

SUTRO TOWER[®]

connection

THE NEWSLETTER FOR THE SUTRO TOWER NEIGHBORHOOD | JULY 2021

Emission Levels from Sutro Antennas Drop by 6%

Radio frequency exposure levels within 1000 feet of Sutro Tower measured this spring were 6% lower than the previous measurement in 2018, according to a report by consulting engineers Hammett & Edison Consulting Engineers submitted to the San Francisco Department of Public Health.

“The TV and FM broadcast stations at Sutro Tower continue to comply with prevailing standards for limiting public exposure to radio frequency energy,” said Hammett & Edison’s Rajat Mathur, P.E., who recorded the measurements along with field technician Scott Walthard and Andrew Afflerbach of CTC Technology.

Measurements were taken at 212 locations — mostly on streets in front of neighborhood houses -- near the tower on a clear weekday in April. On average, the exposure level when television stations use their main broadcast antennas was just 1.4% of the limit established by the Federal Communications Commission, compared to 1.5% previously, a reduction of 6.6%. The highest RF measurement was 6.0% of the allowable limit, recorded along the Summit Reservoir footpath. All street measurements were below 3.5% of the allowable level.

A day later, Mathur, Walthard and Afflerbach measured the emissions at the same 212 locations when all the stations used their auxiliary antennas, which are located lower on the tower. The average measurement was 2.1% of the FCC limit, compared to 2.5% during the previous auxiliary antenna measurements, a net reduction of 16%. The greater reduction for the auxiliary antennas is due primarily to the fact

Andrew Afflerbach observed Scott Walthard’s measurement as Raj Mathur recorded the data



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Supervisor Melgar (right) and her aide Lila Castillo

New Supervisor Visits the Tower

New District 7 Supervisor Myrna Melgar visited Sutro Tower for the first time in May, getting a first-hand look at “her tallest constituent.” Supervisor Melgar was elected last November to replace Norman Yee when he finished his second term, but she couldn’t come to Sutro Tower until Covid restrictions were lifted this spring.

“It was such a pleasure to visit Sutro in my capacity as Supervisor,” said Melgar, who had reviewed the tower’s permit applications during her years on the Planning Commission. “I want to give a shout out and huge thanks to the amazing staff that work round the clock to ensure proper operation and preservation of this tower.”

Experts Endorse Plan to Remove Tower’s Siding

An independent panel of structural and geotechnical engineering experts has affirmed that the best way to bring Sutro Tower into compliance with updated California Building Code criteria for earthquake and wind safety is to permanently remove hundreds of non-structural siding panels on the tower’s legs.

The original panels on the tower’s legs, installed after the structure began operations in 1973, are not strong enough to withstand 102-mph winds, as required by updated building codes (the original code in the 1970s required resisting winds of 70 mph). New steel panels – called cladding – that meet current code would increase the weight on the tower by 30,000 pounds, necessitating more structural additions, while removing the cladding reduces the tower’s weight by 140,000 pounds, reducing wind loads. Removal of the cladding is necessary to bring the tower into compliance, the panel has found, after reviewing the calculations by the structural engineering

consultants Simpson, Gumpertz, and Heger (SGH). “In summary, we concur with the SGH assessment that the tower can support the new broadcast equipment,” the panel stated. “SGH concluded, and we agree, that upgrades to the tower are needed for its compliance with the seismic and wind requirements of ASCE/SEI Standard 7-16. The removal of the cladding on the legs of the Tower is necessary for compliance with the wind provisions of ASCE 7-16.”

“This is clearly the way to go forward,” said Raul Velez, vice president and chief operating officer of Sutro Tower, Inc.

Much of the siding panels were removed in 2019 and 2020 to facilitate installation of new antennas last year and ongoing work to strengthen the tower structurally. Without cladding, Sutro Tower’s three legs will have the open truss look of the Eiffel Tower or most bridges, though because of the tower’s size and shape, the change isn’t

noticeable beyond roughly three-quarters of a mile. After approval by the San Francisco Planning Commission to permanently remove the cladding, the structural elements of the tower will be painted to match the current color scheme of white and aviation orange, unless the Commission determines that it should be painted another color.

Also, cladding remains on the tower’s horizontal elements, so it maintains its familiar form and look.

The peer review panel was convened to assess SGH’s analyses, calculations and drawings for the structural work. The engineering experts on the panel were approved by the city’s Department of Building Inspection prior to their study of the advanced analyses. The panel members were Dr. Andrew Whittaker, engineering professor at State University of New York at Buffalo; Dr. Brian McDonald, principal engineer of the engineering firm Exponent, and John Egan, a senior Bay Area geotechnical engineer.

Baby Hawk Learning to Fly At Sutro Tower

A red tailed hawk was born this spring on Sutro Tower, and Jack Dumbacher, curator of birds at the California Academy of Sciences in Golden Gate Park, said that's good news for San Francisco.

"Hawks eat a lot of rats and mice, things that people don't like in the city," he said. "Raptors are great to have around."

Scott Young, security supervisor at Sutro Tower, has watched the tower's fledgling hawk and its parents for months. "I was hoping for a hatchling," Young said. "As it learned to fly, it cried like it didn't quite know what to do with itself, and perched in low places until it gained confidence."

Dumbacher said red tailed hawks "do very well at Sutro Tower and Golden Gate Park, with open space and big trees or a tower to perch on."

Hawks begin building a nest in late February or early March and take 4 to 7 days to build it. They lay 2 or 3 eggs, one every other day, and begin incubating them after all are laid. Surviving babies hatch 28 days later.



Above, Sutro Tower's newest resident, two weeks after it left the nest near the end of June.

Left, Scott Young looking for Sutro's fledgling hawk

Photo by Scott Young

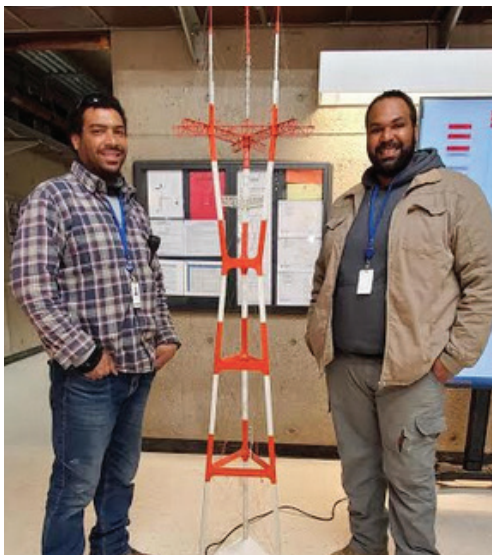
The parents feed the young up to 12 times a day, Dumbacher said, for 30 to 35 days. Then they "fly with the fledglings for months to keep them on track."

"At the end of June I saw the parents perched together, rubbing their faces together. I heard the fledgling's cries," Young said. "The mother flew out in that direction, while the fledgling flew to meet the mother in the middle of the air. Best birdwatching day ever."

There are fewer than 100 raptor pairs that breed in the city, according to San

Francisco naturalist Eddie Bartley of the Golden Gate Raptor Observatory. "The red tail is the largest of hawks, up to 20 inches in length with a 50-inch wingspan. But their life span is short," he said.

Besides hosting hawks, Sutro Tower has crows and ravens. They don't get along well together, Dumbacher said. "Hawks are bigger and will eat young ravens or crows, so the smaller birds will flock together and attack a hawk to chase it off," he said. "You'll see some animosity."



Original Sutro Model Comes Home

A 7-foot-high model of Sutro Tower, made in South Carolina when the tower was built, has found its way to San Francisco.

The model was made by Kline Steel Company of Columbia, SC, the tower company that built Sutro Tower. Kline had started building television towers in 1954; Kline vice president of engineering Furman Anderson did the original design of San Francisco's "Tall Tower" in the 1960s.

Thirty years later, after Anderson had left Kline, Jean-Alain Lecordier became vice president of engineering. When the company was sold, Lecordier left to form Tower Consultants Inc. (TCI) and saved the Sutro Tower model. He shipped it to San Francisco this spring.

Sutro's Manny and Julio Perez with the 40-pound Sutro model

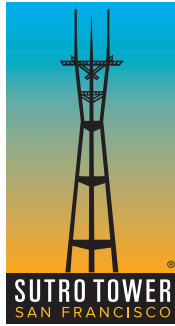
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that many of them were relocated higher up the tower, therefore farther away from the ground. The FCC limits apply for continuous exposures to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health.

Seven new or replacement TV antennas were installed on Sutro Tower last year as part of the FCC's national "repack" project condensing the broadcast spectrum by 30% so wireless usage could grow. In all, 11 television stations and 3 FM radio stations broadcast from the tower, along with numerous public and private wireless users.

Measurements were made using a calibrated Narda Type NBM-520 Broadband Field Meter with Type EF-0391 and Type EA-5091 Isotropic Broadband Electric Field Probes (Serial Nos. D-0454 and 01035, respectively).

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Questions? Visit www.sutrotower.com/for-our-neighbors/, or contact Sutro Tower Vice President & COO Raul Velez at 415-213-7800 or info@sutrotower.com.

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Accuracy of RF Measurements Confirmed

CTC Technology & Energy, an independent consulting firm specializing in technical guidance for wireless technologies, shadowed the team measuring radio frequency (RF) emissions from Sutro Tower this year to provide a third-party review of their approach, procedure and final report.

The review was a condition of the building permit to install new or replacement antennas in 2020.

CTC Chief Technology Officer and CEO Andrew Afflerbach, P.E., Ph.D., came from Washington DC for the review. He reviewed the active antennas and transmitters at the tower, verified that the RF measurement equipment had the appropriate calibration, and accompanied the Hammett &

Edison engineers for the field tests.

"(I) observed the measurements taken on the test equipment, verified that the numbers were recorded properly in the data sheets, that the Hammett & Edison engineers were performing the tests correctly, and that the test locations corresponded to those in the test procedure," Dr. Afflerbach reported to the San Francisco Department of Public Health. His report also stated that he "reviewed the Hammett & Edison report (to DPH) to verify that it accurately described the procedure, reviewed the test data, and found that the data was consistent with the data recorded earlier."

"Moreover, it is (my) professional opinion that the testing protocol is an effective means of determining

the RF exposure in the region of the tower, and correctly incorporates the best practices recommended by the Federal Communications Commission (FCC) to measure RF with respect to the recommended limit for the general public/uncontrolled exposure," Dr. Afflerbach's report stated. "CTC concurs that, for the main measurements, the maximum RF exposure level measured at any of the 212 locations surrounding Sutro Tower was 6.0% of the applicable FCC public exposure limit. CTC concurs that the maximum RF exposure level measured at any of the 212 locations surrounding Sutro Tower, when all auxiliary antennas are operating, was 29% of the applicable FCC public exposure limit."