

Brazil

Building Code Implementation - Country Summary

Prepared for the IPEEC Building Energy Efficiency Taskgroup – Project 3: International Collaboration for Building Energy Code Implementation

Section I: Code Development

History

Start year

No minimum energy performance requirements exist in Brazil. In 2001, Law 10.295, regulating the National Policy for Conservation and Rational Use of Energy was introduced. Under this legislation Brazil has developed methodologies for evaluating the energy efficiency of buildings. In February 2009 the Brazilian Energy Labeling Schemes for Commercial, Public and Services Buildings (RTQ-C) was published followed by the Brazilian Energy Labeling Schemes for Residential Buildings (RTQ-R) in November 2010.

Timeline/ road map

Structural coverage

	Scale (National, regional, local, etc.)	Building size threshold
<i>Residential buildings¹</i>		
New buildings		
Existing buildings for retrofits		
<i>Commercial buildings-</i>		
New buildings		
Existing buildings for retrofits		

Brazil does not yet have requirements on minimum energy performance of buildings. Instead it has energy efficiency labelling schemes, RTQ-R and RTQ-C for residential and commercial buildings, respectively. Participation in labelling is voluntary for buildings.

Measures covered

- Envelope
- HVAC
- Lighting
- Option for performance-based approach.

The RTQ-C classifies buildings according to five levels: from “A” (most efficient) to “E” (least efficient). This classification can be based on two methods: (1) the simulation method, which uses hourly Building Energy Simulation results or (2) the prescriptive method, which is based on a set of prescriptive rules combined with the results of the simplified model (SMRTQ-C) for calculation of energy performance of building envelopes introduced by RTQ-C.

Correction /new codes

Motivation/policies for improving existing building energy codes

Revision schedule

There is no clear revision schedule.

Key methods used to engage stakeholders in the code development process

Section II: Code Implementation

Administration

Administrative/enforcement structures

The roles of stakeholders (what do they do at each stage)

	Design	Construction	Pre-occupancy check
The role of federal/central government			
The role of state/provincial and local government			

<p>Involvement of third parties and their role</p>	<p>Buildings are assessed during project planning and after construction. Participation is voluntary and National Energy Conservation Labels are awarded after the projects are completed.</p>		
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Requirements for commissioning before occupancy

Requirements for energy audits after occupancy

Tools used for compliance checking

Software used for compliance checking

Other tools used to check compliance

Capacity building and education

Education and capacity building programs that support code implementation

Through academic, industrial and electric utility partners, PROCEL conducts courses and seminars for industry, commerce, government agencies, and school-based programs. Besides establishing more than 40 laboratories for testing product energy use, the government has created a network for teaching and research on energy efficiency. Education efforts aim to teach the public about energy conservation and provide technical training through schools. Eletrobras funds related education programs and invested about USD 2.3 million in partner institutions and universities in 2011. An extension of this program is the Energy that Transforms program which educates consumers about energy efficiency through television, radio and printed material. Eletrobras has supported the establishment of two energy efficiency centers of excellence, with two more underway. The centers will serve to educate students and energy officials and develop methodologies for measuring and verifying the results of Brazil’s energy efficiency programs.

Target groups for programs

General public, professionals, energy officials and trades people.

Best-practice example of capacity building

Section III: Compliance & Enforcement

Penalties, incentives and other mechanisms for improving compliance

Penalties for non-compliance with energy provisions in codes

In Brazil, the adoption of minimum prescriptions and criteria for compliance involves several issues: Lack of capable professionals in the city halls to request compliance with the standard; The need of supporting materials and training for developers and building professionals; In the Brazilian reality of construction practices, for small constructions, the lighting and HVAC systems are, usually, installed after the building is ready to occupation. This culture makes the implementation of a compulsory energy standard of minimum requirements more difficult. Based on that, it was decided for an easier start, through the implementation of regulation for labeling commercial and public buildings, then carry out tests and training on the methodology and, finally, to increase the complexity of Brazilian building energy efficiency regulation.

“The mandatory terms of evaluation are those that are usually part of the delivered building and can be obtained from the architectural design. The optional evaluation terms which are denominated as “extra score” items have this optional characteristic due to the fact that they consist of equipments that are mostly installed by consumers after the building occupation, hindering the mandatory requirement of their evaluation. For stand-alone housing units the mandatory items for assessment are the envelope characteristics and the water heating systems, and its final energy-efficiency level is obtained through an equation based on coefficients according to the geographic region in which the building is, once end-uses vary great between the regions. The envelope efficiency level can be obtained from simulation or from a prescriptive method, based on multiple regression equations, according to the eight bioclimatic zones in which the country is divided.”

Incentives/rewards to go beyond minimum required performance level

Compliance assessment

Assessments on rate and effectiveness of compliance

Publicly available information on compliance assessment

Lessons learned from compliance studies

Number of code compliant permits issued per year

Airtightness testing required prior to compliance Yes, based on the Acceptance Code

Section IV: Building Materials & Energy Performance Certificates

Building materials (e.g. windows, insulation, HVAC, lighting)

Building materials rating and labeling

Two environmental labels for building materials were established in the past year. One of them was specifically created to streamline specification for LEED certification, while the other one - still at an embryonic status – is expected to be LCA-based and applicable to products, components and systems.

Tested by certified test labs

Uniform testing procedures and laboratories are in place to evaluate compliance of products such as air conditioning units etc. Not clear whether specific labs in place for testing of building materials.

Providing samples for the tests

Labels showing the ratings for building materials

Energy Performance Certificates

Building codes and energy performance certificate

Energy performance certificates replace codes in all regions - National Electricity Conservation Program (PROCEL Edifica), aims to reduce energy intensity in residential, commercial, and public buildings; industry; public lighting; municipal facilities; and water and sanitation.

Number of certified buildings and the percentage