Blueprint for a lower carbon footprint: The construction impact of NYC’s Local Law 97 - by Amanda Kaminsky

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Densely built cities offer cultural, economic, educational and other benefits, but they come at a cost: big buildings have significant carbon footprints.

With Local Law 97 (LL97), New York City has set ambitious targets to curtail the ecological impact of its thousands of buildings. Bringing a structure to compliance, however, is not without its construction challenges.

How best to address those challenges has emerged as a pressing issue.

In New York, residential, commercial, industrial and institutional buildings together account for 71% of greenhouse gas (GHG) emissions. LL97 is intended to cut these by 40% as of 2030, with further reductions of 80% by 2050. The law applies to most buildings over 25,000 s/f, and the city will levy fines on noncompliant owners beginning in 2025, with standards growing stricter over time.

In the years ahead, developers and their teams will determine what systems should be in place for new-build projects to comply.

Consider 1 Java St., for example, a mixed-use property that my firm, Lendlease, is developing and building along Brooklyn's Greenpoint waterfront, which aligns with Lendlease's global Mission Zero pledge to achieve net zero carbon by 2025 and absolute zero carbon by 2040.

This all-electric project will include more than 800 residential units, 30% of which are designated affordable, and over 13,000 s/f of retail. The 1 Java team is exploring on-site geothermal heating and cooling to reduce the building's GHG emissions.

Preventing greenhouse gas emissions from day one seems relatively easy. A much more daunting challenge is renovating the approximately 50,000 existing structures in New York City that must comply with LL97. Manhattan office space alone totals more than 460 million s/f, most requiring remediation to meet the mandate.

Despite short-term obstacles, the pioneering legislation presents an incredible opportunity. Those Manhattan offices account for more than 10% of all office space nationwide. This means LL97 will have an immense impact on the carbon footprint of not just New York but the entire U.S.

Implementation of LL97 aligns with another trend in commercial real estate. Many companies have instituted work-from-home or hybrid work policies, reducing space requirements for many office tenants. Compounding this, the excess supply gives leverage to those tenants, many of whom are fleeing to newer spaces, hollowing out class B office buildings.

As a result of this flight to quality, many office landlords will refurbish their assets or convert them to a new use such as multifamily. From a construction standpoint, installing more energy-efficient systems can be faster and cheaper in an unoccupied space already undergoing renovations, compared with retrofitting an occupied property.

Given the looming deadline—the first tranche of LL97 is scheduled to run from the start of 2024 through 2029—many owners and managers are metering and auditing their buildings to understand

what changes they will have to implement to achieve compliance.

To meet the highest-reaching goals of LL97, many entire HVAC systems will need to be replaced with more efficient alternatives. Gas hookups will increasingly be removed in favor of whole-building electrification. These can be costly capital outlays, however, depending on how old the existing systems are.

Variable frequency drives and demand control ventilation improvements can help bridge the gap, enabling systems to run more efficiently if it is too early in their lifecycle to warrant full replacement. Lighting systems upgrades are low-hanging fruit and occupancy sensors are a cheap and easy-to-install means of appreciably reducing a building's energy use.

At the envelope, improved insulation and sealing around penetrations, more efficient glazing, and roof-mounted solar panels are additional measures that will reduce a building's carbon footprint, though these are dependent on access to wall interiors, age of the existing windows, and the available roof area.

On-site carbon capture–technology capable of separating out and extracting carbon dioxide from, for example, the flue of a gas-fired boiler–can also help to reduce and repurpose a property's emissions. Once cooled and pressurized, service providers can truck the carbon dioxide away for a secondary use, perhaps in the manufacturing industry.

These carbon capture plants typically do not use dangerous solvents or flammable products, so they are suitable for residential buildings that can allocate the space. The deployment of carbon capture in a healthcare or life science setting can be even more beneficial since the carbon dioxide could potentially be used on site, eliminating the need for transport.

When putting together a team to plan an LL97-compliant renovation, building owners should look for those with design-build experience. The design-build model is well-suited to retrofits due to the requisite efficiencies.

Unlike disconnected organizations in a design-bid-build process, a team with design-build experience can coordinate all design, cost-planning and site logistics early to determine which systems must be targeted for upgrade, creating a timeline to work intelligently, economically and efficiently. With fewer bottlenecks and deeper collaboration throughout the process, design-build teams are more accountable, resulting in fewer change orders and a less costly project in the end.

Of the New York City buildings that will exist by 2050, an estimated 90% are already standing. Building a new tower with all the latest sustainable bells and whistles may grab headlines but retrofitting our existing building stock will have a greater impact overall.

Amanda Kaminsky is the director, sustainable construction – Americas, Lendlease, New York, N.Y.