: the Pennsylvania Department of Community and Economic Development; U.S. Department of Energy through the Pennsylvania Department of Environmental Protection; the U.S. Department of Agriculture in partnership with North Carolina State University; and, DOW Chemical Company. Additional contributions were made by the Pennsylvania State University through a variety of sources including the Hankin Endowment and in-kind support.

During this reporting period total project costs were $370,336.98 (Figure 2). Act 157 Construction Training Account accounted for 50% of these funds, other grants and contracts accounted for 5%, other projects not part of Act 157 matching funds accounted for 28%, and income from fees and services accounted for 17%.

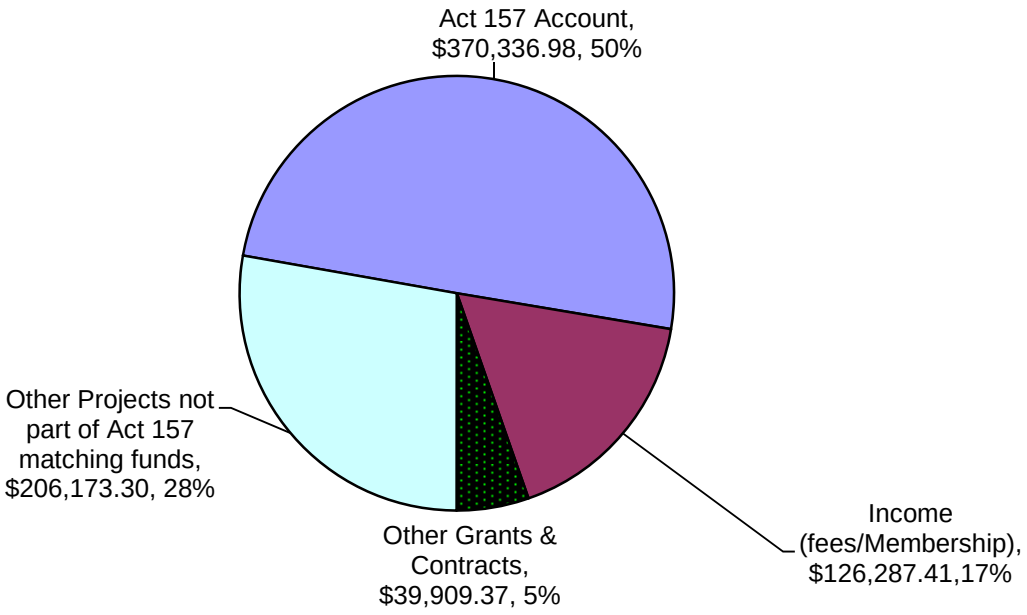


Figure 2: Summary of Funding
July 1, 2009 through June 30, 2010

The funds collected under Act 157 of 2006 stem from a $2 fee collected for each building permit to support the activities at the PHRC. This legislation took effect in January 2007. As of July 1, 2009, the beginning of this reporting period, the PHRC received one payment of $76,503.05 in August 2009, $222,484.23 in February 2010, and $97,125.00 in May from the Department of Community and Economic Development.

Any remaining funds, and disbursements received during this period, will be used for activities in the next fiscal year.

The Act 157 Account incurred expenses of $370,336.98 during this reporting period. This is less than anticipated in the Project Plan for a variety of reasons. The salaries were reduced because the Land Development Specialist position was vacant for part of the reporting period. Additionally, the PHRC was able to shift fund initially anticipated to be incurred by Act 157 account to other funding sources

The *PHRC Project Plan July 2010 – June 2011* was developed with the remaining funds in the Act 157 Account as of June 30, 2010. This plan has anticipated expenditures of $400,818.

Table 2: PHRC Expenses July 1, 2009 through June 30, 2010

Category	ACT 157 Account	Leveraged Funding	Total Expenses
Total Salaries	$215,290.10	$135,979.72	$351,269.82
Fringe Benefits	$61,748.07	$29,452.72	$91,200.79
Supplies and Materials	$154.77	$9,468.34	$9,623.11
Communications Services	$1,588.92	$6,697.34	$8,286.26
Travel	$24,916.30	$72,846.36	$97,762.66
Publications	$659.76	$2,976.52	$3,636.28
Maintenance		$725.65	$725.65
Consulting & Prof Svc	$52,250.00	$30,932.25	$83,182.25
Copies and Photographic Services	$390.39	$21,939.35	$22,329.74
Scholarships			$0.00
Tuition and Fees	$13,160.00	$13,160.00	$26,320.00
Equipment		$2,088.44	$2,088.44
Purchased Services		$17,546.67	$17,546.67
Miscellaneous	$178.67	$26,741.76	$26,920.43
Indirect Costs (Overhead)		$1,814.96	$1,814.96
Total	$370,336.98	$372,370.08	**$742,707.06**

	Summary of Act 157 Funds			
		Expenses	**Deposits**	**Balance**
Fiscal Year 2009-10	Starting Balance FY 2009-10			**$413,594.34**
	Expenditures FY 2009-10	$370,336.98		**$43,257.36**
	August 2009		$76,503.05	**$119,760.41**
	October 2009		$93,036.50	**$212,796.91**
	January 2010		$129,447.73	**$342,244.64**
	May 2010		$97,125.00	**$439,369.64**
	Payment Due August (anticipated amount)		$76,868.89	**$516,238.53**
	Projected Expenditures FY 2010-11	$400,818.00		**$115,420.53**

6. Proposals

The PHRC continuously seeks to leverage funding from the Commonwealth with funds from other sources. The following is a list of proposals submitted during 2009-10.

Proposals Submitted:

- Center for Rural Pennsylvania – *Impact of the Uniform Construction Code in Rural Pennsylvania*
- National Science Foundation – *Seismic Tests of Reinforced Laminated Timber Frames*
- West Penn Power Sustainable Energy Fund – *Development of certification Training for Keystone Help Contractors*
- PA Department of Environmental Protection – *Implementing the 2009 IECC in Pennsylvania- Pre-proposal*
- U.S. Department of Energy – *Pilot program to investigate the challenges and opportunities for achieving and documenting 90 percent energy code compliance*
- U.S. Department of Agriculture (USDA) – *Property Evaluation of Genetically Engineered Wood from Aspen with Down-Regulated Lignin Enzymes-Mechanical Properties*
- National Housing Endowment, Homebuilding Education Leadership Program (HELP) – *Establish the Instructor-Practioner Position*
- DOW Chemical – *Life-Cycle Cost Assessment of Building Enclosure Systems with Respect to Hygrothermal and Wind Pressure Loads*