

# KCDA Board Meeting – Radio Project Update

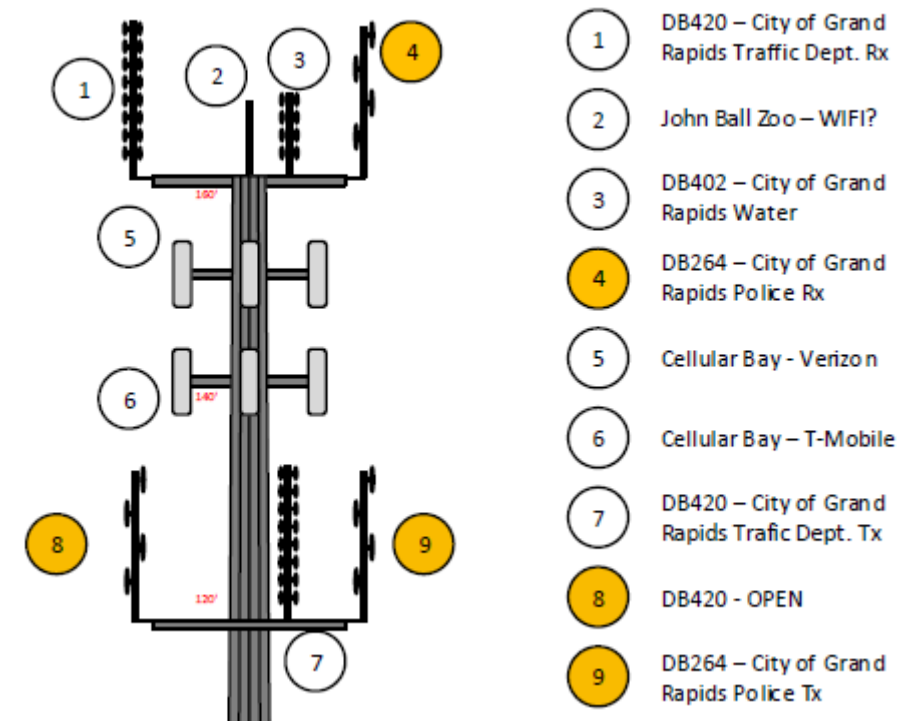
10-28-19

# Kent County System Site Tracker

Site	Shelter Installed	Tower Erected	L&A Install	Equipment Installed
Honor Camp	Complete	Complete	Complete	RF Cold Install
Alto Fire	Complete	In process	Nov.	Nov.
Cumberland	Complete	Complete	Complete	Nov.
Woodlawn	N/A	N/A	Complete	RF Cold Install
Plainfield	Complete	N/A	Complete	RF Cold Install Pending DC?
Moore Park	Complete	In process	Nov.	Nov.
Gezon	Complete	N/A	Complete	RF Cold Install
Cedar Springs	N/A	N/A	Complete	RF Cold Install
Cannonsburg	N/A	N/A	Complete	RF Cold Install
92 <sup>nd</sup> St.	N/A	Complete	Complete	Nov.
Sheriff's Dispatch	Complete	N/A	Complete	RF Cold Install Pending DC?
John Ball Zoo	Loading Issue	N/A	Loading Issue	TBD
Belknap	N/A	N/A	Complete	RF Cold Install
GR Dispatch	N/A	N/A	Console antenna mounting and MW link to JBZ pending	TBD

# John Ball Zoo Structural (8/12) Observations

- City antennas at 168' and includes a 12' platform
- Verizon appears to have 9 antennas at 156': 6 of one type, 3 of another, plus a voltage protection box and a TMA
- Current T-Mobile installation to include 3 antennas, 3 TTAs, 1 OVP box and a 12' platform at 145'
  - Analysis also includes 3 additional antennas and 3 RRUs
- Additional City antennas and a platform at 117'



**Both T-Mobile and Verizon permitted 12 antennas at a single mounting height**

# Revised John Ball Zoo Structural Approach

- Include current T-Mobile installation and new request
- Include current Verizon installation **plus three antennas**
- Include all current City antennas
  - One variation removes “spare”
- Include KCDA installation as planned:
  - LMR antennas at 60’ and 90’
  - Microwave dishes at 83’ and 111’
- Three 5’ mounting pipes removed

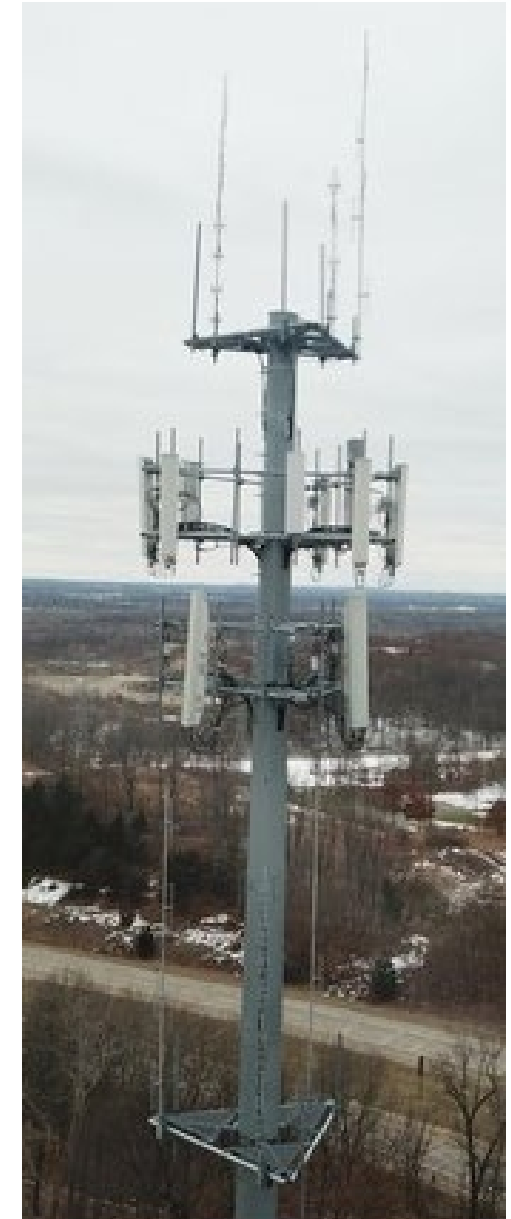
## “Full Transition Scenario”

- Include current T-Mobile installation and new request
- Include current Verizon installation plus three antennas
- Two City PD antennas removed
  - Mounting platforms at 117’ and 160’ replaced with side-arms for two remaining antennas at each height
  - One variation removes “spare” at 117’
- Include KCDA installation as planned:
  - LMR antennas at 60’ and 90’
  - Microwave dishes at 83’ and 111’
- Three 5’ mounting pipes removed

## “Post Transition Scenario”

# Revised John Ball Zoo Structural Results

	Structural Loading Results	Twist and Sway @ 60 MPH 3 sec. Gust Wind
Scenario 1A	86%	Does Not Meet
Scenario 1B	84%	Does Not Meet
Scenarios 2A and 2B	81%	Does Meet



# Revised John Ball Zoo Structural Results

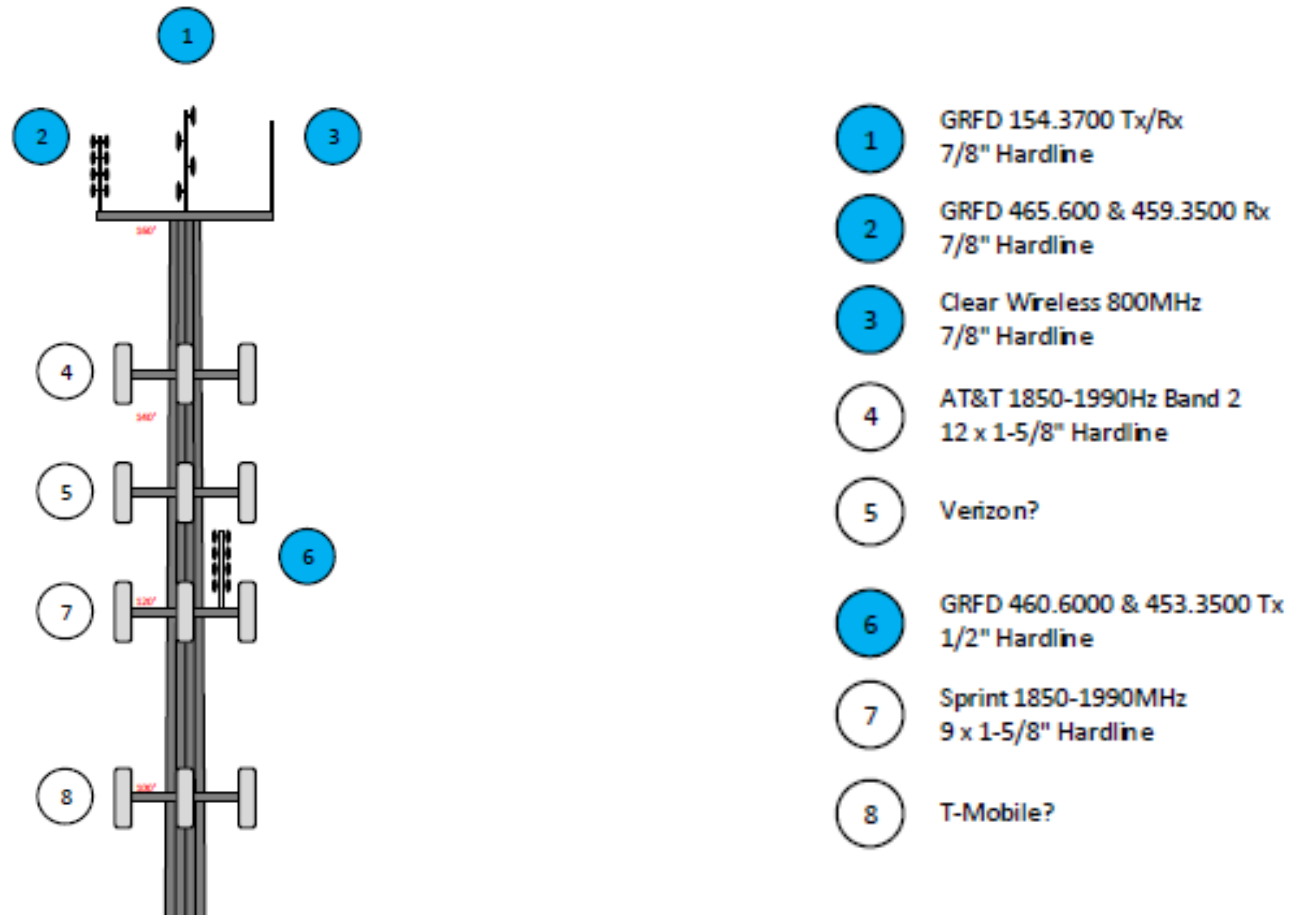
- Full transition Scenarios 1A and 1B are not “overloaded”, but fail “Twist and Sway”
  - Report did not specify degree of twist and sway failure
  - Results provided today based on analysis of the TIA spec with Nokia concurrence
- Post transition Scenarios 2A and 2B both pass
- All scenarios would pass with the 11 GHz antenna at 105’ (acceptable link height per Nokia)

	6 GHz Antenna (at 83')	11 GHz Antenna (at 111')	11 GHz Antenna (at 105')
<b>Maximum Allowable (In Deg.)</b>	1.475	1.61	1.61
<b>Scenario 1A</b>	1.23	1.66	1.57
<b>Scenario 1B</b>	1.20	1.63	1.53
<b>Scenarios 2A and 2B</b>	1.13	1.53	1.44

# John Ball Zoo Next Steps/Recommendations

- Confirm twist and sway analysis as presented
- Based on these findings and confirmations:
  - Proceed with JBZ build – Scenario 1A (with 11 GHz dish mounted at 111' to avoid any potential for shadowing of the receive antennas)
  - Proceed with testing and acceptance while monitoring for a link outage
    - An alarm will occur if there is an outage
    - A temporary interruption to the ATP may occur
  - Reconfigure tower to Scenario 2A or 2B to bring twist and sway into acceptable limits, **or**
  - Consider antenna swap with Covell tower and KCDA antenna move to higher rad centers (analysis to follow)

# Potential John Ball Zoo Alternative (for non-ps)



**Covell Ave. Tower (Sprint/Crown Castle)**

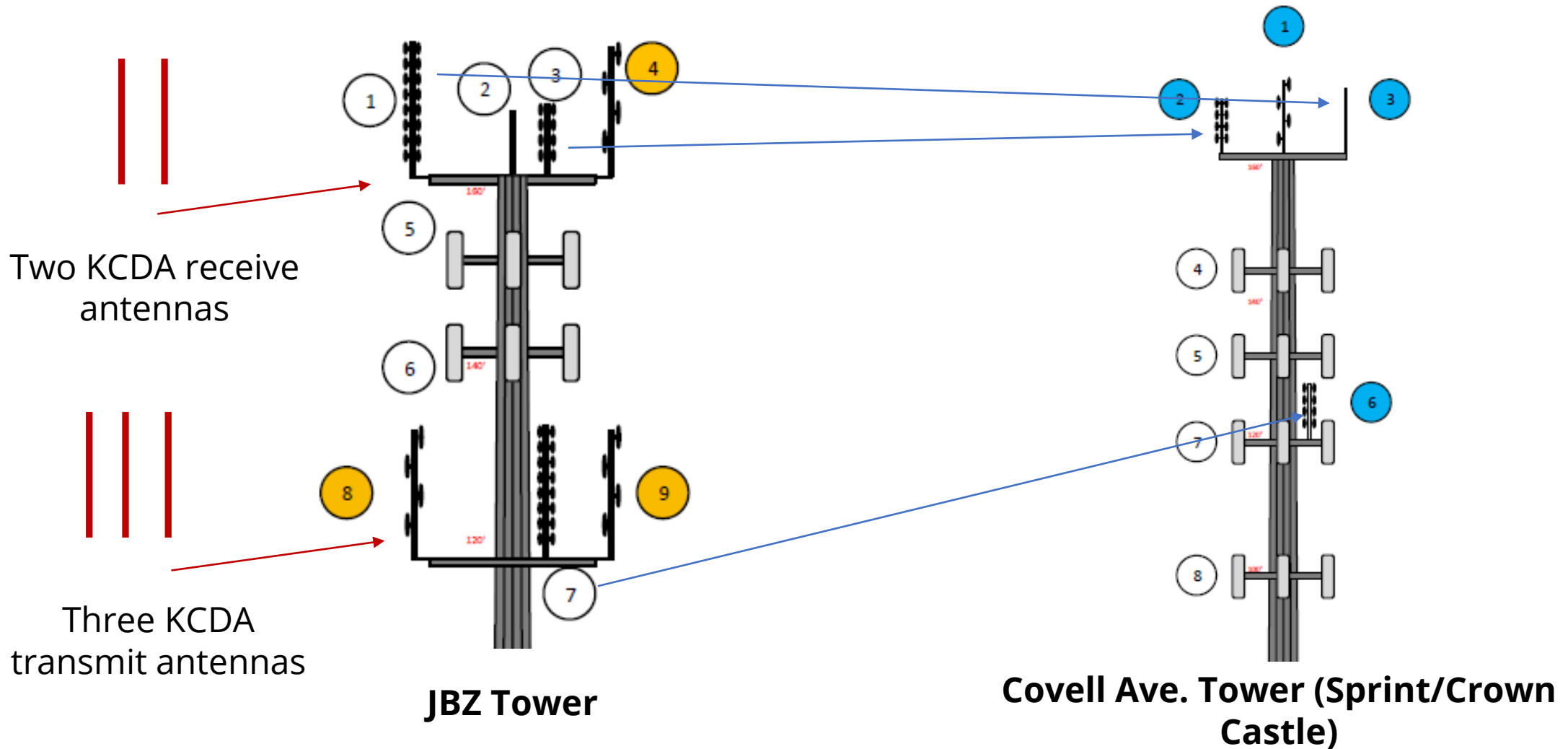


# John Ball Zoo Situation/Options

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- Is there a better long term solution for KCDA?
  - Use JBZ as currently planned and described previously to transition to new KCDA/MPSCS system
    - All agencies transition to KCDA/MPSCS
  - Move City water and traffic (3 antennas) to Covell tower
    - Loading and height should be about the same once GRFD vacates
    - Need to work with these agencies
  - Move KCDA LMR antennas up to 117' and 164' at JBZ
    - Better coverage for the system
    - Loading not likely an issue once 3 City antennas are removed and other antennas remain at existing locations - study in process

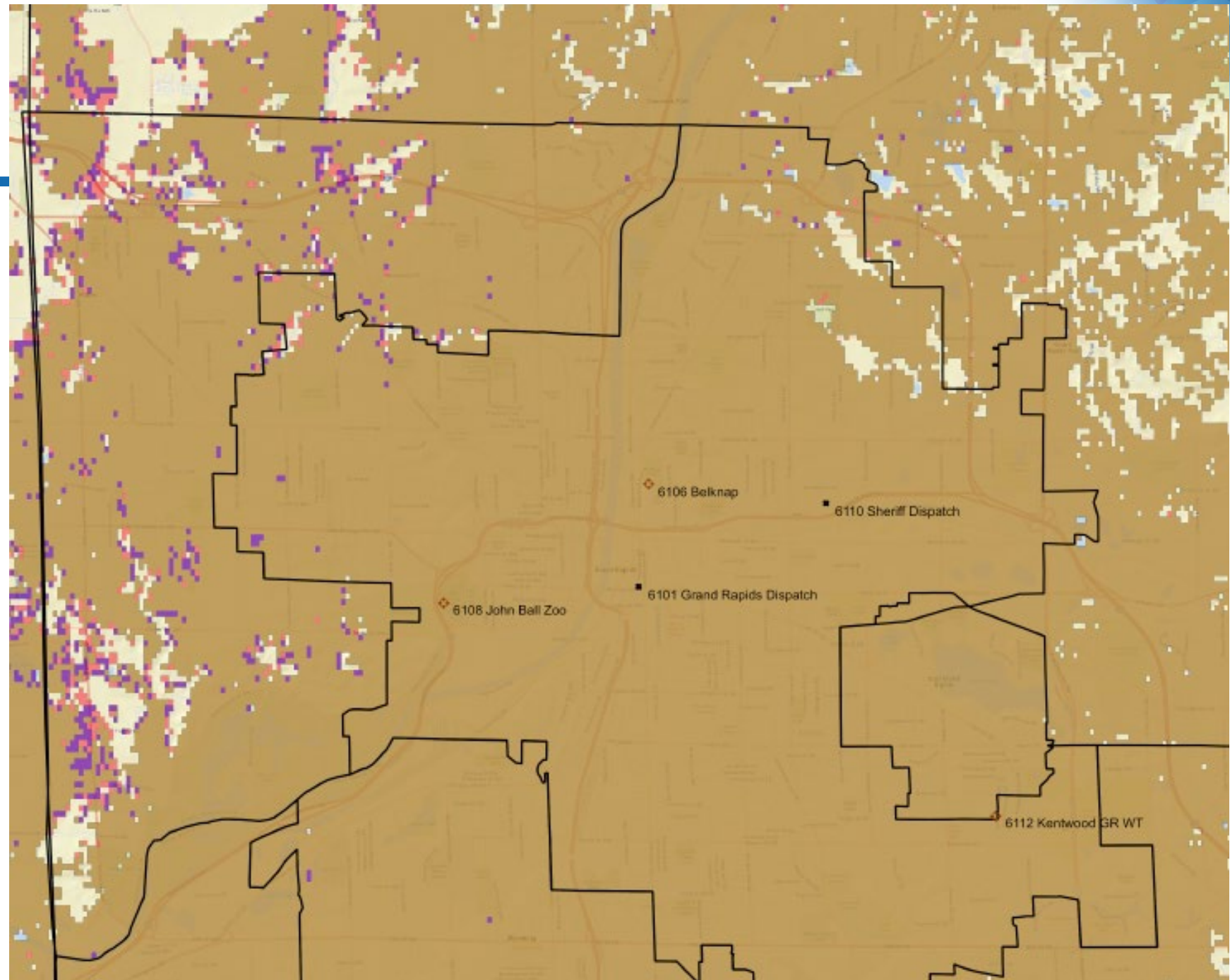
# Potential John Ball Zoo Long Term Improvement



# John Ball Zoo Coverage Comparison (15 dB)

- Baseline
- Additional at top of JBZ
- Additional at 230'

Motorola's contractual commitment is to pass 95% of all areas predicted to be covered at 15 dB baseline



# John Ball Zoo Coverage Comparisons

	Baseline	Coverage/Coverage gained with antennas at top of JBZ (175')	Coverage/Coverage gained with antennas at top of new tower (230')
<b>15 dB In-Building Margin (gained)</b>	-	+1.99 SqMi	+3.46 SqMi
<b>Predicted Walker Coverage at 15 dB In-Building Margin</b>	84.78%	88.67%	90.68%

Motorola's contractual commitment is to pass 95% of all areas predicted to be covered at a given level for the baseline

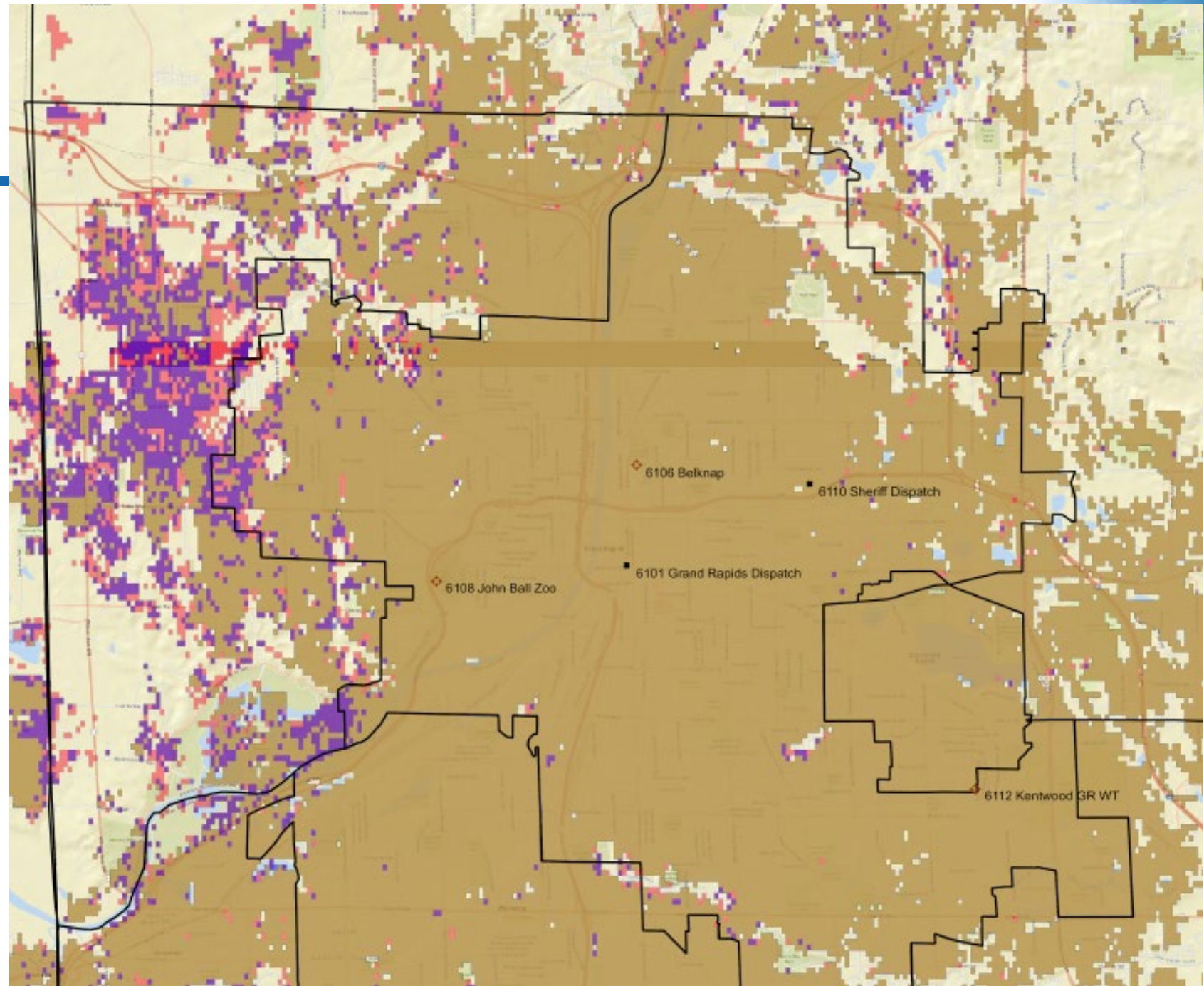
# KCDA Board Meeting – Questions

10-28-19

# John Ball Zoo Coverage Comparison (23 dB)

- Baseline
- Additional at top of JBZ
- Additional at 230'

Motorola's contractual commitment is to pass 95% of all areas predicted to be covered at 23 dB baseline



# John Ball Zoo Coverage Comparisons

	Baseline	Coverage/Coverage gained with antennas at top of JBZ (175')	Coverage/Coverage gained with antennas at top of new tower (230')
<b>15 dB In-Building Margin (gained)</b>	-	+1.99 SqMi	+3.46 SqMi
<b>23 dB In-Building Margin (gained)</b>	-	+4.92 SqMi	+8.04 SqMi
<b>Predicted Walker Coverage at 15 dB In-Building Margin</b>	84.78%	88.67%	90.68%
<b>Predicted Walker Coverage at 23 dB In-Building Margin</b>	49.21%	61.80%	67.83%

Motorola's contractual commitment is to pass 95% of all areas predicted to be covered at a given level for the baseline

# Other Structural

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- Cedar Springs – originally 130%, remediated to 103.5%
- Belknap – 66.6%
- Cannonsburg – 102.4%
- Sheriff's Department 89.3%