



## **Fox of Cook + Fox Architects guest speaker at BOMA/NY seminar**

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Global warming has thrust building owners and managers into an unparalleled position of public responsibility - and opportunity.

Buildings account for 43% of all CO2 emissions, beating out all forms of transportation at 32%, and industry - perhaps our most visible form of pollution - at 25%. In New York City the stakes are higher; some reports, including those from City Hall, place building CO2 emissions at 79%.

Speaking at the recent BOMA/NY seminar, renowned architect Robert Fox, AIA of Cook + Fox Architects LLP, summed up the challenge and the opportunity by saying quite simply, "Real estate has a tremendous role to play." Fox was joined by his colleague, engineer Scott Frank from Jaros Baum & Bolles, in the presentation and Q&A.

The work of his firm and their collaborators at the LEED Platinum One Bryant Park-Bank of America Tower (OBP) serve as a case study on how to leverage every green opportunity possible before a building comes out of the ground. But the lessons can also be applied to existing building stock, which by the year 2030, will still account for 85% of the city's total building inventory. Fox's insights on reducing a building's carbon footprint for building owners and managers are summarized here.

Start with what's free. Analyze all natural elements - wind, sun, rain, bio processes, earth - to see if they can defray energy costs, reduce water use, etc.

\* Floor-to-ceiling windows make daylighting a widely used feature at OBP and reduces energy daytime draw. How does this quantity of glass work in a green building? A ceramic frit pattern on the upper portion of the windows reflects solar radiation outward and thus deflects a large amount of heat while allowing the light to penetrate. Daylight also helps reduce the need for lighting and has cut lighting use at OBP by 30%.

\* With an aging, overtaxed water system, the pumping of more than 13 million gallons a day out of the subway system and problems with storm water run-off every time there is a heavy rain, water use is critical in New York. At the 945-foot tall OBP, it was not feasible to re-use the black waste water, but it would pay to re-use the gray water. Roof run-off, ground water and condensate from the AC system are being collected and channeled to internal tanks, then stored for use flushing toilets and cooling tower make-up for a 50% reduction in potable water consumption.

\* But where does one store a new tank? The OBP team found space beneath the elevator pits - one of the "interesting spaces" one can find, said Fox, when you approach a situation from the non-traditional point of view.

Location, location, location. At OBP, 40% of the construction materials were home grown and transported to the site from within a 500 mile radius, reducing exhaust and fuel consumption.

Lost in transmission. Typically 73% of energy is lost as waste heat during generation and in

transmission and distribution losses. Co-generation eliminates such losses; buildings can use the waste heat where power plants cannot. A natural gas turbine combined with a steam plant now generates 66% of OBP's load, providing heat and some A/C, with greatly reduced emissions. And equally as important, the system takes stress off the power grid serving the New York area.

Similarly, the in-house ice plant, one of the few in New York, makes ice at night and shifts demand off-peak. Fox reminded the seminar attendees that NYSERDA will provide a rebate for this shift in demand because it reduces daytime stress on the grid.

Set in stone. Fox asked the group to name the most polluting manufactured product used in construction and the answer was a stunner - cement. Approximately 7 to 8% of the CO2 produced worldwide comes from cement production. But blast furnace slag, the steel manufacturing by-product, is stronger, and as it exists in abundance, including piles of it lining the Erie Canal in upstate New York, it was more than feasible to use in OBP. The result? By using the slag, 56,000 tons of CO2 emissions were avoided. The good news? This procedure is now becoming the norm. As for construction debris, most was wood and 83% of that was recycled.

Hot and cold. The bane of every property manager's existence is hot and cold complaints. But at OBP, they are negligible due to an underfloor air delivery system that is the first of its kind in NYC, and is based on the fundamental premise that hot air rises. The air emerges at 65 degree and since diffusers are within arm's reach for most employees, they can control their amount of air themselves. Money that's waiting for you. For those involved with retrofits, Fox strongly recommended using NYSERDA funding. They "collect on average \$400,000 a day" use it!" he recommended. NYSERDA funds helped at OBP and at another Cook + Fox project at 375 Pearl Street, a former switching station for Verizon, where photovoltaics will be integrated into the fabric of the curtainwall and a clean, highly efficient 400kW fuel cell will be installed, supplementing existing on-site power generation.

Think creatively. When building its own office, Fox's team discovered a new source of recycled insulation - blue jeans. At the Verizon building, which was being converted from a switching center to office space, the air shafts once used for cabling proved to be an untapped resource - more than 100,000 s/f was recaptured and corner offices were expanded from two to eight per floor.

And the creative thinking that underscores the greening process is now ready to be committed to paper, Fox said, noting that "volunteers are needed to green the new building code..." Something BOMA/NY, which was instrumental in rewriting the most recent reincarnation of the code, knows something about.