

Discussion of Cell Tower

Dover-Sherborn Regional School Committee

October 7, 2014

October 7 meeting process

- History
- Individual RSC comments
- Community comments
 - Identify name/address
 - Speak for up to 2 minutes
 - Move the discussion forward
- RSC discussion/vote
 - Award RFP
 - Identify preferred location
 - Specify lease terms
(Executive Session discussion; not a vote)

History

- Topic of discussion off-and-on for years, often revenue driven
- What changed?
Application by Bay Communications to site tower on private land in Dover, 670 feet from DS campus in front of Dover Planning Board and Zoning Board of Appeals
- Exploration by RSC to site tower on campus
 - Be landlord rather than neighbor

Location of application = 670'



2014

Late April	Confirm abutter application
May 1	Attend Dover Zoning Board of Appeals meeting; gather info
May 6 RSC	Discuss; vote to send letter to ZBA/DPB expressing interest
May 21 RSC	Discuss RFP, specialized counsel and RF engineer
June 10 RSC	Send abutter notices as well as email blast to HS/MS parents; discuss aspects of RFP
June 16 RSC	Vote to retain counsel and RF engineer
June 23 RSC	Vote to continue exploring RFP; receive 12 emails split equally support/oppose
July 15 RSC	Vote to approve draft RFP with pending changes
August 13 RSC	Host mandatory pre-bid meeting attended by 4 parties
Sept 5	Open bid from one bidder: Bay Communications (AT&T)
Sept 9 RSC	Discuss; vote to release the lease

RSC issues discussed

- Abutter application 670' from DSHS
 - Telecommunications Act of 1996: application for towers >35' cannot be rejected by Dover regulatory committees for health reasons (source: *Guide to local officials* prepared by FCC)
- Control
 - Location: alternative sites 870' and 1200' from DSHS
 - Annual fee to fund measurements of EMF exposure
 - Potential recourse in case measurements exceed limits
 - Potential recourse in case FCC/National Council on Radiation Protection and Measurement (www.ncrponline.org) lower limits
 - Potential recourse in case technology changes
- Health concerns
- Financial terms

Limited emails received

- In support
 - "Making decisions that impact our community based on 'science' that is emerging at best, is not prudent."
 - "Understanding the complexity of the topic, and the passions that arise as we grapple with the impact of a whole host of environmental risks on our children's health, I do hope that the discussion centers upon mainstream medical literature and consensus statements eg '... most researchers and regulatory authorities do not believe that cell phone towers pose health risks under ordinary conditions.' <http://www.cancer.org/cancer/cancercauses/othercarcinogens/athome/cellular-phone-towers>.
- Against
 - 2 presentations about the potential health effects from exposure to EMF radiation

Locations in RFP: Distance to School Building

TWR 1 ~ 870', TWR 3 ~ 1200'



RFP

- Lease property on DS campus
- 3 locations
 - Balance distance from school, access road
- 120' monopole with top 8' public safety
 - Not monopine, lattice
- Minimum lease payment = \$24,000/year + 50% of any co-locator fee (min \$12,000/year)
 - 10' between carriers; wireless providers only
- 10 year initial + 4x5-year renewals

Distance and exposure

From Isotrope Wireless, RF Consultants

- %of the Federal and State Public Maximum Permissible Exposure (MPE) levels at various distances from the proposed cell tower.
- Comparison of the estimated extreme case exposure levels from towers at various distances to the Italian Public MPE and the Italian “Quality Target” MPE

Table 1: Extreme Case Exposure Estimates Based on Federal and State Safety Standards

Distance From Tower in Feet	Sum of Three Frequencies - % Public MPE (100% is the limit)
18	0.04
500	0.07
1000	0.09
1200	0.10
1500	0.10

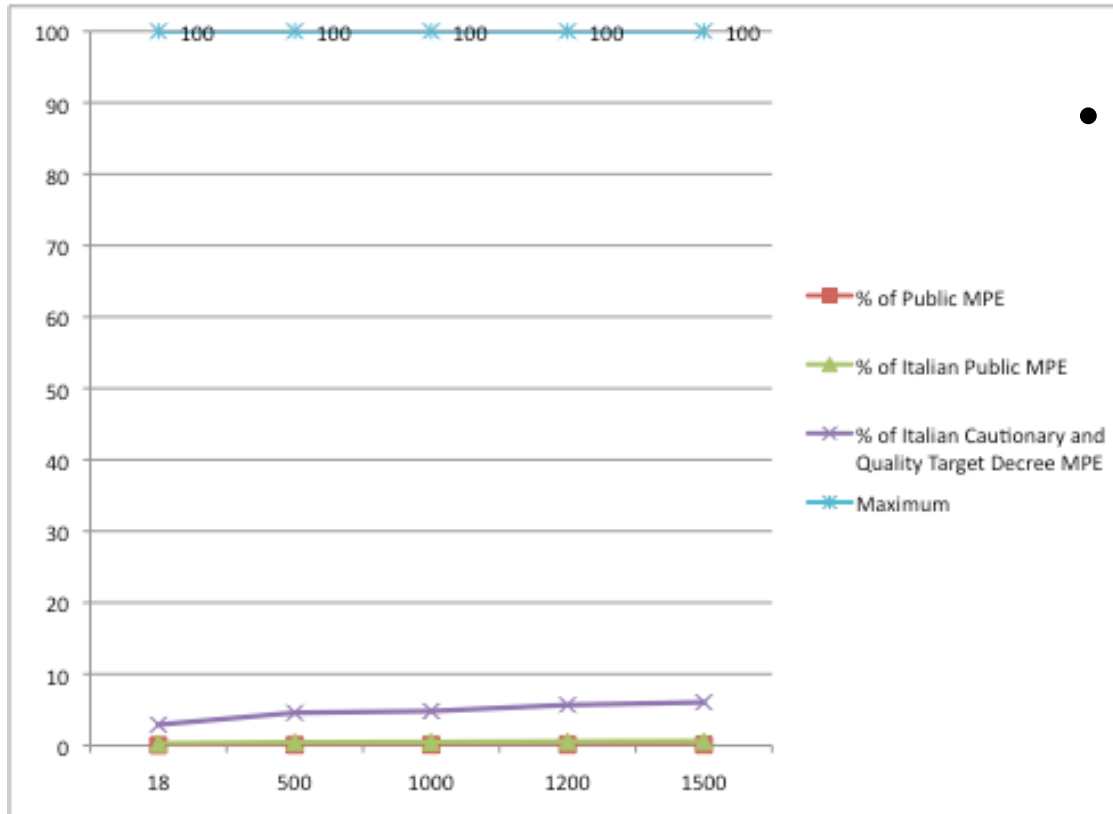
Table 2: Extreme Case Exposure Estimates Based on Italian Safety Standards

Distance From Tower in Feet	Sum of Three Frequencies - % Italian Public MPE (100% is the limit)	Sum of Three Frequencies - % Italian Cautionary and Quality Target Decree MPE (100% is the limit)
18	0.29	2.92
500	0.46	4.59
1000	0.48	4.82
1200	0.57	5.68
1500	0.61	6.05

Distance and exposure

% of MPE

(Free space loss, with no adjustment for vegetation or building loss)



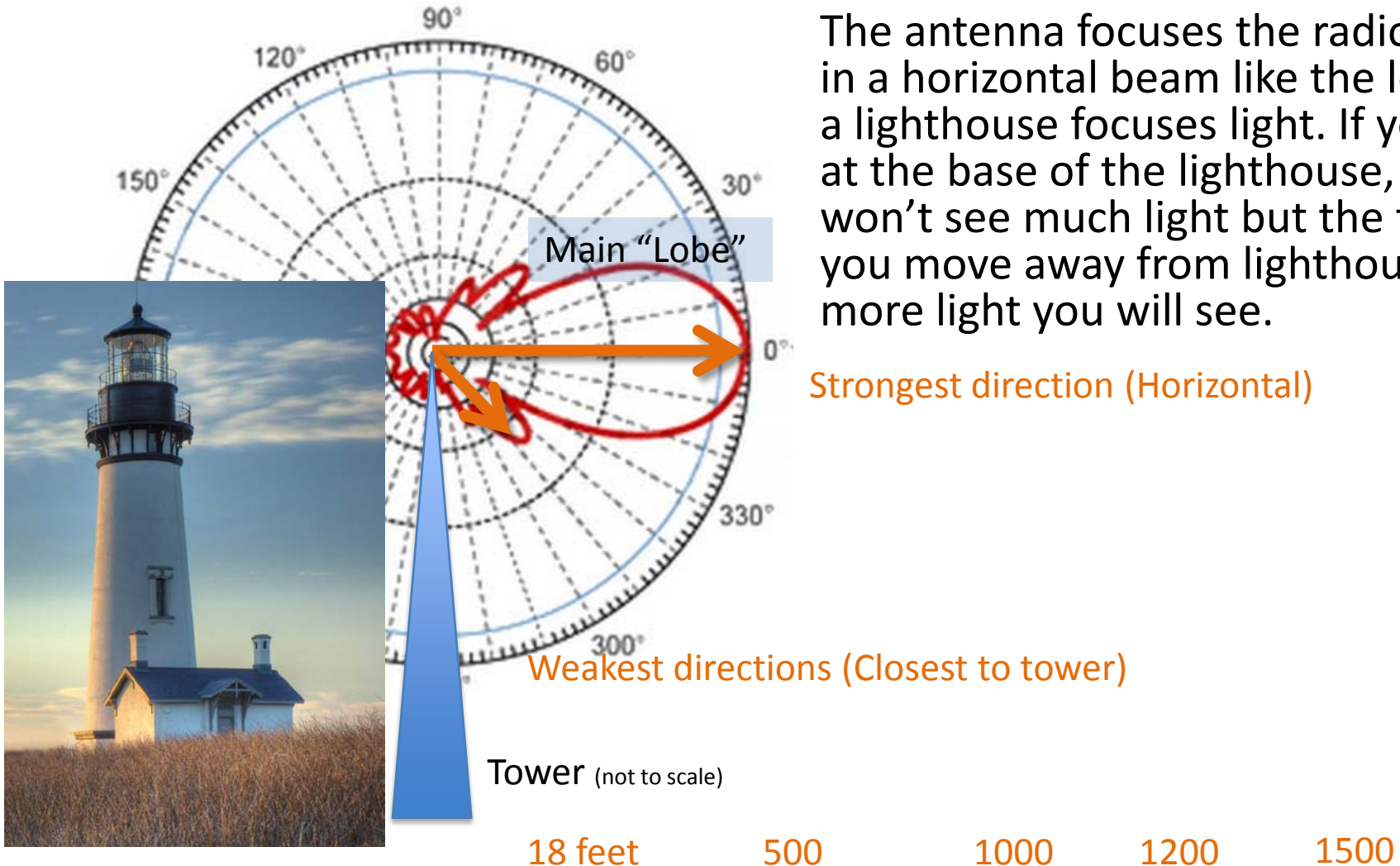
Distance from tower (feet)

(each location assumes same antenna height above sea level)

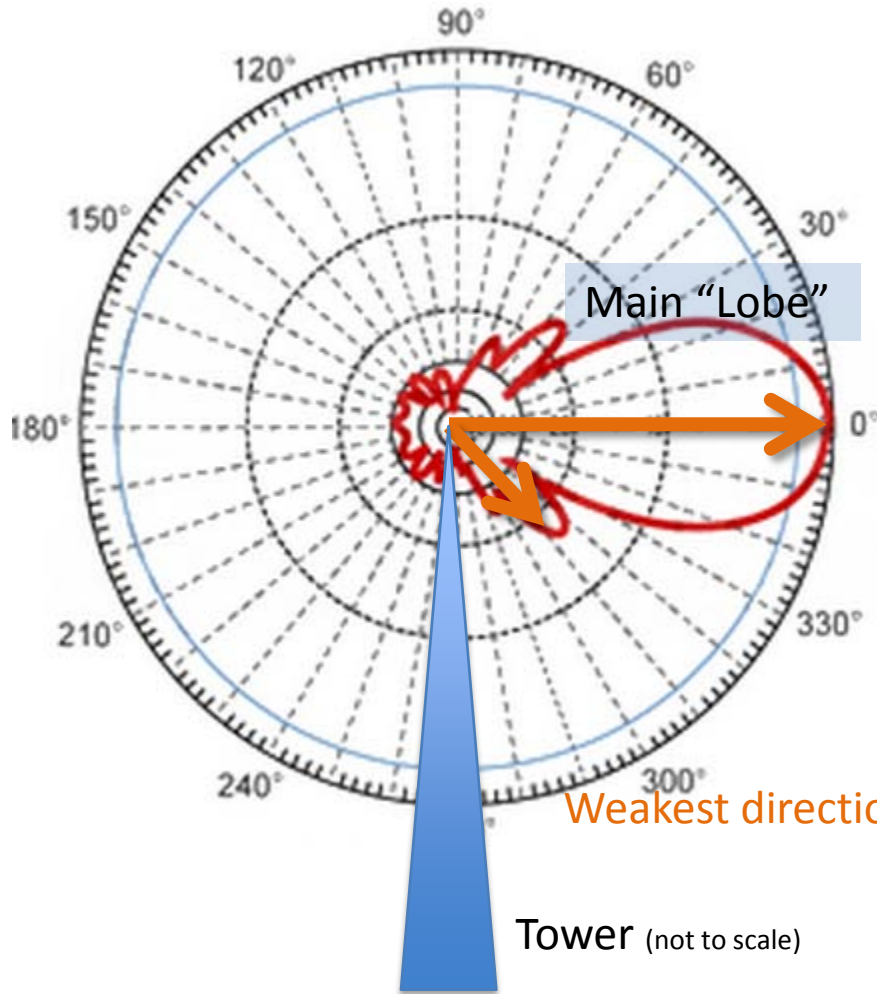
- MPE levels are significantly below the limits, regardless of location,
- MPE levels would be
 - <1% of the US established public exposure level,
 - <1% of the Italian public exposure level and
 - <7% of the Italian cautionary and quality target decree

Distance and exposure

The antenna focuses the radiowaves in a horizontal beam like the lens on a lighthouse focuses light. If you're at the base of the lighthouse, you won't see much light but the further you move away from lighthouse, the more light you will see.



Distance and exposure



Signals weaken very quickly with distance.

Close to tower: The antenna keeps the signal low level.

Far from tower: the distance weakens the signal significantly.

Strongest direction (Horizontal)

Weakest directions (Closest to tower)

Tower (not to scale)

18 feet

500

1000

1200

1500

Distance and exposure

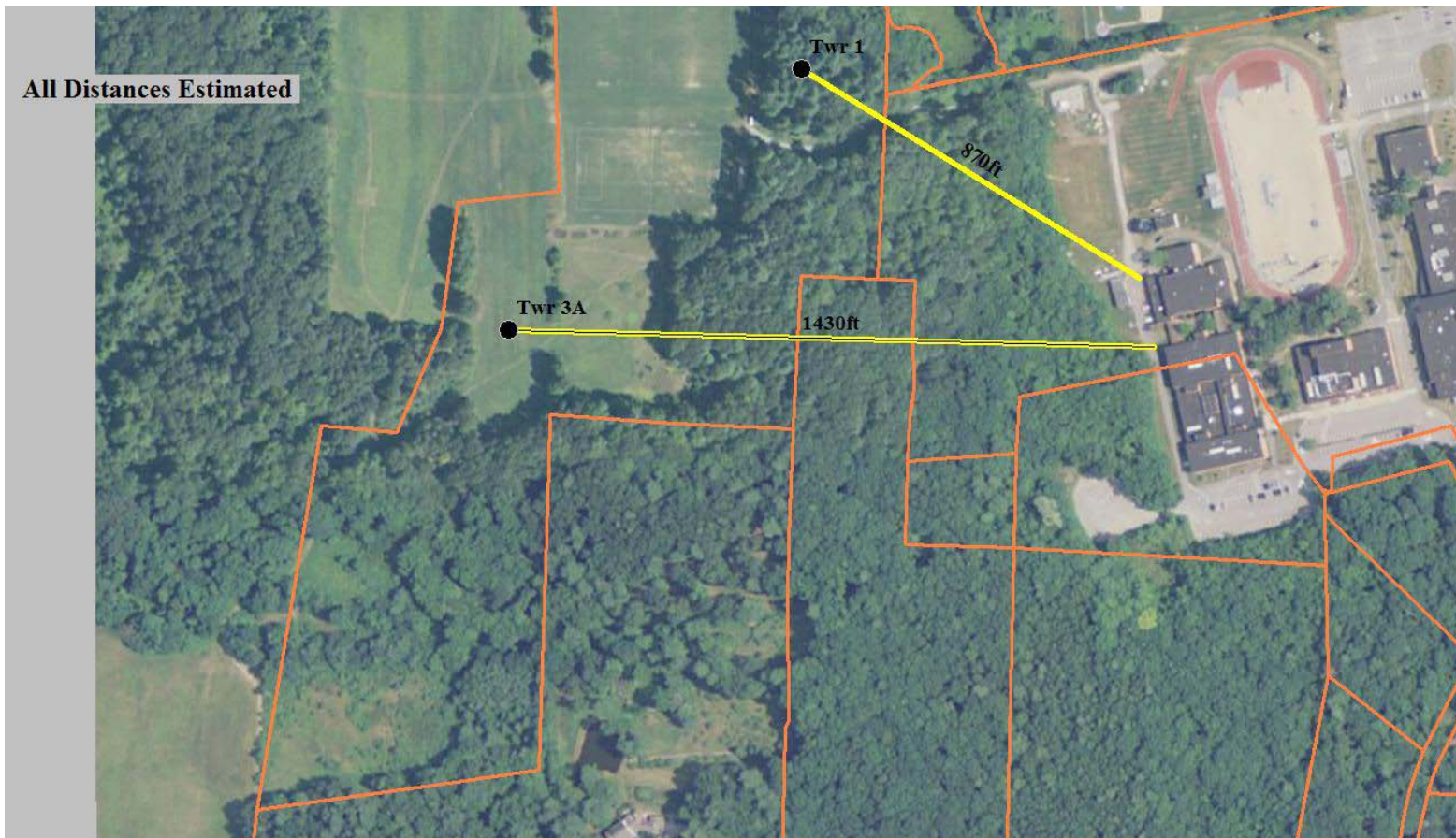
- Distance from a tower is not a determinant of signal strength (or exposure)
- Due to the antenna focusing pattern, there is often less exposure beneath the tower than there is 1000 ft out.
- Beyond the point where the main signal lobe grazes the ground, the signal level continues to decrease with distance.
- Many variables determine where the main signal lobe first grazes the ground: Antenna type, frequency band, antenna height, change in ground elevation, obstacles like vegetation and terrain and buildings.
- Pragmatically, a tower at the school building produces less signal and therefore less exposure within the school than at the distances evaluated.
- The best place to put a tower to minimize exposure in the school would really be on the roof.

Distance and exposure

- Keep in perspective:
 - All the signal levels/locations considered are below all the thresholds considered.
 - With respect to the safety standards, the minor differences in signal levels caused by the various tower placements have no material impact on safety.
 - From the perspective of thresholds for safety, consider the kinetic energy of a brick, a crumpled piece of paper and a grain of sand when dropped from 6 feet on someone's foot. The brick is dangerous, but is the piece of paper really more dangerous than the grain of sand?

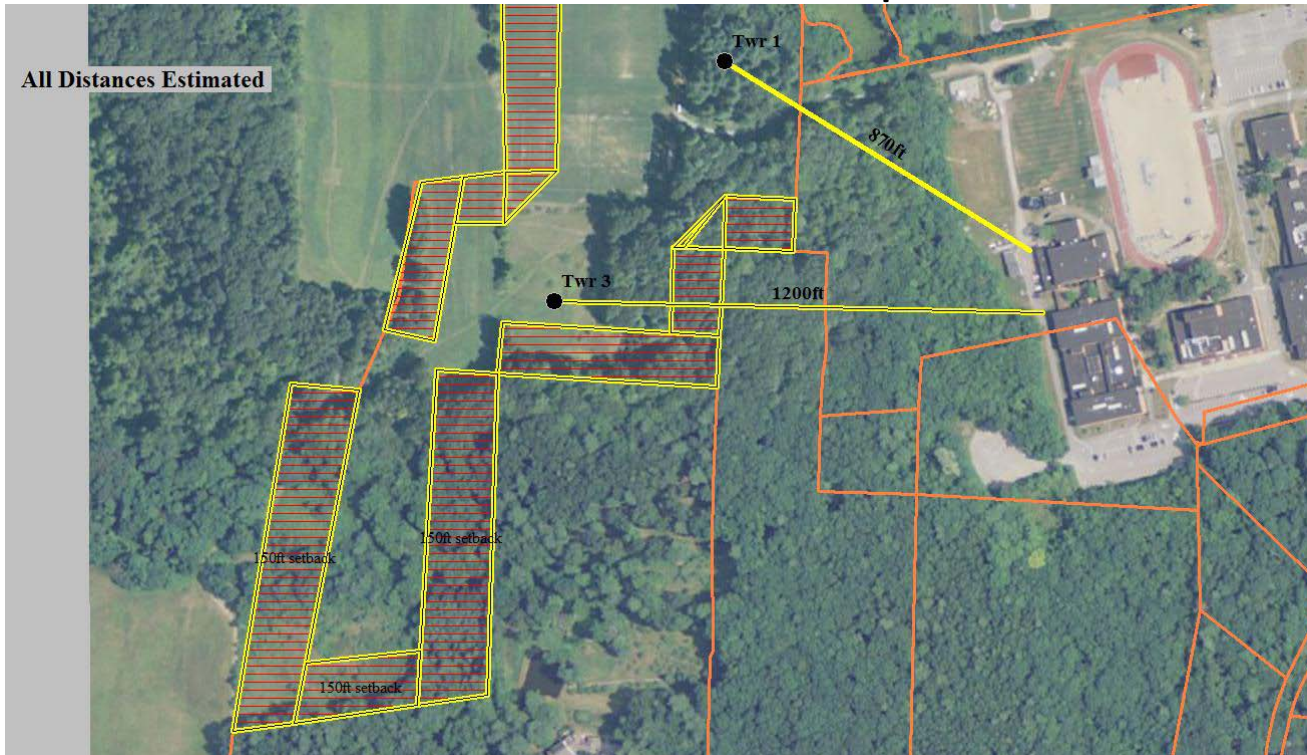
Location options?

- TWR 3A ~ 1430 feet, but not in RFP.



Location options?

- Private Site ~215 ft Ground Elevation
- TWR 1 ~ 218 ft – TWR 3 ~ 220 ft – TWR 3A ~ 205 ft
- TWR 3A might need to be taller to compensate for ground elevation. Greater setback required from lot lines.



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