MICHIGAN ENERGY CODE UPDATES

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THE UPDATED 2021 MICHIGAN ENERGY CODE WILL IMPLEMENT THE FOLLOWING CHANGES:

Solar-Ready Zones and Renewable Integration

One of the most forward-looking updates requires all new commercial buildings to include solar-ready roof zones. This requirement ensures that at least 40% of the roof area can accommodate solar panel installations in the future without structural modifications and ensures roof design loads and electrical infrastructure are prepared to support solar energy systems. By embedding these features early in the design phase, buildings are better equipped for the transition to renewable energy.

Automatic Receptacle Control and Energy Monitoring

Energy code updates emphasize the need for smarter building systems. Automatic receptacle controls now require wall plugs to turn off based on schedules, occupancy sensors, or other triggers, which will help reduce unnecessary energy consumption. Additionally, energy monitoring systems are now required to trend and store data, enabling building operators to identify inefficiencies and optimize energy use.

Enhanced Commissioning Requirements

Commissioning, a process critical for ensuring systems perform as intended, has undergone significant changes. Previously, commissioning requirements were limited to pre-functional and installation checks. However, the updated codes now mandate comprehensive commissioning of HVAC systems, water heating, building envelopes, and lighting systems by third-party agents. This thorough approach includes verification, testing, and ongoing performance evaluations, ensuring that systems operate efficiently and reliably. While this increases initial project costs, it ultimately reduces operational expenses and extends useful life of equipment and systems.

Building envelope commissioning is a new requirement. To meet the requirements, owners and design teams need to ensure there is a continuous air barrier as part of the building envelope. Air barrier compliance can be visually witnessed by a third-party or a blower door test to ensure installation conformance. Building envelope commissioning enhances energy efficiency, building user comfort, and indoor air quality while reducing heating and cooling loads.

Lighting System Updates

Lighting design has seen significant advancements with the widespread adoption of LED technology and control systems. The updated energy codes further reduce allowable lighting power densities, with schools now limited to 0.72 W/ft^2— a 17% reduction compared to previous standards. However, these limitations are easily satisfied in current designs. Whole building designs recently have been calculated at 0.4 W/ft^2 which is well beneath the maximum allowed. Control systems are also required for lighting systems, yet most lighting designs have incorporated these strategies for years. While the adoption of the new energy code may be formally updating requirements, most engineers and designers have been meeting these standards for many years.

Vestibule Requirements

The updated codes clarify and expand vestibule requirements for building entrances, reinforcing their role in reducing energy loss. Exceptions are provided for spaces under 3,000 SF, certain employee-only entrances, and doors equipped with air curtains that meet specific performance criteria. These provisions balance energy efficiency with practicality, particularly for smaller buildings and specialized use cases.

Boiler Plant Design and Heating Systems

New regulations for boiler plants prioritize efficiency by encouraging the use of condensing boilers with return water temperatures of 120°F or lower. This shift supports low-temperature heating systems, which require larger heating coils but deliver substantial energy savings. The updated standards reflect a broader industry trend toward reducing reliance on high-temperature systems.

THESE CHANGES WILL HAVE POSITIVE IMPACTS ON A STUDENT'S LEARNING EXPERIENCE AND ENVIRONMENT:

Enhanced Indoor Comfort and Air Quality

Stricter air leakage limits and enhanced insulation on building envelopes ensure a stable indoor climate. This reduces drafts and temperature fluctuations, creating a comfortable learning environment for students.

Optimal Lighting for Learning

Energy codes mandate the use of efficient lighting and control systems, resulting in well-lit classrooms and hallways with reduced glare and improved focus. By lowering allowable wattage per square foot, schools balance energy efficiency with optimal brightness, enhancing visual comfort and reducing eye strain.

Energy Efficiency and Cost Savings

Smart systems minimize unnecessary energy use, reducing overall operational costs. Schools can reallocate savings to educational resources and programs, directly benefiting students. Low-temperature heating systems and energy recovery units also optimize energy use, ensuring consistent thermal comfort at lower costs.

Sustainability Education Through Design

Visible renewable energy features, like solar-ready zones, can serve as educational tools, inspiring students to learn about sustainable practices and renewable energy technologies. Real-time energy tracking also provides an opportunity for hands-on learning, integrating energy conservation topics into the curriculum.

Environmental Impact

By aligning with global energy efficiency standards, IECC-compliant schools contribute to a reduced carbon footprint, fostering a sense of environmental stewardship among students. These buildings set an example of responsible resource use, encouraging students to adopt sustainable habits.

Adaptability for Future Technologies

Solar-ready roofs and modernized systems prepare schools for future renewable energy installations, ensuring long-term adaptability and offering students a glimpse into cutting-edge technology in action.

Resilience and Longevity

Enhanced commissioning ensures all systems operate efficiently and reliably, reducing downtime and disruptions in the learning environment.

A PATH TO A MORE SUSTAINABLE FUTURE

The latest energy code updates represent a significant step forward in creating high-performing, sustainable educational buildings. By incorporating advanced technologies, renewable energy integration, and stricter performance standards, these changes can help us align with the global push for decarbonization and environmental stewardship.

For building project teams these updates are both a challenge and an opportunity — to innovate, educate stakeholders, and deliver buildings that meet the demands of the future. By embracing these changes, building owners can achieve a balance between initial investment and lifecycle performance.

THE GMB TEAM

Our team of engineers, energy experts, and Certified GeoExchange Designers have implemented energy solutions for our education clients for decades and are available to discuss your next energy related project.

Reach out to us today and explore how we can help elevate your student experience.

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