Mexico

Building Code Implementation - Country Summary


Section I: Code Development

History

Starting year

Although Mexico does not have an energy code per se, the Federal Law on Metrology and Standardization establishes a number of energy efficiency standards that apply both to building components and energy-consuming equipment. The standards are applied throughout the national territory and can be mandatory (Mexican Official Standards or NOM), and voluntary (Mexican Standards or NMX).

Mandatory standards (NOMs) are developed by the standardization committees, which consist of different agencies of the federal government. Voluntary standards (NMX) are developed by the national standards bodies. The first 3 energy efficiency standards, NOM-ENER, were issued in 1995. Of the 29 Mexican energy efficiency standards, 6 NOM-ENER apply to lighting systems for non-residential buildings and roads surround residential and non-residential buildings, industrial thermal insulation and pump systems (others are for appliances, industrial and agricultural systems and elements).

The application of NOM-ENER is mandatory at the national level. However and in order to achieve compliance of energy efficiency standards apply to systems (e.g. building envelope, lighting system for buildings), these standards have to be included in the building regulations of states and municipalities.

Timeline/ road map

In 2014, government organization CONUEE (La Comisión Nacional para el Uso Eficiente de la Energía) under the Secretary of Energy and association CASEDI (Calidad y Sustentabilidad en la Edificación) developed and proposed Mexico’s first national energy code for commercial buildings (El Código de Conservación de Energía para las Edificaciones en México, IECC- México)\(^1\). The code is based on the International Code Council methodology and aims to integrate existing standards. IECC-Mexico was published in August of 2014 at the federal level and is pending adoption by individual states. City-level codes also exist in Mexico.

\(^1\) [http://www.conuee.gob.mx/work/sites/Conuee/resources/LocalContent/69/6/ArturoEchPresenTallerInterMonty mayo2014.pdf](http://www.conuee.gob.mx/work/sites/Conuee/resources/LocalContent/69/6/ArturoEchPresenTallerInterMonty mayo2014.pdf).
Existing codes

**Structural coverage**

<table>
<thead>
<tr>
<th>Scale (National, regional, local, etc.)</th>
<th>Building size threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Residential buildings</strong></td>
<td></td>
</tr>
<tr>
<td>New buildings</td>
<td>Regional /local</td>
</tr>
<tr>
<td>Existing buildings for retrofits</td>
<td>Regional /Local</td>
</tr>
<tr>
<td><strong>Commercial buildings</strong></td>
<td></td>
</tr>
<tr>
<td>New buildings</td>
<td>Regional /local</td>
</tr>
<tr>
<td>Existing buildings for retrofits</td>
<td>Regional /local</td>
</tr>
</tbody>
</table>

Mexico does not have building energy codes, but it has national standards on minimum energy performance of building elements and materials. The official standards have to be incorporated into local construction regulations to be implementable. Buildings covered by the standards should show compliance with the performance-based approach. However, few states have done so.

**Measures covered**

The following systems are currently covered by official standards (Normas Oficiales Mexicanas, NOM):

- Building envelope [NOM-008-ENER-2001 requires that buildings have a label to disclose estimated solar heat gain in non-residential buildings, while NOM-020-ENER-2011 requires that buildings have a label to disclose estimated solar heat gain in residential buildings, compared to reference buildings, but these norms do not set limits on energy consumption. These norms are model norms, introduced at the federal level, but they have to be adopted locally to be implemented.

- Lighting systems for residential buildings (NOM-007-ENER-2014) sets the maximum lighting (W/m²) power density in new non-residential buildings and renovations with lighting equal to or greater than 3 kW load. The implementation of this standard has been possible since the Federal Electricity Commission requests the compliance certificate of the lighting system prior to the provision of the power service.
Option for performance-based approach [This appears to be the main approach].

**Correction/new codes**

According to the Federal Law on Standardization and Metrology all mandatory standards should be updated, modified or ratified every 5 years.

**Motivation/policies for improving existing building energy codes**

Mexico has an Energy Sustainability Fund (Fondo de Sustentabilidad Energética), Green Mortgage Programme (Hipoteca Verde), Programme for Financing of Electric Energy Saving (PFAEE). Since 2009, Mexico has adopted legislation that deals with energy consumption in appliances, the Law on Sustainable Energy Use, requiring manufacturers and importers to declare how much energy a specific product consumes.

**Involvement of stakeholders in the development of codes**

By law, all interested parties can participate in the drafting of standards. Draft standards are published for public commentary, and those comments have to be considered when adopting the final version of official standards. More recently, CONUEE has worked to make sure that relevant stakeholders were involved in the development of the draft code.

**Section II: Code Implementation**

**Administration**

**Administrative/enforcement structures**

Enforcement of national mandatory standards for systems (building envelop, lighting system) is as follows:

Verification Units perform visual inspections, sampling, measurements, laboratory tests or examination of documents, in order to assess conformity with an energy efficiency standard. Verification Units have been accredited by the Entity of Accreditation (EMA) and approved by the relevant government agency (CONUEE). This structure consists of 8 certification bodies, 62 test labs and 155 verification units.

Upon successful inspection, Verification Units issue the Verification Certificate, which building owners must present, depending on the case, before the municipal authorities, the utility and the Federal Public Administration (in the case of construction, purchase or rent of real estate). In federal public buildings,

---

2 [http://www.conuee.gob.mx/pdfs/nomrevsusanaga_1.pdf](http://www.conuee.gob.mx/pdfs/nomrevsusanaga_1.pdf)
the certificates of compliance with NOM-008-ENER and/or NOM-020-ENER standards, and NOM-007-ENER and NOM-013-ENER must be submitted to utilities and municipal authorities.

The full enforcement of energy efficiency standards, such as for envelope of residential and nonresidential buildings, NOM-008-ENER and NOM-020-ENER, requires that the federal government establishes a close link with state and municipal governments to ensure the proper reference in their technical building regulations to the compliance with mandatory standards. In addition, full enforcement requires review and update of procedures to grant building licenses in states and municipalities, such as specifying that granting a building license requires the verification certificate of compliance with the energy efficiency standards. It will also be necessary to make sure that those responsible for granting construction permits are applying the procedure correctly.

The roles of stakeholders
For compliance with envelope and lighting norms

<table>
<thead>
<tr>
<th>Design</th>
<th>Construction</th>
<th>Pre-occupancy check</th>
</tr>
</thead>
<tbody>
<tr>
<td>The role of federal/central government</td>
<td>Approval, plan review permits</td>
<td>Random inspection to ask for the Verification Certificate</td>
</tr>
<tr>
<td>The role of state/provincial and local government</td>
<td>Request proof of compliance</td>
<td></td>
</tr>
<tr>
<td>Involvement of third parties and their role</td>
<td>Verification Units check design</td>
<td>Verification Units inspect elements of design in actual buildings</td>
</tr>
</tbody>
</table>

Tools used for compliance checking

Software used for compliance checking
No software exists, except to calculate building performance for the building labels showing solar heat gain under standards NOM-020-ENER and NOM-008-ENER. The software program is maintained by CONUEE and can be found here: http://www.conuee.gob.mx/wb/Conuee/herramientas_y_aplicaciones.

Capacity building and education

Education and capacity building programs that support code implementation
There are alliances with third-parties to provide training, mainly with organizations related to the construction sector. Also, CONUEE personnel participate as trainers in diploma courses.
**Target groups for programs**
Designers and builders

**Best-practice example of capacity building**
In 2012, Mexico offered a series of courses to explain the calculation methodology for heat gain in residential buildings (NOM-020-ENER) and data that should be included on the label, as a result of this calculation. These courses were offered to several hundred construction professionals in 10 cities with the support of an NGO (Asociación de Empresas para el Ahorro de Energía en la Edificación) and the National Construction Chamber (Cámara Mexicana de la Industria de la Construcción).

**Section III: Compliance & Enforcement**

**Penalties, incentives and other mechanisms for improving compliance**

**Penalties for non-compliance with energy provisions in codes**

Non-compliance with the NOM standards is punishable in accordance with the Federal law on Metrology and Standardization, while CONUEE has the capability to sanction non-compliance with the NOM-ENER; however, CONUEE’s main strategy has been to facilitate and support to developers of buildings, so that they meet the specifications of non-residential and residential buildings standards, instead of applying sanctions.

**Incentives/rewards to go beyond minimum required performance level**

**Compliance assessment**

**Number of code compliant permits issued per year**

<table>
<thead>
<tr>
<th>Year</th>
<th>NOM-007-ENER-2014</th>
<th>NOM-008-ENER-2001</th>
<th>NOM-020-ENER-2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>Lighting systems in non-residential buildings</td>
<td>Building envelope in non-residential buildings</td>
<td>Building envelope in residential buildings</td>
</tr>
<tr>
<td>2012</td>
<td>861</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>2013</td>
<td>683</td>
<td>90</td>
<td>0</td>
</tr>
<tr>
<td>2014</td>
<td>640</td>
<td>23</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>602</td>
<td>23</td>
<td>160</td>
</tr>
</tbody>
</table>
Section IV: Building Materials & Energy Performance Certificates

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

Rating building materials
Mexico has the following standards for building materials:

NOM -018-ENER-2011 – Thermal insulation of building materials. This standard sets the minimum thermal conductivity of insulation materials. It applies at the national level, both for local manufacturing and imports. The certificate of compliance is required at customs office.

NOM-024-ENER-2013 – Windows and window systems for buildings. This standard sets thermal and optical characteristics. Its implementation has not been possible due to the lack of investment to assemble a testing laboratory that is accredited and approved.

NOM-011-ENER-2006 – Seasonal energy efficiency ratio of central air systems.

NOM-023-ENER-2010 – Energy efficiency ratio in split air conditioners system.

General lighting (lamps) is covered by NOM-017-ENER/SCFI-2012, NOM-028-ENER-2010, NOM-030-ENER-2012, which set minimum luminous efficacy (lm/W) for each type of lamps.

Tested by certified test labs
Test laboratories are legal entities that evaluate the performance of the products, in accordance with the test methods contained in the NOM-ENER.

Product Certification Bodies perform certification, through observation and documentary analysis of findings reports issued by testing labs, as well as sampling and monitoring products covered by the certificate issued.

These two entities have to be approved by the relevant government agency (CONUEE) and accredited by an Entity of Accreditation (EMA). The validity of accreditation and approval thereof, are subject to annual evaluations, on its structure and functioning, based on the directives provided by the Federal law on Metrology and Standardization and its system.

Providing samples for the tests
Mexico developed standards for testing methodology, which help measure and verify compliance with specifications. The testing methodologies take into account international methodologies, particularly those established by international standardization bodies recognized by the Mexican government, which are ISO and IEC.
Labels showing the ratings for building materials

Energy efficiency standards have always required labelling of building materials, so that consumers can choose more energy efficient product and building developers can identify products or systems that comply with energy efficiency requirements. Standards usually describe the label format, content and location.

Energy Performance Certificates

NOM-008-ENER-2001 requires that buildings have a label to disclose estimated solar heat gain in non-residential buildings, while NOM-020-ENER-2011 requires that buildings have a label to disclose estimated solar heat gain in residential buildings, compared to reference buildings.

Local governments also promote LEED, particularly in the Mexico City. CONUEE, with support of the German Cooperation Agency (GIZ) and Mexico’s National Ecology and Climate Change Institute (INECC) developed a rating system of energy performance for office buildings, based on the methodology of ENERGYSTAR, which seeks to establish an energy performance labeling program.

Appendix 1. Additional Information

Number of Verification Units accredited by EMA and approved by CONUEE in Mexico:

<table>
<thead>
<tr>
<th>Standard</th>
<th>Number of Verification Unit (UV) and people certified</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOM-007-ENER-2014</td>
<td>155</td>
</tr>
<tr>
<td>NOM-008-ENER-2001</td>
<td>3 UV with 7 people certified in total</td>
</tr>
<tr>
<td>NOM-020-ENER-2011</td>
<td>4 UV with 14 people certified in total</td>
</tr>
</tbody>
</table>