



Buildings for the 21st Century

Buildings that are more energy-efficient, comfortable, and affordable...that's the goal of DOE's Office of Building Technology, State and Community Programs (BTS). To accelerate the development and wide application of energy efficiency measures, BTS:

- Conducts R&D on technologies and concepts for energy efficiency, working closely with the building industry and with manufacturers of materials, equipment, and appliances
- Promotes energy/money saving opportunities to both builders and buyers of homes and commercial buildings
- Works with State and local regulatory groups to improve building codes, appliance standards, and guidelines for efficient energy use
- Provides support and grants to States and communities for deployment of energy-efficient technologies and practices



NEW YORK ENERGY CONSERVATION CONSTRUCTION CODE

Projected to save up to \$80 million per year in energy costs

New York remains at the forefront of energy-efficient construction practices by moving to adopt one of the most progressive state energy codes.

The New York Energy Conservation Construction Code (ECCC) capitalizes on recent advances in energy-efficient technologies and building practices. When the code becomes mandatory in 2002, it is expected to save New Yorkers up to \$80 million per year in energy costs. It will protect New York's air quality by reducing carbon dioxide emissions by 517,000 tons per year and acid rain-causing sulfur dioxide by 493 tons per year.

Under the direction of the New York State Department of State, the agency responsible for reviewing and adopting state building codes, the ECCC was developed under an extensive multi-group partnership. The collaborative process involved the New York State Department of State (DOS) Division of Code Enforcement and Administration (DOS), the New York State Energy Research and Development Authority (NYSERDA), the New York Energy Code Technical Subcommittee, the U. S. Department of Energy (DOE), Pacific Northwest National Laboratory (PNNL), the Building Codes Assistance Project (BCAP),

design and building professionals, and other stakeholders. Together, this group crafted a code that will benefit taxpayers, businesses, building owners, and renters for years to come.

A Cost-Effective Code with Simplified Compliance

The ECCC requires minimum standards of energy efficiency in new residential and commercial buildings. And, as outlined by New York law, the incremental cost of the ECCC demonstrates a 10-year simple payback when compared to the previous energy code that was adopted in 1979 and last updated in 1992.

One of the code's most attractive features is the flexibility it offers builders and designers through simplified compliance and enforcement. Building professionals may demonstrate compliance using approved home energy rating systems or computer programs such as New York variants of *COMcheck*[™] and *MECcheck*[™] compliance software. A variety of worksheets, compliance manuals, and educational materials will be available to further support compliance and enforcement.



The New York State Department of Environmental Conservation (DEC) Headquarters Building in Albany complies with many of the provisions of the ECCC. Completed in 2001, the 471,000-square-foot building is expected to cost about 40 percent less per year to operate than a typical building this size, resulting in annual energy cost savings of \$179,000. Photo courtesy of WCGS Architects.

ECCC Follows the International Energy Conservation Code™

The ECCC is a New York-enhanced version of the *International Energy Conservation Code* (IECC), the nationally recognized model energy code developed by the International Code Council.

Provisions for residential buildings in the ECCC are based on the 2001 IECC, with key modifications that include requirements for:

- ✓ More stringent insulation in electrically-heated homes.
- ✓ Reduced infiltration in fireplaces.
- ✓ More efficient thermostats, including those with programmable features.
- ✓ Basement insulation levels that vary by region and climate.

Commercial provisions of the ECCC are drawn from the 2001 IECC (including envelope criteria outlined by *ANSI/ASHRAE/IESNA Standard 90.1-1999*). New York added enhancements that provide for:

- ✓ Mandatory high-efficiency transformers.
- ✓ A special compliance path for two-piped hydronic systems, which are common in New York.

Collaboration Strengthens the Code Adoption Process

Development of the ECCC began in 1999, when the New York Codes Council established an Energy Code Technical Subcommittee, directing it to review the IECC and recommend appropriate modifications for New York.

The subcommittee included architects, engineers, builders, code officials, housing and energy advocates, and staff from DOS and NYSERDA. The group met regularly for 8 months. They sought input from professionals involved in model energy codes and conducted outreach with industry groups throughout New York. When their work was complete, they had prepared 7 enhancements and 68 minor modifications to the IECC—all of which were approved by the New York Codes Council.

The U.S. Department of Energy's Pacific Northwest National Laboratory, which operates the Building Energy Codes Program (BECP), supported the efforts of the Technical Subcommittee by:

- ✓ Helping verify that certain provisions of the ECCC made sense economically from an energy perspective.
- ✓ Developing New York-specific versions of the *MECcheck™* and *COMcheck-EZ™* code compliance software.
- ✓ Providing *MECcheck™* and *COMcheck-EZ™* training as well as master copies of training materials that were later tailored to New York's needs.

The Building Codes Assistance Project, which is funded by DOE and the Energy Foundation, contributed to development of the ECCC by marshalling key support from industry stakeholders. BCAP also worked with New York on securing grant support for the multi-year effort.



Fireplaces (solid fuel type or ANSI Z21.50) shall be installed with tight fitting non-combustible fireplace doors to control infiltration losses in three construction types: 1) masonry fireplaces or factory-built fireplaces designed to allow an open burn; 2) decorative appliance (ANSI Standard Z21.60 gas-log style unit) installed in a vented solid fuel fireplace; and 3) vented decorative gas fireplace appliances (ANSI Standard Z21.50 unit). Fireplaces shall be provided with a source of combustion air, as required by the fireplace construction provisions of the Building Code of New York State, the Residential Code of New York State or the New York City Building Code, as applicable.

One of Eight New Building Codes in New York

The ECCC is part of a sweeping effort in which the New York Codes Council called for adoption of nearly all of the International Code Council's International Codes. In addition to the ECCC, New York embraced the International Building Code, International Fire Code, International Residential Code, International Plumbing Code, International Mechanical Code, International Fuel Gas Code, and International Property Maintenance Code. The International Codes are a departure from New York's 20-year history of developing and maintaining its own codes—an arrangement that had become increasingly time-consuming and expensive.

NEW YORK ENERGY CONSERVATION CONSTRUCTION CODE

Training and Compliance Tools to Ensure Success

In addition to developing the ECCC, New York initiated efforts to help building professionals more easily comply with and enforce the code.

- ✓ **Outreach and training for code officials and building professionals.** Extensive outreach and training began while the ECCC was being developed and continues today. The DOS Division of Code Enforcement and Administration has introduced the ECCC to 4,000 code officials, with training for another 2,000 expected by early 2002. In addition, DOE funding enabled DOS to contract with the International Conference of Building Officials to train hundreds of architects, engineers, and builders on the ECCC and compliance methods and tools.
- ✓ **MECcheck™ for the New York State Energy Conservation Construction Code and COMcheck-EZ™ compliance software.** MECcheck™ and COMcheck-EZ™, developed and distributed by DOE's BECP, are recognized tools for easily showing compliance with national model building codes. PNNL customized the software to reflect New York weather as well as specific ECCC requirements. Builders and designers can use

MECcheck™ for the New York State Energy Conservation Construction Code and COMcheck-EZ™ code compliance software for residential and commercial buildings, respectively, to demonstrate compliance with the ECCC.

"MECcheck™ for the New York State Energy Conservation Construction Code allows users to trade-off the energy conservation characteristics of different building components, while still demonstrating compliance," says Mike McGowan, McGowan Corp. and past president of the New York State Builders Association. "This flexibility helps builders stay cost competitive."

MECcheck™ for the New York State Energy Conservation Construction Code and COMcheck™ energy code compliance software can be downloaded free of charge from www.energycodes.gov. A CD version is available from PNNL for a nominal fee. To order, visit www.energycodes.gov/order_form.stm.

- ✓ **New York Energy Code Website.** With funding from DOE, New York developed and maintains its Energy Code Website at www.dos.state.ny.us/code/energycode/nyenergycode.htm to support education and training on the ECCC.

- ✓ **User's manual and self-help tool to familiarize code users with the ECCC.** DOS plans to develop support materials that will make compliance easier.

- ✓ **Energy Codes Support.** Specialists at PNNL offer technical support to code officials, architects and others on the code, MECcheck™ for the New York State Energy Conservation Construction Code and COMcheck-EZ™ software through email at techsupport@bec.pnl.gov.

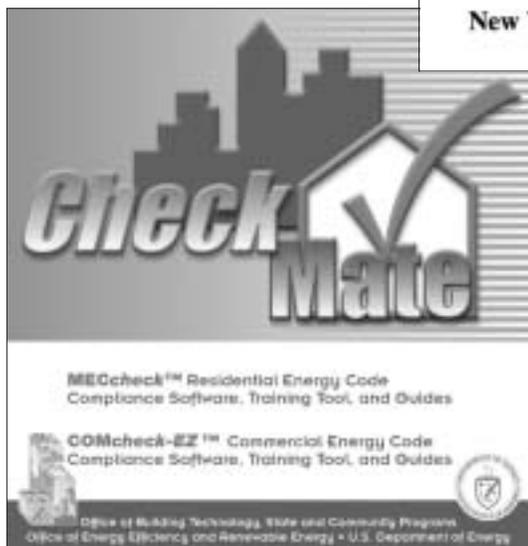
DOE Grants Make a Difference

DOE State Energy Program (SEP) Special Projects grants supported the development of the ECCC.

Even before formal work began on the ECCC, New York secured DOE funding to study energy codes nationally and compare them to New York's code.

Subsequent DOE grants supported the lengthy process of reviewing the IECC and proposing and adopting the ECCC. DOE support allows New York to conduct studies on current building practice in the state and develop software and other compliance and training tools. DOE support continues to assist New York to conduct outreach and training for code officials, designers, and the building community and develop building science programs at the university level. DOE grant money also is being used to integrate the code with ENERGY STAR™ and other energy efficiency programs.

"DOE grants have been instrumental in moving New York toward adoption of model-based energy codes," says Ray Andrews, Assistant Director of Energy, DOS Division of Code Enforcement and Administration. "By giving us access to valuable information and consultants, they've kept us ahead of the curve at every turn."



Builders and designers can use MECcheck™ for the New York State Energy Conservation Construction Code and COMcheck-EZ™ energy code compliance software to demonstrate compliance with the ECCC. Developed by DOE, the software is packaged on the CheckMate CD, together with training tools and compliance guides. The software also can be downloaded free of charge from <http://www.dos.state.ny.us/code/energycode/nyenergycode.htm> or www.energycodes.gov.

NEW YORK ENERGY CONSERVATION CONSTRUCTION CODE

For more information
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**New York Energy
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[www.dos.state.ny.us/code/
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**DOE support offered
through PNNL:
Energy Codes Tech Support
techsupport@bec.pnl.gov
Website
www.energycodes.gov**



Printed with renewable – source
ink on paper containing at least
50% wastepaper, including
20% post consumer waste.

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DOE's Building Energy Codes Program

BECP offers a range of services and products that make it easy to update, implement, and enforce commercial and residential energy codes.

- ✓ **Energy Codes Support** – Specialists at PNNL offer technical support on code compliance software tools and national energy codes through email at techsupport@bec.pnl.gov.
- ✓ **Website** – Access a wealth of information, download DOE's **COMcheck-EZ™** and **MECcheck™** compliance software, and learn more about BECP products and services at www.energycodes.gov.
- ✓ **Code Compliance Support Materials** – **COMcheck-EZ™**, **COMcheck-Plus**, and **MECcheck™** energy code compliance software provide a fast and easy way for designers, builders, and others to determine if new buildings meet the requirements of model energy codes. Versions of the software are being used to demonstrate compliance with model energy codes in more than 30 states. The software and accompanying users' guides and compliance manuals can be downloaded free of charge from the Website.
- ✓ **Training** – Hands-on training on the compliance software occurs regularly throughout the country.

✓ **Training Materials** – The **MECcheck™** and **COMcheck-EZ™** product lines include videos, computer-based training tools (CBT), and other training materials. These are available in hard copy and on diskette by visiting the Website.

✓ **Technical Assistance** – States can request that BECP perform needed analysis (i.e. code comparisons or economic analyses) or provide specialized support (i.e. compliance software customization or code training).

Influencing Codes Regionally and Nationally

Lessons learned during development of the ECCC are helping to strengthen codes across the country. DOS staff members now serve on the International Existing Building Code Drafting Committee and the International Energy Conservation Code Development Committee. Their involvement is influencing national model codes and code support materials.

New York is helping to dovetail ECCC training for New York builders with a Multi-State Codes Project coordinated by BCAP. With support from DOE, the State of Vermont, the Northeast Energy Efficiency Partnerships, Inc., PNNL, and BCAP, the Multi-State Codes Project educates Northeast building professionals on advanced design and cost-effective construction techniques. The goal is to boost energy performance of new buildings and promote the development of energy codes nationwide.