

Appeal to Board of Supervisors of
Planning Commission Motion 20849
Record No: 2019-015984CUA

Approval of new rooftop AT&T Macro Wireless Telecommunications Facility at 590 2nd Ave

Documentation of how the amount of sunlight loss on 588 2nd Ave this project will cause was determined

A to scale plan view of 590 and 588 2nd Ave was drawn and used to determine Azimuth (compass direction) when sun will be shining from the direction of the 23 feet long by 6 feet high screen onto 588 2nd Ave decks and garden

A to scale elevation section of 590 and 588 2nd Ave was drawn and used to determine the angle of the roof of 590 2nd Ave relative to the back yard and decks of 588 2nd Ave, both with and without the proposed screen

The web site <https://www.esrl.noaa.gov/gmd/grad/solcalc/azel.html> was used to find the Azimuth and declination every minute of the day on every day of the year when the sun would be obstructed by the screen

Summary of information in spreadsheet attached to email

UPPER DECK calculations when sun over south building stairwell

The screen will affect the upper deck between azimuth 140 and 215 AFTER WHICH TIME IT PASSES BEHIND OUR HOUSE

Depending on location on the deck, Angle to roof in direction of screen ranges from 29-42 earlier in the day and 27-40 later in the day

Decided to use an average of 35 degrees for calculations

Based on my drawing of a north-south elevation section, I estimate the screen will raise these angles about 5 degrees.

Based on the data, between 2/1/20 and 3/8/20, 38 days,

The screen will obstruct the sun for 60 out of 123 hours, an average of 94 minutes (49%) during that time

This will be duplicated approximately between October 1 and November 10

GARDEN SHADING

afternoon sun across lightwell on garden without screen, starting at north edge of garden

afternoon sun across lightwell on garden with screen

At far NE corner of yard elevation per elevation drawing from yard to roof at screen is 24d rising to 28d with screen

At NW corner of yard elevation per elevation drawing from yard to roof at screen is 44 d rising to 48d with screen

these times are when the screen will completely obstruct sun from the garden, but without screen the garden has some sun, amount increasing as elevation increases

For 69 days before and after the winter solstice the screen will reduce sun into the garden for a total of 138 days in the winter

At the solstice, when the sun is over or behind the screen. the direct sun is reduced by 50% from 2 hours to one hour a day

The amount of reduction gradually decreases to 0 over the 69 days.

A total of 45 hours lost or 25% of the total hours the sun is shining during this time now this is at the back of the garden.

The closer to the house the greater the effect of the screen

FAMILY ROOM DECK SHADING Calculations

Shading of 588 2nd Ave Family room deck and back yard by the cell antennas on 590

all times are PST, no adjustment for daylight savings time

January 1 to June 20 (summer solstice)

Radio screen between family room deck and sun from azimuth (compass direction) 110-215 (90 is east and 180 is south)

From east to west sextant measurements at various locations on deck range from 63-52 at 4 feet above deck.

Based on my drawing of a north-south elevation section, I estimate the screen will raise these angles about 5 degrees.

Results below show shadowing between April 17 and August 15, for a total of 128 days, the screen will shade the family room deck between 10:30am and 1pm

During that time frame the sun shines an average 67 minutes a day during that time, ranging from 20 minutes when sun is low to 149 minutes when the sun is higher

The screen will eliminate sun on 34 days when the sun is lower

The shadowing will decrease sunlight from 143 hours to 86 hours, a reduction of 40%

Double the calculated times to include time between summer solstice and Dec 31

See Supporting Drawings below

Raw data in Excel file submitted as separate attachment

Drawing 2:

Section Elevation to determine the elevation of the sun when the screen will obstruct sunlight into the back yard and decks

