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The Pennsylvania Housing Research/Resource Center

# Projects for the 2004-2005 Fiscal Year

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## FY 2004/2005 Preface

Each year, the Pennsylvania Housing Research Center (PHRC) seeks to identify and prioritize a series of projects that collectively satisfy the following criteria:

- meet house builder needs and home building industry needs and the needs of 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 sections of the industry.

This PHRC work plan is the result of input and assistance from numerous individuals and groups. The PHRC Advisory Council and the Operations Committee, in particular, have responsibility for the final choice of topics. These housing industry-based bodies consist of manufacturers and suppliers, builders, remodelers and industry associations. Suggestions for projects and feedback have also been received from the Pennsylvania Builders Association's (PBA) Training and Education Committee, and individual builders and remodelers.

The list of projects that follows identifies only those 2004-2005 fiscal year projects that are to receive some degree of support from funds provided to the PHRC by the Commonwealth of Pennsylvania, Department of Community and Economic Development. The projects started July 1, 2004 and we anticipate them being completed on or before June 30, 2006. 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. A budget by project category is presented in Attachment 1. We plan to continue with our previous initiatives in the areas of training and education, modular housing, manufactured housing, and applied research.

We have tried to build into the program some flexibility with regard to the number and nature of projects and their funding. We are required to plan projects and allocate funds at the start of each fiscal year. However, there is a real need for the PHRC to be able to take on special projects during the year. These projects typically fall into two categories: the first includes short term and limited scope projects that are time sensitive while the second requires the ability to allocate some funds to leverage additional outside funds in response to request for proposals.

**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.

**Workshops**

**Description:** Every year the PHRC provide workshops for builders, remodelers, design professionals, educators and building code officials. These programs are held in partnership with local and regional design professional associations, building related associations or building code associations. Some of the topics that are being considered for this year's programs include the following:

- storm water management & modeling infiltration processes and practices
- design and construction of wood frame buildings (NDS)
- moisture control, and
- other Building Science related issues.

**Manager/PI:** Fortney/Brown/Burnett

**Deliverable:** The PHRC will develop and deliver at least two technical workshops to be held in various locations across the state.

**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 are topics that are being considered:

- Crawlspace Insulation Strategies
- Infiltration Processes and Practices
- Overview of Land Development Regulation

**Manager/PI:** Fortney, Burnett, Brown, Sagan

**Deliverable:** At least one builder brief will be researched, written, printed and distributed

**Building Code Training**

**Description:** The passage of the Uniform Construction Code (Act 45 of 1999) created, for the first time, a statewide building code for Pennsylvania. This act has been implemented. It will cause the single biggest change for the construction industry in Pennsylvania. For areas of the state that have never had an enforced building code, now there is one. For areas with an enforced building code, the new code replaces the existing regulations. This will change the way we build. The PHRC will also expand its support for the Pennsylvania Construction Code Academy (PCCA) by developing programming to help building code officials prepare for residential certification examinations.

In response, the PHRC has developed a series of building code training programs intended for builders, remodelers, building code officials, design professionals, and others involved in residential construction. These programs were developed with the support of the Pennsylvania Builders Association (PBA) and DCED, the U.S. Department of Energy. The following are the programs to be offered during this program period:

**General Audience Programs**

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|---|-------|
| 1. Comprehensive International Residential Code Program | 2 day |
| 2. Pennsylvania's New Energy Code Requirements          | 1 day |
| 3. Overview of the IRC's Plumbing Requirements          | 1 day |
| 4. Overview of the IRC's Mechanical Requirements        | 1 day |
| 5. IRC Refresher and 2003 Update Program                | 1 day |

**Code Official Programs**

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|--|-------|
| 1. Comprehensive International Residential Code Program for code officials | 2 day |
| 2. Pennsylvania's New Energy Code Requirements for code officials          | 1 day |
| 3. Overview of the IRC's Plumbing Requirements for code officials          | 2 day |
| 4. Overview of the IRC's Mechanical Requirements for code officials        | 2 day |
| 5. Pennsylvania's New Energy Code Requirements for code officials          | 1 day |

**Custom Programs Developed for:**

1. Pennsylvania Concrete Masonry Association (PCMA)
2. American Society of Home Inspectors (ASHI)

**Manager/PI:** Sagan, Fortney

**Deliverable:** The PHRC will deliver at least 20 workshops to be held at various locations across the state. At least two (2) additional programs will be developed and/or delivered to meet training needs and demands. The PHRC will also develop a 5 year strategic plan for its role in developing and delivering building code training in the Commonwealth of Pennsylvania.

**Technical Development Program for Career and Technical Educators**

**Description:** The PHRC has submitted a proposal to the Pennsylvania Department of Education, Bureau of Career and Technical Education (CTEs) for the technical training of vocational building construction teachers. The goal of this program is to create a mechanism to keep CTEs up to date on new and emerging technologies, construction methodologies, and building codes. The program will work closely with CTEs to incorporate this information into curriculum and teaching.

The PHRC will form a CTE Subcommittee to provide input and guidance for the activities that will be pursued under this multi-year initiative. The Subcommittee will consist of the PA Department of Education, industry representatives, CTE educators and administrators, and PHRC members.

**Manager/PI:** Sagan/Fortney

**Deliverables:** The deliverables can be grouped in the following four general categories:

1. Developing and delivering a series of training and educational programs.
2. Providing ongoing technical assistance
3. Making technical and research information available to CTEs.
4. A formal outreach and liaison program for CTEs.

The final list of deliverables will be approved the Subcommittee and the Department of Education. Please note that this project is contingent upon partial funding by the PA Department of Education.

**Technology Transfer  
& Outreach**

**Description:** Continuation or expansion of activities to get information and publications to builders, remodelers, design professionals, building code officials and others involved in the residential construction industry.

**Manager/PI:** Fortney

**Deliverable:** The PHRC will work with the PBA and other industry and trade organizations by means of the following activities:

1. **Annual Pennsylvania Housing Conference/Workshop:** The PHRC organizes an annual event to address one or more technical issues. This event is intended for builders, developers, vocational technical instructors, utility personnel, state policymakers, product manufacturers, and others involved in the housing industry.
2. **Speaker Service:** The PHRC will hold and/or participate in talks and seminars directed at the housing industry. This may include trade association functions and regional meetings, local association dinner or breakfast meetings, or state or national conferences.
3. **Outreach Activities:** This includes activities to let builders know about the PHRC and the services and publications it provides. These activities may include the PHRC newsletters, mailings, promotional pamphlets, advertisements in trade journals, phone calls, and the PHRC's Web site.

**Applied Research:** A very important function of the PHRC is to undertake or stimulate research and development on materials, products, procedures, etc. These efforts may have a longer-term and/or a more fundamental focus than other projects. The projects that are listed below make use of, foster partnerships and draw on the expertise and strengths of the persons, the groups and the facilities available at both the Pennsylvania State University and Pennsylvania College of Technology.

**Convective Drying  
in Walls**

**Description:** This project, which is to be completed this year, is to investigate and quantify the contribution of convective drying to moisture control in enclosure wall systems. Significant funding has been provided by ASHRAE and National Science Foundation under the PATH program. Additional research is anticipated contingent on the financial support from the brick industry.

**Manager/PI:** Burnett

**Deliverable:** At least two papers and at least one research brief.

**Technical review of  
Visitability in  
Pennsylvania**

**Description:** This project links funds from PHFA to study the costs and technical barriers to making homes visitable in Pennsylvania's climate and topography. It includes a technical review of meeting these standards, a cost analysis and develop a series of viable solutions.

**Manager/PI:** Fortney, Burnett

**Deliverable:** A series of 5 reports.

**Drying of Slabs and  
Basement Walls**

**Description:** The largest moisture loading that most in-service below-grade walls and floors have to deal with is, the water used to make the concrete and /or mortar. Much of this water is required for the purpose of workability (delivery, casting, and finishing) rather than hydration of the cement. There is a need to be able to estimate the time it takes for both walls and slabs to dry sufficiently to safely permit finishes to be applied. This issue has become critical for the following reasons:

1. The Building Codes have changed and now frequently require the thermal insulation of the walls (usually internally). This is a situation with which many builders and owners are not familiar.
2. Homeowners expect the ability of having a potentially habitable or habitable basements. This desire to finish both walls and floors too early is only likely to generate a high incidence of mold and other moisture related problems.

**Manager/PI:** Burnett, Sheetz

**Deliverables:**

1. Produce a 4-page Builder Brief that, in the interim, provides the builder community in PA with some awareness of the issues and the some guidance on what to do.
2. Develop a research proposal to undertake an appropriate R and D program

**Moment Capacity of  
Metal Plate Connected  
Wood Trusses:**

**Description:** Will refine the moment capacity specs of metal plate truss connections. Doing so will improve the design, reliability and cost effectiveness of the wood truss system.

**Manager/PI:** Manbeck

**Deliverable:** A technical report.

**Land Development:** The land development process is key component to 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. The following tasks will be undertaken during the 2004 / 2005 fiscal year:

**Standards Coalition:** **Description:** The PHRC is providing the leadership and staffing to a coalition of stakeholder organizations and agencies to identify consensus needs relative to land development practices in Pennsylvania. The initial goal or objective of this group is to provide oversight and input to the process of developing residential development guidelines for the Commonwealth. The first meeting of the Consortium was held on July 29, 2004. During this meeting, the overall objectives and strategic plan for the group were developed. This group is scheduled to meet every two months for a two year period to provide oversight and input to the development of site improvement guidelines. The meetings will also be used as a forum for the discussion of broader issues related to land development in Pennsylvania as they are identified.

**Manager / PI:** Brown

**Deliverable:** The Coalition will meet at least three times during the contract period.

**Guideline Standards:** **Description:** The residential development standards project, initiated in late 2003, will continue under the guidance of the Standards Coalition. We are currently nearing completion of an initial review of Pennsylvania Subdivision and Land Development ordinances. This review is identifying areas where improvements in existing ordinances are necessary to promote sustainability and more affordable housing. The findings from this review will be used to shape the direction and needs for the development of the guideline standards during the course of the next two fiscal years.

**Manager / PI:** Brown

**Deliverable:** During the next two fiscal years several draft's of the land development guidelines document will be produced for review and critique by the Standards Coalition. It is anticipated that the final guideline development standards document will be completed by the end of FY 2006.

**Land Development Subcommittee**

**Description:** The PHRC will form a Land Development Subcommittee to provide input and guidance on general land development issues. This membership driven group will help provide leadership and guidance to the PHRC's initiatives related to land development

**Manager / PI:** Brown

**Deliverable:** The subcommittee will be developed and will meet at least twice during the contract period.

**Factory Built Housing:** The PHRC has been working closely with the Modular Housing industry and the Manufactured Housing Industry. Two training centers have been established at the Pennsylvania College of Technology. Recently these training centers have moved under one umbrella the PHRC's Factory Built Housing Center at Penn College and the Center has appointed Rick Terry as the first full-time Director. The following projects build on our past experience and add value to our current commitment.

**MHTI & MHRC**

**Description:** 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 a full-time Director of MHTI and MHRC to be employed

**Manager/PI:** Pennsylvania College of Technology

**Deliverable:**

1. Promotion of the programs by providing presentations at trade association meetings, direct marketing to manufacturers, community owners and retailers, etc.
2. The development of at least two half-day training program for the factory built housing industries. This would expand the existing programs and help Penn College respond to industry demand for training. Topics for the program will be approved by the PHRC's Factory Built Housing Subcommittee.

**Technical Concerns for the Modular and Manufactured Housing Industries**

**Description:** This general initiative is intended to provide resources to address specific technical issues identified by these industries and the Modular Housing Training Institute (MHTI) and the Manufactured Housing Resource Center (MHRC).

**Manager/PI:** Fortney

**Deliverable:** The deliverable for this will be brief technical documents addressing specific concerns. The documents will be written for the appropriate audiences with the potential for use by either MHTI or MHRC in their training.