The Value of Building Energy Codes

NARUC Energy Regulatory Partnership Program

The Energy Regulatory Commission of the Republic of Macedonia
and
The Vermont Public Service Board

Christopher Owen

Vermont Department of Public Service

May 24, 2005

Building Energy Codes

- WHY
- Each year we add about 1-2 percent to building stock
- New Construction is most cost-effective opportunity to make buildings energy efficient
- Energy retrofits are EXPENSIVE

Building Energy Codes

- WHY?
- Buildings are more comfortable
- Good ventilation makes healthier building
- And saves energy, of course!
- More predictable design “target” for designers, builders, occupants

Building Energy Codes

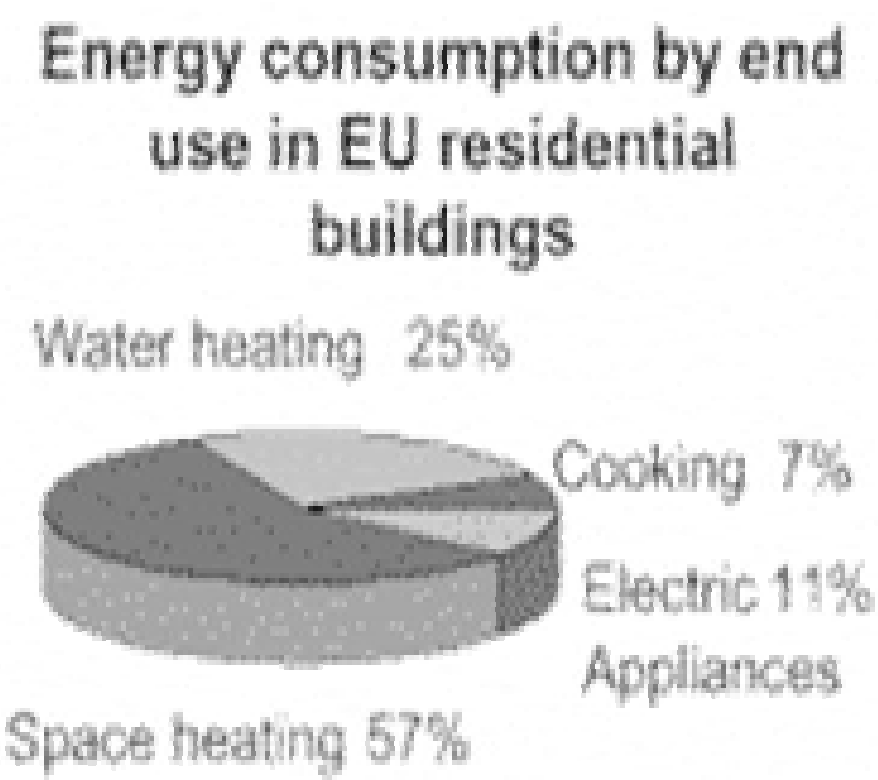
- Why?
- Lower utility bills for consumers
- Reduced demand on utility grid
- Less fossil fuel burning

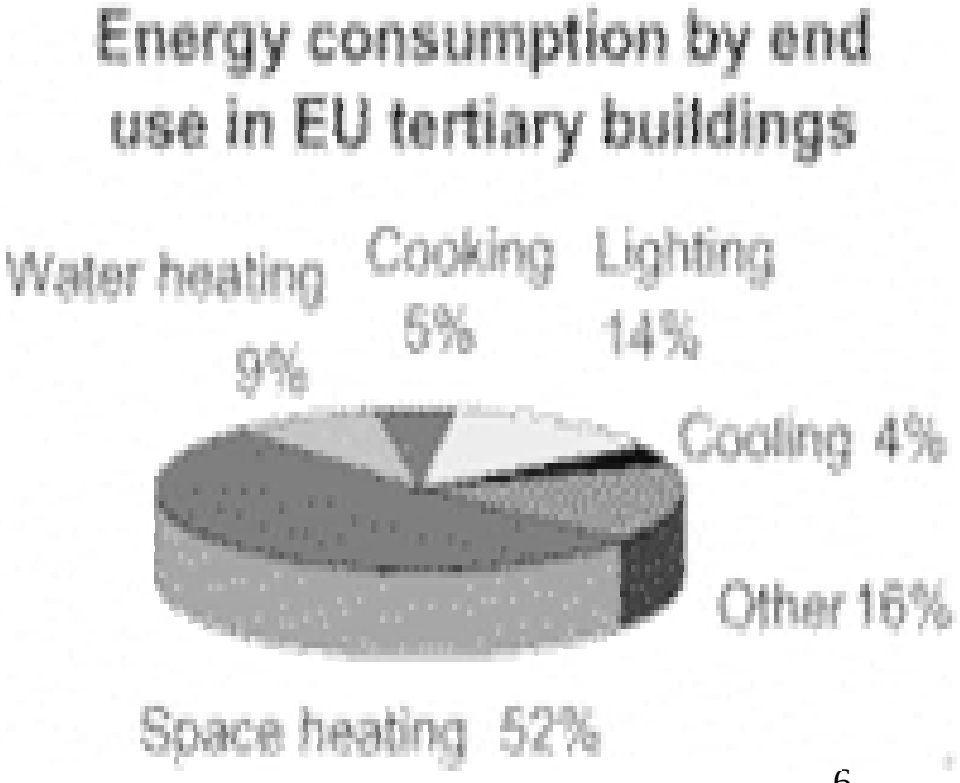
Building Energy Codes

- WHAT is an energy code?
- Minimum Standards for:
  - --Thermal Shell (insulation, windows, doors
  - --HVAC (heating, ventilation and air conditioning
  - --Lighting
  - --Electric Motors
  - --Other energy uses

Building Energy Codes

How a building uses energy

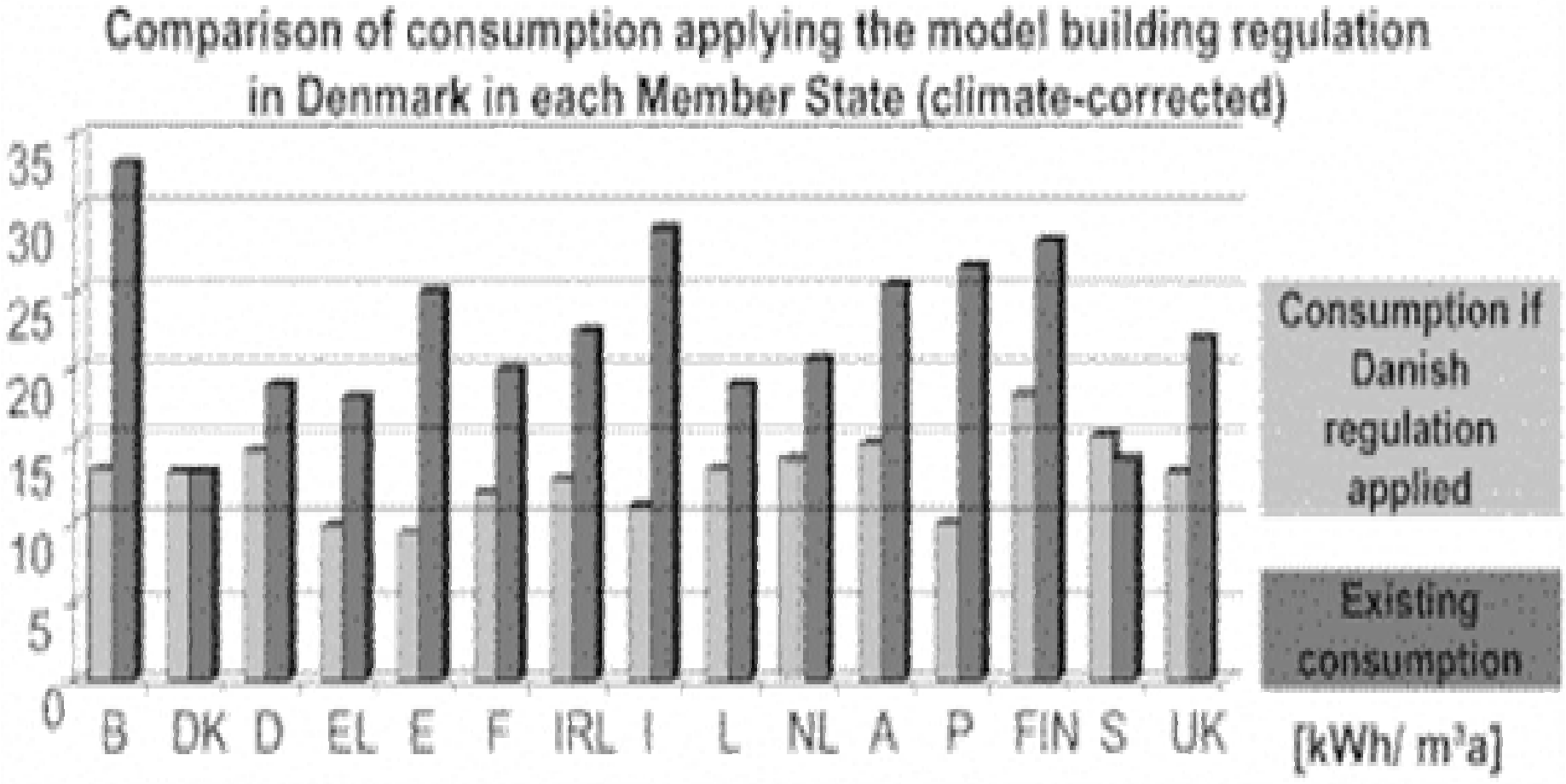




Building Energy Codes

- Energy is one of the "Code Family"
- Other codes:
  - -- electrical
  - -- plumbing
  - -- fire safety

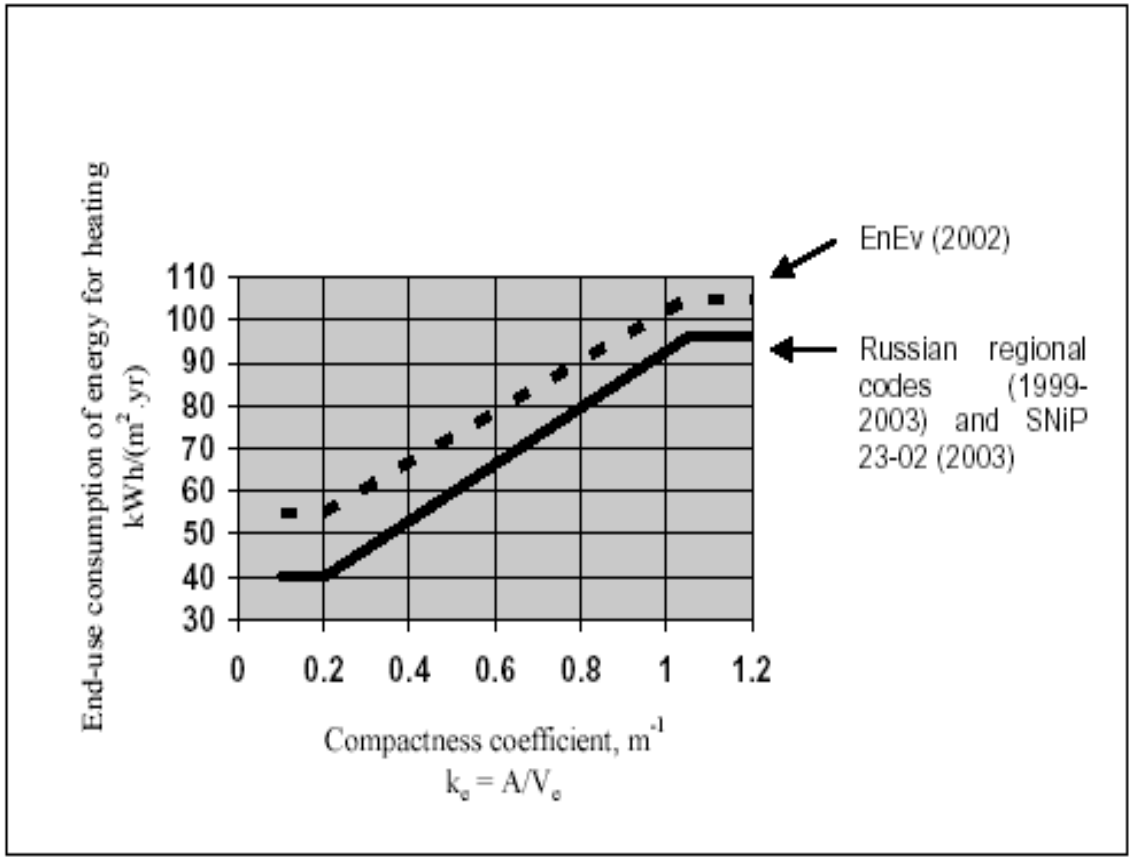
Code vs. Non-Code Comparison



Building Energy Codes

- 2003 Russia adopts federal energy code
  - 25-35 percent reduction in heating energy

Figure 4. Comparison of Required Energy-Performance Levels of Russian Regional and Federal Codes, and Germany's EnEV-2002



Building Energy Codes

- HOW are energy codes developed?
- Using model codes and standards developed by International Energy Conservation Code (IECC) and ASHRAE (American Society of Heating, Refrigeration and Air Conditioning Engineers
- Develop code for:
  - Residential Buildings (three stories or less
  - Commercial Buildings (more complex energy systems)

Building Energy Codes

- How
- Select an energy code suited to your region and climate
- Code should be widely endorsed by engineers, architects, builders and equipment suppliers

Building Energy Codes

- Get professional design community (engineers, architects) involved in code development process
- Select energy code developed for your region (EU, Russia)

Building Energy Codes

<u>Importance of Updating Code Periodically</u>

Codes need to be periodically updated to reflect advances in energy technologies (lighting, motors, air conditioning, etc.)

Building Energy Codes

Implementation Strategies

- Will local, provincial or national agency administer energy code?
- Code or Standard? Code requires enforcement; Standard serves as guideline for designers / builders
- Self certification. Builder or designer asserts compliance with code

Building Energy Codes

Remember that Energy Codes are the

MINIMUM requirement, the *worst (least efficient)* building you can legally construct.

Many programs exist in USA the support "BEYOND-CODE" design and construction. Beyond-code buildings will use 30%-50% less energy than code-compliant building.

Today's BEYOND-CODE design paves the way for tomorrow's energy code.