Climate Resilience in 5 Steps

08/29/2016 | BY JANELLE PENNY

Can your building handle climate-related emergencies?

How well would your building stand up against a heat wave or a storm? Before you answer with your building’s specs, remember that they’re based on historic conditions – and your building will be subject to storms that are more intense and frequent than your design and equipment probably take into account.

“Our buildings were essentially designed looking through the rearview mirror of the car as we’re driving down the road,” explains Chris Pyke, Chief Operating Officer for GRESB (Global Real Estate Sustainability Benchmark, a consultancy that specializes in assessing environmental, social and governance policies) and co-author of the USGBC report Green Building and Climate Resilience. “The conditions our buildings are being operated in are out in front of us. We design our buildings to operate under conditions that happened 30 to 40 years ago, yet because we know the climate is changing, the conditions our buildings will experience in terms of temperature, precipitation, and other extreme events are not the conditions we assumed when we designed them.”

As climate-related emergencies become more intense and frequent – bringing longer and deeper rainfall, stronger wind, or harsher temperatures – it’s up to facilities managers to make sure they’re prepared for the worst.

The Unique Challenges of Climate Resilience

Determining whether your facility is ready to meet the challenges of climate emergencies isn’t easy. In part, that’s because readiness is a moving goalpost, explains George D. Sullivan, Senior Principal and CEO of the Net Zero Analysis and Design Corporation, a clean technology firm specializing in reducing energy consumption and recycling waste energy.

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How Climate Change Could Impact Your Building

LANDSCAPES

Plant hardiness zones will change due to increasing temperatures, more intense and frequent heat and precipitation, and longer periods between storms. Consider evolving precipitation patterns, length of seasons and average ambient temperature in landscape design. Your landscaping choices are also crucial to helping manage stormwater runoff for your site and neighborhood, so select design and plant species wisely.

WATER

Consumption of water will increase as average temperatures rise, extreme heat events become more frequent and intense, and droughts last longer. If regional stream patterns change as projected, water availability will become more unpredictable, contributing to longer droughts. Focus on reducing your building's water consumption to balance the growth in demand with a supply that is projected to shrink.

STORMWATER

Harsher storms that occur more frequently increase runoff as site and neighborhood stormwater management systems are overwhelmed. Buildings are at risk of stormwater damage and localized flooding.

ENERGY

Cooling degree days will increase along with average temperatures. Winter heating demand will decrease slightly, but not enough to offset the predicted increase in cooling energy demand.

However, your envelope and systems influence how much more cooling energy you’ll need. Consider high albedo roofs, green roofs and enhanced envelope strategies the next time you need to replace your roof or tighten up your envelope, as well as HVAC design that allows for expansion when current cooling capacity is no longer sufficient.

INDOOR ENVIRONMENTAL QUALITY:

If both daytime and nighttime temperatures rise, natural ventilation will be much less effective for cooling indoor air. Ground-level ozone concentrations are also likely to rise, posing risks to human health and further impacting the viability of natural ventilation. Energy-saving measures like night cooling will be less reliable.

BUILDING MATERIALS

Look for durable, well-tested building materials that can stand up to more frequent and intense storms, increased flooding and changes in regional pests. Wind-driven water and roofing performance are the top threats to building materials, according to a report produced after Hurricane Ike, requiring smart roofing and envelope strategies.
INCREASED FLOOD RISK

Flooding is greatly impacted by neighborhood patterns, but your building material choices can help mitigate your flood risk as well. Look for materials that are more durable and water-resistant, less susceptible to water intrusion, and relatively inexpensive and easy to replace if your building does flood.

PESTS

Termites are expected to expand their range as temperatures increase, especially if winter seasons shorten as anticipated because ground freezing helps keep termite populations down. Buildings in regions with limited termite populations may become more vulnerable to the pests as the climate grows warmer, so consider possible damage to wood-based building materials and furnishings.

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