Mapping the sun's potential to power New York

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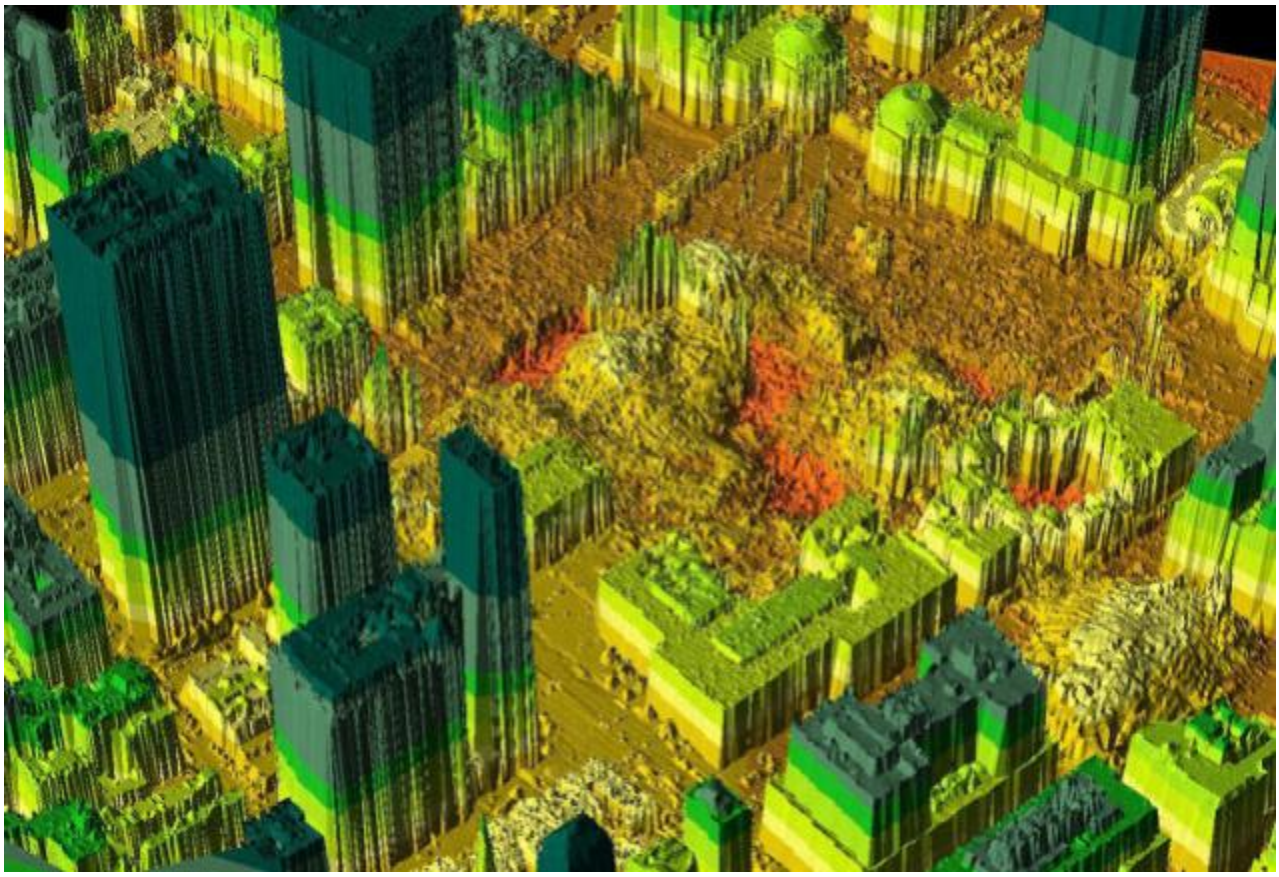

AFP CRUCIAL: LiDAR images - like the one in this file photograph that shows the area near the World Trade Center in New York - should help advance efforts to increase the city's reliance on solar power as part of its energy mix. File photo

Two-thirds of New York City's rooftops are suitable for solar panels and could jointly generate enough energy to meet half the city's demand for electricity at peak periods, according to a new, highly detailed interactive map made public on June 16.

The map, which shows the solar potential of each of the city's one-million-plus buildings, is a result of a series of flights over the city by an airplane equipped with a laser system known as LiDAR, for light detection and ranging.

Swooping over the five boroughs last year, the plane collected precise information about the shape, angle and size of the city's rooftops and the shading provided from trees and structures around them.

The map is at the Web site of the City University of New York (CUNY) [http://www.cuny.edu/about/resources/sustainability/solar-america/map.html]. City officials said the information should advance efforts to increase the city's reliance on solar power as part of its energy mix, reducing the metropolis's greenhouse gas emissions.

What LiDAR shows

“The quality of the LiDAR information is so remarkable that it will much more rapidly unlock usable sites,” said Stephen Goldsmith, the deputy mayor for operations.

Over all, the images show that 66.4 per cent of the city's buildings have roof space suitable for solar panels, said the CUNY team, which developed the map in partnership with the city and the federal Department of Energy. The rooftops could generate up to 5,847 megawatts from hundreds of thousands of buildings, the team said, compared with the negligible 6.5 megawatts yielded now from about 400 installations.

At those output levels, the panels could meet 49.7 per cent of the current estimated daytime peak demand and about 14 per cent of the city's total annual electricity use, the officials said. The figures consider typical weather conditions.

Yet harnessing solar power also involves overcoming barriers like the upfront costs of installation, the availability of installers and the ability of utilities to integrate solar power into their grid.

Solar power is projected to grow into a $12-billion-a-year industry this year, according to the Solar Energy Industries Association, but the sector is still in its infancy.

Nationwide, the installed solar capacity is just 2,300 megawatts, less than half the rooftop potential of New York City.

“We're just really beginning,” said Rhone Resch, president of the trade group.

Solar map

The solar map will allow New Yorkers to type in the address of a building where they live or work and find out how much solar power the roof can yield and at what cost. The Web site indicates what government financial incentives are available to help cover the costs and calculates how long it would take a building's owner to recoup the costs in energy savings.

For the more environmentally minded, the map also shows how much carbon dioxide emissions each property would avoid, in pounds and by the number of trees that, if planted, could absorb that amount of emissions.

The solar map alone cost $210,000 and was financed by the federal Department of Energy's Solar America Cities programme. The city provided $450,000 for the LiDAR flights.

LiDAR produces images of structures, trees, wetlands and other surface terrain by shooting laser pulses from an aircraft and measuring the time it takes the pulses to bounce back. Its data will also be used to update flood maps.

More than a dozen cities already use similar maps, although not necessarily prepared with the LiDAR system, and some of the maps have contributed to broadening the use of solar power. In San Francisco, the number of solar installations on private roofs rose to more than 2,300 this year, from 551 in 2007, when the solar map was introduced along with financial incentives like tax credits and rebates.

“It's sort of a one-stop shop for people to understand what the technology is, does it make financial sense, are others doing this,” said Danielle Murray, the renewable energy programme manager for San Francisco's Environment Department. “You realise that you're not alone, and that it's a smart investment.”

In New York, David Bragdon, director of the Mayor's Office of Long-Term Planning and Sustainability, said the city could realistically add “thousands of megawatts” in solar power.

To that end, Mr. Bragdon said, it has been working on streamlining the installation permit process and relaxing building regulations to accommodate the panels, in addition to pursuing larger-scale solar projects at landfills and other sites.

Officials with Con Edison, the utility that supplies electric service to most of the city, said they were developing a centralised Web site to reduce the cost and time of going through all the paperwork required to install the panels, which currently can take up to a year.

The city had already identified some “solar empowerment zones” where solar energy would be most beneficial, based on growing demand for power and other factors. The solar map now will offer roof-by-roof information within those zones, allowing planners to locate and aid owners in areas with the highest demand on hot and sunny days.

“This map can serve as a key foundation toward building a new infrastructure, a clean energy infrastructure, for New York City,” said Tria Case, the director of sustainability for CUNY. —

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