POLICY BRIEF

BUILDING ELECTRIFICATION AND CARBON REDUCTION

BOMA International

The societal trend toward decarbonization is leading to a wave of public policies and mandates, and the concept of building electrification is gaining a foothold as a potential next step. The issue has evolved rapidly from a niche concept among a few cities and proponents, to a mainstream sustainability goal discussed across much of the country. The potential benefits from electrification are clear in theory, but the path to turn the concept into reality can be complicated—and even contradictory—particularly with regard to existing buildings. The issue has quickly gained traction, even while a lot of relevant information has been lacking; BOMA is uniquely positioned to fill this gap.

ELECTRIFICATION



The push for building electrification is gaining steam. The vision is a built environment comprised of all-electric buildings powered only by electricity and without use of gas combustion or any other fossil fuel source on site. The driving force is a desire to reduce carbon emissions. At a time when many jurisdictions are setting carbon emissions goals, renewable energy targets, and energy efficiency standards, building electrification is starting to be promoted as a potentially significant solution.

Electrification is no longer only theoretical. Some U.S. localities have proposed and passed regulations targeting the real estate sector with mandates that aim toward an all-electric built environment. Much of this trend has focused on bans on fossil fuel hook-ups, particularly for new construction. The trend is accelerating, as a host of cities are actively considering electrification strategies, which could impact existing buildings as well.

However, it remains a challenge that the path to electrification is much more complex than the goal. To some degree, proponents have oversimplified the issue, pushing for a decarbonization solution without considering the current realities of the infrastructure of both existing buildings and the electrical grid.

To accomplish electrification—or any other path that ultimately leads to decarbonization—will necessitate massive planning and collaboration throughout society. Despite the hurdles, electrification represents a long-term vision that property owners and managers must begin planning for.

Twenty states have passed various versions of "preemption laws" that prohibit local governments from banning natural gas:

Alabama
Arizona
Arkansas
Florida
Georgia
Indiana
Iowa
Kansas
Kentucky
Louisiana
Mississippi
Missouri
New Hampshire
Ohio
Oklahoma
Tennessee
Texas
Utah
West Virginia
Wyoming

Further complicating matters, building electrification has rapidly become a political football. While some localities are racing to be on the leading edge in pushing the issue, there's been a backlash as well, and a growing number of states have passed laws that prevent local governments from issuing electrification mandates or gas bans. Many cities are left trying to find a middle ground that encourages electrification as an alternative.

THE CRE PERSPECTIVE

Electrification may be a worthy goal, but it's a high hurdle to accomplish it equitably, responsibly, and in an economically viable manner. Significant unanswered questions persist as glaring warning signs, including:

- the capacity of the electrical grid,
- the availability of clean energy sources, and
- the ability of existing buildings to retrofit.

A business case needs to be demonstrated for electrifying commercial properties, and this is especially challenging for existing buildings. With new construction projects, buildings can be designed to be all-electric with negligible difference in cost; retrofits of existing buildings require significant planning and likely necessitate excessive costs and logistical challenges.

While these challenges may not be insurmountable, the current public policy debate on electrification has generally been wanting. This comes at a time when state and local climate laws are being proposed that in some instances could be detrimental to commercial real estate while producing questionable results. The foremost example may be New York City Local Law 97, which established targets that cannot reasonably be met by the majority of properties, potentially resulting in steep fines that aren't earmarked for climate programs.

Now, electrification is gaining momentum as a legislative and regulatory "silver bullet" to achieve decarbonization goals, sometimes with little concern for current realities. Bans of fossil fuel connections have passed in New York City, Seattle, and several California cities, and proposals are being considered in Boston, Washington, D.C., and many more.

BENEFITS

PREPARE FOR THE FUTURE

Regardless of the weight one places on climate change concerns, regulatory requirements are coming—and in some cases they've already arrived. Responsible management now includes looking at electrification as a potential long-term vision that property owners and managers must begin planning for.

SAVE DOLLARS

Operational benefits are always welcome in regard to energy efficiency, even while long-term energy costs can be difficult to predict. Electrification can produce savings in construction costs for new buildings, and can drive lower energy costs in existing buildings if retrofits are timed and planned well.

REDUCE EMISSIONS

Cities are increasingly setting sustainability targets—as are many companies voluntarily—as they plan around decarbonization and emissions goals. Electrification offers an enticing path forward, especially if implemented as part of a transition away from fossil fuel combustion.

IMPROVE HEALTH

The combustion of fuel generates pollution that lowers indoor air quality as well as affecting the air outdoors. Again, if electrification encompasses a move toward cleaner energy sources, then there may be added health-related benefits for building occupants.

ATTRACT TENANTS

All-electric buildings can be a difference-maker to tenants seeking to reduce their carbon footprints or just lower their energy costs. Whether it's helping tenants meet their sustainability goals or simply offering a highly efficient space, electrification can be a selling point.

CHALLENGES

GRID CAPACITY

In many regions of the U.S., increased electricity demand from all-electric buildings could not plausibly be handled by the existing electrical grid. This presents the country with a massive infrastructure challenge with no political consensus on the path forward, and any potential solutions would be many years away.

UPSTREAM EMISSIONS

In order to achieve benefits for downstream users at the building level, the upstream energy production must be decarbonized away from fossil fuel–burning power plants. There is little to be gained in emissions if a shift is made to electricity generated by inefficient facilities, and in some cases emissions could increase.

DIFFICULT RETROFITS

The logistics of retrofitting existing buildings can present a high number of significant challenges: the timing of equipment turnover with long life cycles, the timeline of the investment payback period, tenant lease terms, and even the availability of space for larger electric systems.

COMPLEX VARIABLES

The concept of electrification may be simple, but the list of critical variables is long, including the age of the building, the climate in the region, the current utility fuel source, and the availability of other energy options. Equipment technology is constantly evolving as well.

COSTS AND EQUITY

Policies that place mandates at the building level must consider the significant upfront equipment costs and the questionable long-term savings. Short-sighted decisions on who bears the costs and the risks can lead to unanticipated consequences and inequitable outcomes.

POLICY EXAMPLES

~ BERKELEY ~
CALIFORNIA

The first municipal electrification ordinance in the nation was passed by Berkeley in July 2019, requiring that new buildings be built all-electric beginning January 1, 2020. No gas hook-ups could be installed in new construction of residential and commercial buildings; existing buildings were not affected. Even the local utility was supportive, stating that it had no interest in investing in new gas infrastructure that would get stranded before the end of its life. The city now has an Existing Buildings Electrification Strategy with a tentative timeline to transition all existing building stock off natural gas as soon as possible, and no later than 2045.

~ SAN FRANCISCO ~
CALIFORNIA

A wave of California cities followed Berkeley and passed electrification ordinances in 2020, and San Francisco required all new construction of residential and commercial buildings to be all-electric, taking effect June 1, 2021. All indoor and outdoor space-conditioning, water heating, cooking, lighting, and clothes-drying systems must be electric. The ordinance allows builders to apply for waivers to install natural gas for restaurants. The city maintains a list of third-party "all-electric feasibility reviewers" who can be hired to help identify options to meet project goals while building all-electric.

~ SEATTLE ~
WASHINGTON

Seattle amended its energy codes in 2021 to restrict natural gas use in commercial and apartment buildings taller than three stories, both for new construction and replacement of older systems. The amendments will continue to allow natural gas for cooking. Since then, the state of Washington has amended the state commercial energy code to require all-electric space and water heating in new commercial and multifamily construction taller than three stories beginning in 2023, making it the first state to incorporate building electrification mandates into statewide energy codes.

~ DENVER ~
COLORADO

The Energize Denver ordinance was passed in 2021, establishing electrification mandates for space and water heating and cooling equipment for all existing buildings. The requirement is triggered upon system replacement, as long as it does not cause economic hardship, going into effect on March 1, 2023. The law also sets performance targets for buildings larger than 25,000 square feet and will gradually require energy use intensity reductions. Meanwhile, Colorado passed state legislation directing utilities to create incentive programs for electric appliances, and directing the public utilities commission to set energy and emissions goals from electrification.

~ ITHACA ~
NEW YORK

The first U.S. city to commit to electrification of all existing buildings may be a bit of a surprise, but Ithaca's Efficiency Retrofitting and Thermal Load Electrification program is underway. With a goal of decarbonizing all 6,000 public and private buildings by 2030, properties will be individually assessed and targeted for a variety of solutions, from heat pumps to renewables to smart meters. As an ambitious early adopter, the city has attracted outside attention, including an eye-popping $100 million of support from private investors that will fund a low-interest loan and lease program.

~ NEW YORK ~
NEW YORK

Building on its aggressive decarbonization goals, New York City passed legislation in 2021 that phases out natural gas in most new buildings. Any new building under seven stories will be required to be all-electric by 2023, and taller new buildings will be required to be all-electric by 2027. Hospitals, commercial kitchens and laundromats are exempt from the ban, and residents who currently have gas stoves and heaters in their homes will not be impacted. The ban could affect thousands of new buildings in America’s largest city, but it doesn’t address the hundreds of thousands of existing buildings.