



U.S. Department of Energy  
Energy Efficiency and Renewable Energy



Building Energy Codes

# Showcasing DOE Efforts

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## DOE Efforts - Deployment

- Responded to 300+ technical support questions each month
- Trained 6,500+ using web-based training methods
- Reached over 3.5 million hits in March 2006 ([www.energycodes.gov](http://www.energycodes.gov))
- Leveraged material from hundreds of tools in the Resource Center
- Educated thousands with the Setting the Standard Newsletter



# Website – www.energycodes.gov

➤ Hosts content for many of the other program features and efforts

- Videos
- Web training
- News
- Calendar of Events

The screenshot shows the homepage of the DOE Building Energy Codes Program website. The browser window title is "DOE: Building Energy Codes - Home - Mozilla Firefox". The address bar shows "http://www.energycodes.gov/". The website header includes the U.S. Department of Energy logo and the text "Energy Efficiency and Renewable Energy" with the tagline "Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable". The main navigation bar is green and says "Building Energy Codes Program". Below this is a cityscape image. The left sidebar contains a table of contents with categories: "About the Program", "Compliance Tools", "Training/Education", and "Implementation Tools". The main content area features a large icon of a house with a checkmark and a description of the program's mission. Below this, there are sections for "Free Software" (listing REScheck and COMcheck) and "Technical Support" (listing Resource Center and Ask an Energy Codes Expert). The right sidebar includes a search bar, a "Need Help?" section, and a "NEWS" section with a red banner for the "2006 National Workshop Registration NOW OPEN!".



## Resource Center

- *Currently Available!*
- Residential and commercial content
- DOE and external materials centrally located
- Generate pdfs for distribution
  
- Over 1,200 illustrations and photos
- Over 1,500 external materials, videos, articles
- Averaging 500,000+ hits per month
- Averaging 30,000+ redirects per month to external materials including EERE, EPA EnergySTAR, ASHRAE, Building America, and others.



Demonstration

# Resource Center

The screenshot shows a Mozilla Firefox browser window displaying the Building Energy Codes Resource Center website. The browser's address bar shows the URL: <http://resourcecenter.pnl.gov/cocoon/morf/ResourceCenter>. The website header features the logo and the text "Building Energy Codes RESOURCE CENTER". Below the header is a search bar with a "SEARCH" button and a "BROWSE" dropdown menu. A navigation menu includes links for "Home", "About the Resource Center", "Ask a Question", "Advanced Search", and "Help".

**Welcome to the Building Energy Codes Resource Center**

This system has been developed to provide users with information about energy codes and beyond code technologies. You can SEARCH by keyword, or BROWSE the available topics. Start your research using the toolbar at the top of the page.

Resources are available in a variety of different media types, including Articles, Graphics, Online Tools, Presentations, and Videos. The BECP Resource Center gathers content not only from our own archives, but also provides links to energy code resources from around the web. [Learn more about the Resource Center.](#)

**NEW MATERIALS**

- [Article #1529: Energy Policy Act 2005 and Tax Credits](#)
- [Article #1533: Appropriate Use of Building Energy Simulation Software](#)
- [Article #1484: Vestibule Case Study](#)

**POPULAR RESOURCES**

- [Article #139: Insulating Suspended Ceilings](#)
- [Building Energy Codes Glossary](#)
- [Article #1420: Energy Code Climate Zones](#)
- [Article #1469: How Do I Enter Non-Uniformly Insulated Basement Walls in REScheck?](#)

**Something missing?** Send us your materials if you see something outdated, or let us know if you have requests for information we don't have.

Resource Center Home | [Email Us](#) | [Security & Privacy](#) | [www.energycodes.gov](http://www.energycodes.gov)



## Technical Support

- Streamlined system leverages Resource Center materials and website
- Evolving to include a prototype web forum in fall 2006
  - *Coming soon!* Let us know if you want to participate!
  - Provides a searchable reference for those with software questions
  - Provides a mechanism for all user to interact dynamically with one another
  - May allow region specific/state specific interaction to the software users





Demonstration

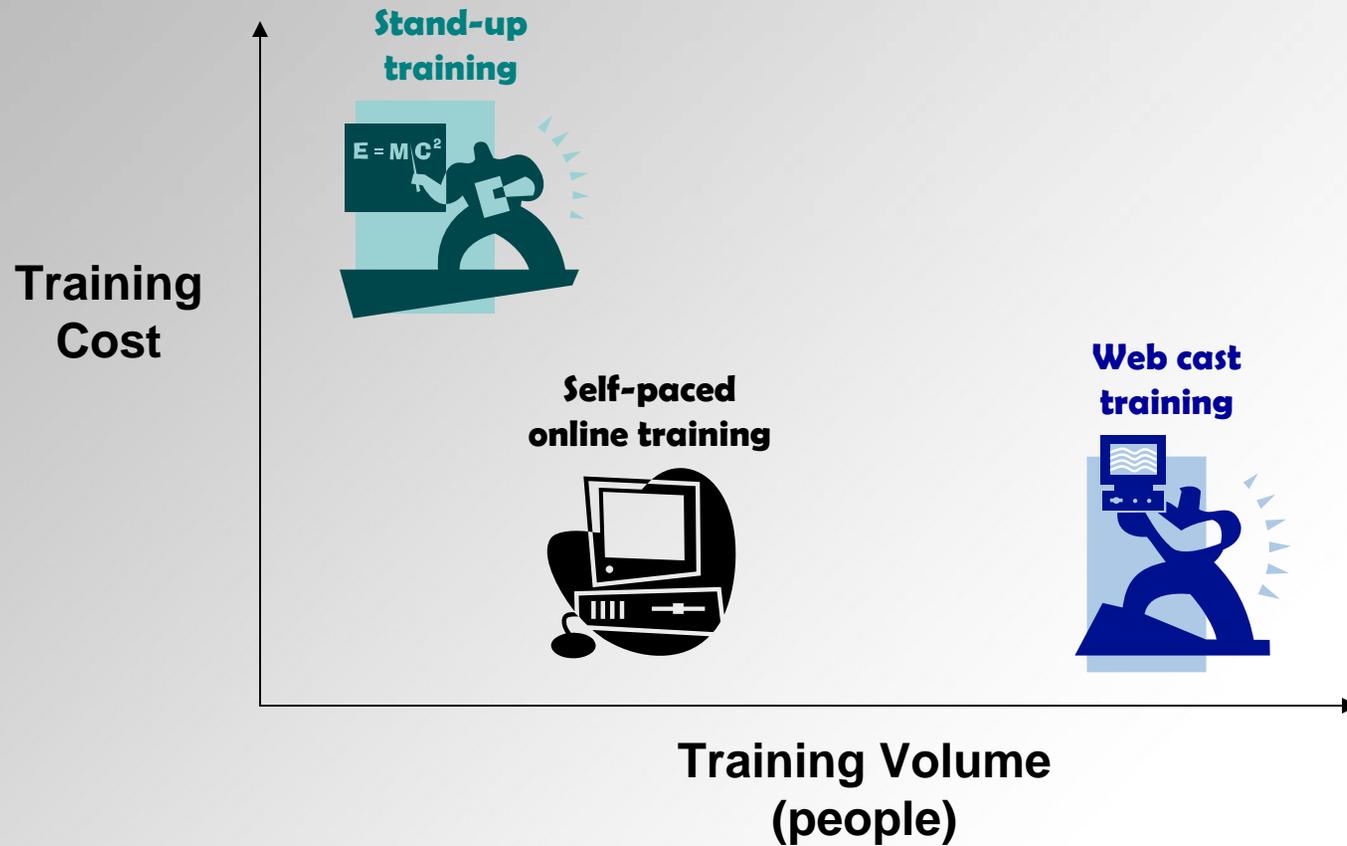
# Technical Support

The screenshot shows a Mozilla Firefox browser window displaying the Building Energy Codes Project forum. The browser's address bar shows the URL <http://gromit.pnl.gov/forum/>. The forum page features a header with the logo and the text "Building Energy Codes TECHNOLOGY FORUM". Below the header, there are navigation links for "Search", "Member List", and "Help". A greeting "Hello There, Guest! (Login — Register)" and the current time "07-26-2006, 01:46 PM" are displayed. The main content area is titled "Building Energy Codes Project" and contains a table of forum threads. Below the table is a "Board Statistics" section with radio buttons for "Forum Contains New Posts", "Forum Contains No New Posts", and "Forum is Locked". A "Quick Login" form with fields for "Username" and "Password" is also visible. At the bottom of the page, there are links for "Contact Us", "BECP", "Return to Top", "Return to Content", "Lite (Archive) Mode", and "RSS Syndication". The footer includes the text "Powered By MyBB" and "Copyright © 2006 MyBB Group". The browser's status bar at the bottom shows the URL <http://gromit/forum/index.php>.

Forum	Threads	Posts	Last Post
<b>REScheck</b> Includes desktop and web software.	2	3	<b>Airtight IC lights</b> 07-18-2006 12:22 AM by h Dillon
<b>COMcheck</b> Includes desktop and web software.	1	1	<b>COMcheck-Web Lighting iss...</b> 07-18-2006 12:09 AM by h Dillon
<b>Energy Codes Discussion</b> Discussion not related to the REScheck and COMcheck software.	2	3	<b>Tax software</b> 07-18-2006 12:29 AM by h Dillon



# Training Becomes more Cost Effective





## Online Training (self paced)

- *Currently Available!*
- Training modules available at no cost
  - REScheck 101
  - COMcheck 101
- Instructor available electronically as needed
- New materials added as available





Demonstration

# Online Training (self paced)

Course: REScheck Training - Mozilla Firefox  
http://energycode.pnl.gov/moodle/course/view.php?id=2

energycodes smugmug W labweb SQL other morf Morf Editor

You are logged in as Heather Dillon (Logout)

## Building Energy Codes ONLINE TRAINING

energycodes » REScheck101

**Administration**

- Change password...
- Unenrol me from REScheck101...

**Courses**

- REScheck Training
- All courses...

**Topic outline**

PNNL-SA-49263

### REScheck 101 Training

Welcome to the Building Energy Code Program's new online training tool. This tool allows you to learn about using REScheck to comply with the 2003 International Energy Conservation Code at your own pace.

Each section is designed to provide a basic overview of the requirements, and most sections have links that provide additional details on that section's topic as well as additional resources for more information if you are interested.

**Pilot Study:** BECP is currently conducting a pilot study on this course to determine the amount of Continuing education credit that can be offered. The actual amount of AIA learning units/continuing education credits offered for this course will be determined based on the results of this pilot study.

Participants who successfully complete the course and quiz and enter their AIA numbers will be submitted to AIA by BECP for the determined amount of credits following the conclusion of the pilot study. Certificates of completion will be emailed to all successful participants at the end of the pilot study.

**Audience:** Building energy code officials, designers, engineers, builders, and anyone else involved in demonstrating energy code compliance for a residential building.

**Course Structure:** Self-paced, online

**Estimated Length:** 1-2 hours

**Author:** Rosemarie Bartlett, CEM, BEP

**Communication:** Via e-mail.

REScheck™

[Navigation Overview](#)

**Topics**

1 2 3 4 5 6 7 8 9 10

This course covers the basics of complying with the 2003 **International Energy Conservation Code** using REScheck. Each section is designed to provide a basic overview of the requirements, and most sections have links that provide additional details on that section's topic as well as additional resources for more information if you are interested.

**Topics:**

1. Scope of IECC
2. General Requirements for Building Envelope
3. General Requirements for Heating, Ventilation, and Air Conditioning
4. General Requirements for Service Water Heating
5. General Requirements for Electrical Power and Lighting
6. REScheck Compliance Methods
7. REScheck Example
8. Basic Concepts in 2003 IECC

Each topic section will include:

- ◆ Resource Articles



Demonstration

# Online Training (self paced)

The screenshot shows a Mozilla Firefox browser window displaying a Moodle course page. The browser's address bar shows the URL: <http://energycode.pnl.gov/moodle/mod/resource/view.php?id=11>. The page title is "REScheck101: HVAC General Requirements - Mozilla Firefox". The browser's menu bar includes File, Edit, View, Go, Bookmarks, Tools, and Help. The browser's toolbar shows navigation buttons (back, forward, home, stop, refresh) and a search bar. The browser's status bar shows the current page is "Done".

The Moodle course page has a breadcrumb trail: [energycodes](#) > [REScheck101](#) > [Resources](#) > [HVAC General Requirements](#). The page title is "REScheck 101 Training: HVAC General Requirements" and it is "Page 1 of 7".

## HVAC General Requirements

The 2003 IECC has several requirements that must be met regardless of which [compliance method](#) is used. The REScheck compliance approaches assume that all applicable general requirements have been met. The REScheck software includes these requirements in the [Inspection Checklist](#).

If you encounter terms you are not familiar with see our [Building Energy Codes Glossary](#).

An HVAC system consists of:

- a heating and/or cooling source,
- a distribution system (e.g., ductwork or hot/chilled water piping), and
- temperature controls.

**Additional Resources**

[Bigger is Not Always Better with HVAC Systems](#)



Navigation buttons: <<Previous, Exit, Next>>

Last modified: Wednesday, 22 February 2006, 10:02 AM

You are logged in as [Heather Dillon](#) (Logout) | REScheck101



## Online Training (Videos)

- *Currently Available!*
- Video version of past live web trainings
  - 2006 IECC Residential
  - Log Homes in REScheck
  - 2006 IECC Commercial – Envelope/HVAC/Lighting
  - ASHRAE Advanced Energy Design Guide Lighting
  - ASHRAE 90.1-2004 Lighting Update
  - Vestibules
- New videos added each month



Demonstration

# Online Training (Videos)

The screenshot shows a video player interface. At the top, there is a blue header with the U.S. Department of Energy logo on the left and the 'Building Energy Codes' logo on the right. The main content area is light gray with diagonal lines and contains the following text:

**How to Use  
COMcheck  
Energy Code Compliance Software**

U.S. Department of Energy  
Building Energy Codes Program

At the bottom of the video player, there is a blue bar containing the 'Building Energy Codes' logo on the left and a video control bar on the right. The control bar includes a 'STREAMING' indicator, a progress bar showing '0:01:15.648', and standard playback controls (play/pause, previous, next, volume, and full screen).

[Webmaster](#) | [Web Site Policies](#) | [Security & Privacy](#) | [Disclaimer](#)



## Deployment Summary

Training	6500+ web training participants
	3500+ trained with BECP materials
Website	Averaging over 3 million hits per month
	3.5 million hits in March 2006 (XX% growth)
Resource Center	Averaging 500,000 hits per month
	Averaging 30,000+ redirected links per month to beyond code materials.
National Workshop	235 Participants, 36 states
Newsletter	84,000+ registered subscribers

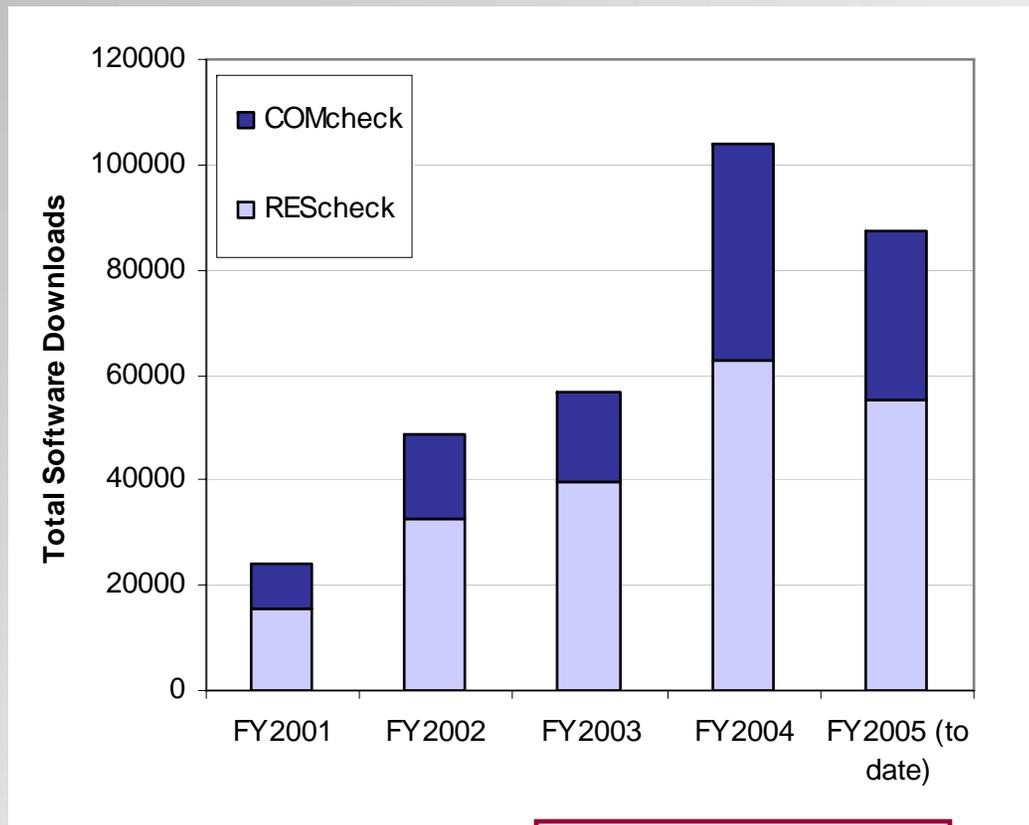


## DOE Efforts - Software

- COMcheck
  - 2004 IECC COMcheck
  - Beyond Code Advisor
  - Alterations Features
  - Preferences
- REScheck
  - 2006 IECC REScheck
  - New AreaCalc
  - Web services



# Desktop Software



I Will update





## Beyond Code Advisor

- *Available September 2006*
- Interactive beyond code advice as the user navigates the software
- Features include the web software and desktop
- New look and feel make the advisor a more intrinsic part of the user experience



Demonstration

# Beyond Code Advisor

The screenshot displays the COMcheck-Web application interface. The main window is titled "Create Linear Fluorescent" and features a list of fixture options with radio buttons and dropdown menus for length and wattage. The selected option is "22" T5 14W". Below the list, there is a "Description" field containing "22in. T5 14W" and a "Create" button. A yellow tooltip is visible over the "Create" button, stating: "Exemptions are currently disabled. To view exemptions, click the Exemptions button in the box underneath the tool." A "Beyond Code Advisor" pop-up window is overlaid on the main interface, containing a "Close" button. The interface also includes a "Login" form at the top right and a "CHECK COMPLIANCE" button at the bottom left.



## User Preferences

- *Available September 2006*
- Addresses one of the most frequently requested features in the software tools
- Allows auto-fill of:
  - Contractor Name/Address
  - Most recent file list
  - Email addresses (for electronic submissions)



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Building Energy Codes

Demonstration

# User Preferences

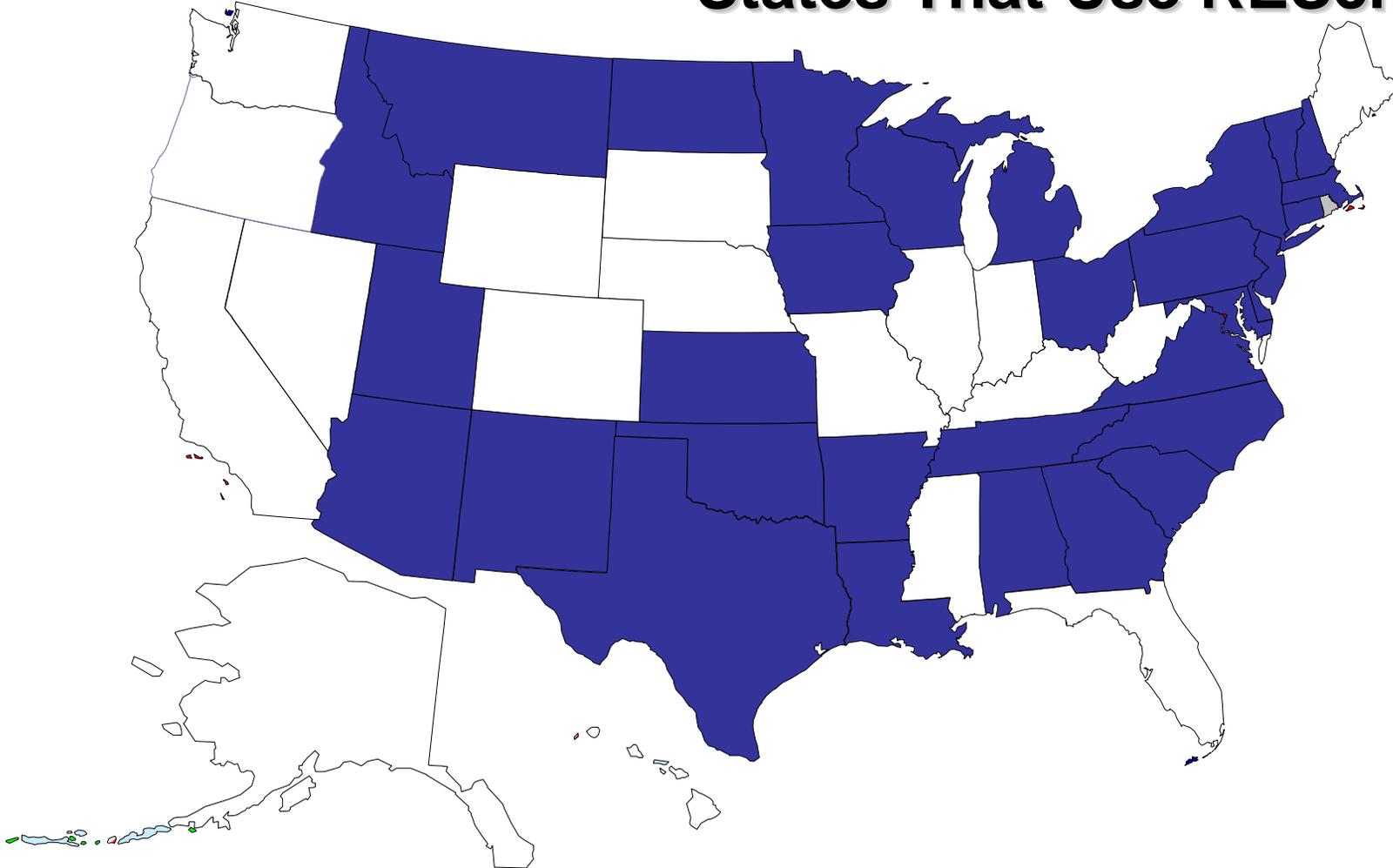


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Building Energy Codes

## States That Use REScheck





## REScheck 2006 IECC

- *Available September (desktop)*
- Change in code support for WWR makes the tradeoff features different
- New performance based equipment tradeoff





Demonstration

# REScheck 2006 IECC

example.rck - REScheck 3.7.4 Code: 2006 IECC

File Edit View Options Code Tools Help

Project Envelope Mechanical

Ceiling Skylight Wall Window Door Basement Floor Crawl Wall

	Component	Assembly	Gross Area or Slab Perimeter		Cavity Insulation R-Value	Continuous Insulation R-Value	U-Factor	UA	Depth of Insulation (ft)
Building									
1	Ceiling 1	Flat Ceiling or Scissor Truss	729	ft2	38.0	0.0	0.03	22	
2	Ceiling 2	Flat Ceiling or Scissor Truss	592	ft2	30.0	0.0	0.035	21	
3	Wall 1	Wood Frame, 16" o.c.	1647	ft2	13.0	6.0	0.061	82	
4	Door 1	Glass	84	ft2			0.61	51	
5	Window 1	Vinyl Frame, Double Pane...	204	ft2			0.45	92	
6	Door 2	Solid	20	ft2			0.54	11	
7	Wall 2	Wood Frame, 16" o.c.	276	ft2	13.0	0.0	0.082	21	
8	Door 3	Solid	18	ft2			0.35	6	
9	Floor 1	All-Wood Joist/Truss, Ov...	938	ft2	19.0	0.0	0.047	44	
10	Floor 2	All-Wood Joist/Truss, Ov...	32	ft2	30.0	0.0	0.033	1	
11	Floor 3	Slab-On-Grade:Unheated	82	ft		8.0	0.779	64	2.0

Compliance Invalid Conditioned Floor Area Max. UA 411 Your UA 415 TBD % Better Than Code

Select the building assembly buttons above the column headers to create a list of envelope components for the building.



## AreaCalc Update

- *Available Next Year*
- Integrates directly into the existing user interface (no longer a separate program launch)
- Will become available in both REScheck and COMcheck



Demonstration

# AreaCalc Update

The screenshot shows the REScheck-Web interface in a Mozilla Firefox browser window. The main page has a navigation menu with 'Project', 'Envelope', and 'Mechanical' tabs. The 'Envelope' tab is active, showing a table with one row: '1 Ceiling: Flat or Scissor Truss'. An 'Area Calculator' dialog box is open over the table. The dialog has a 'Shape' dropdown set to 'Rectangle'. It features a diagram of a rectangle with 'Width Base: 0'-0" ft-in' and 'Height: 0'-0" ft-in' labels. Below the diagram, a calculation is shown: '0.00 ft<sup>2</sup> X 1 = 0 ft<sup>2</sup>', with 'Unit Area', 'Quantity', and 'Total Area' labels. 'OK' and 'Cancel' buttons are at the bottom of the dialog. At the bottom of the browser window, a blue bar contains a 'CHECK COMPLIANCE' button and the text 'To display compliance results, click the Check Compliance button.'



# Software Summary

## ➤ Web-based applications

- RES*check*-Web
- COM*check*-Web
- RES/COM-Package Generator

14,500+ registered users

Average 3,000 visits per month

Average 1,200 visits per month

Average 2,000 visits per month

## ➤ Desktop Applications

- RES*check*
- COM*check*

76,000+ registered users

Average 5,000 downloads per month

23,000+ registered users

Average 3,000 downloads per month



## Software of the Future - Web Services

### ➤ Four web tools in 2006

- Implement interaction with private sector vendors specifically as part of the NCSBCS committee
- Later .... Integrate closely with other private sector vendors
  - HVAC sizing software
  - Cost estimation software
  - AutoCAD software

### ➤ Leveraging Technology

- PNNL existing expertise in web services
- Extensive security and server infrastructure make development easy



## Future Work (Farther out)

Cost  
Reductions

- Palm based compliance for every code official in the field
- Instant transmission of digital code information, documentation and compliance
- Integrated web-based systems allow jurisdictions to consolidate services (mechanical, plumbing, energy)



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Building Energy Codes

# Future Compliance Preview

## **Robert Wible**

Secretary to the Alliance for Building Regulatory Reform in the Digital Age  
and the National Partnership to Streamline Government

## **Paul Watkins**

Chairman, Information Technology Industry Advisory Committee  
and President, MobileHWY

*STREAMLINING THE NATION'S BUILDING REGULATORY PROCESS THROUGH INTEROPERABLE  
INFORMATION TECHNOLOGY ENHANCING ENERGY CONSERVATION IN NEW CONSTRUCTION  
THROUGH THE INTEROPERABILITY OF RESCHECK AND COMCHECK*



# Challenges Facing State and Local Governments

- Forces demand greater effectiveness and efficiency in code administration and enforcement:
  - Economic competitiveness in global markets
  - Dwindling resources to government
  - Rising energy prices and cost of dependency on foreign supplies
  - Natural and man-made disasters
  - Preparedness, response and recovery



## Work of the Alliance for Building Regulatory Reform and National Partnership to Address these Challenges

- Share best practices with state and local governments
- Build stakeholder support for regulatory streamlining and greater efficiency in codes administration and enforcement
- Identify hardware and software that can assist government effectiveness & efficiency
- Work with software community to develop truly interoperable hardware, software and “intermediate-ware” - ease of transfer of data not only within a government agency but between agencies and between jurisdictions



## Alliance's Information Technology Industry Advisory Committee to Develop Interoperability Standard

- Building Regulatory System Standard 2004-2006 work
- Demonstration project with DOE in 2005
- Working with PNNL in 2006 to develop and demonstrate:
  1. Webservice Interface to DOE's REScheck and COMcheck tools
  2. Demonstrate in two jurisdictions ability of data from REScheck and COMcheck tools to migrate to other building department databases
  3. Enhance effectiveness of field inspections for energy conservation using REScheck and COMcheck tools



## Putting Technology to Work for You

- Standards entail a mix of real-world experience, design, and validation from stakeholders and technology leaders.
- **Wednesday Session** - Come see how leading technology vendors and jurisdictions are reshaping the products you use to improve the nation's building regulatory process.