

CITY OF ONALASKA MEETING NOTICE

COMMITTEE/BOARD: Technology Advisory Committee
TIME OF MEETING: April 26, 2018 (Thursday)
PLACE OF MEETING: City Hall – 415 Main Street (Room 112)
TIME OF MEETING: 6:30 P.M.

Please Note

If you are unable to attend please contact Diane Wulf at 780-7007 or by email dwulf@onalaskawi.gov at least the Monday before the meeting

PURPOSE OF MEETING

1. Call to Order and roll call.
2. Approval of minutes from the previous meeting.
3. Public Input (limited to 3 minutes/individual)

Consideration and possible action on the following items:

4. Election of:
 - a. Chair
 - b. Vice Chair
5. Read Technology Advisory Committee Mission Statement
6. Report on Status of 2018 IT Projects
7. Review and Consideration of Changes to Planned WiFi Project
8. Adjournment

PLEASE TAKE FURTHER NOTICE that members of the Common Council of the City of Onalaska who do not serve on the committee may attend this meeting to gather information about a subject over which they have decision making responsibility.

Therefore, further notice is hereby given that the above meeting may constitute a meeting of the Common Council and is hereby noticed as such, even though it is not contemplated that the Common Council will take any formal action at this meeting.

NOTICES MAILED TO:

Mayor Joe Chilsen	*Pam Goldbeck – Vice Chair	_____
Ald. Jim Binash	*Scott Wied	_____
Ald. Jim Olson	*Tim Bena	_____
Ald. Ron Gjertsen	*Vacant	_____
Ald. Kim Smith	*Richard Vogel	_____
Ald. Jerry Every		_____
*Ald. Diane Wulf		_____
City Attorney	City Administrator	_____
La Crosse Tribune	Dept Heads.	_____
Coulee Courier		_____
WKTY WLXR WLAX		Omni Center
WKBT WXOW FOX		Onalaska Public Library
*Committee Members	** Alternate Member	_____

Date Notices Mailed and Posted: 4 -18-18

In Compliance with the Americans with Disabilities Act of 1990, the City of Onalaska will provide reasonable accommodations to qualified individuals with a disability to ensure equal access to public meetings provided notification is given to the City Clerk within seventy-two (72) hours prior to the public meeting and that the requested accommodation does not create an undue hardship for the City.

TECHNOLOGY ADVISORY COMMITTEE MISSION STATEMENT

“The mission of the Technology Advisory Committee is to provide guidance and recommendations to our City Administrator and Onalaska Common Council regarding ways the City can provide effective technology usage for employees and citizens.”

Goal One: “Identify technology issues and the means to resolve them efficiently and effectively.”

Goal Two: “Promote the efficient use of tax dollars on technology solutions.”

Goal Three: “Serve as a liaison among government, education, and businesses to efficiently and effectively utilize technology.”

Omni Center Predictive Wi-Fi Assessment



Name: **Omni Center Predictive Wi-Fi Assessment**
Location: **Onalaska, WI**

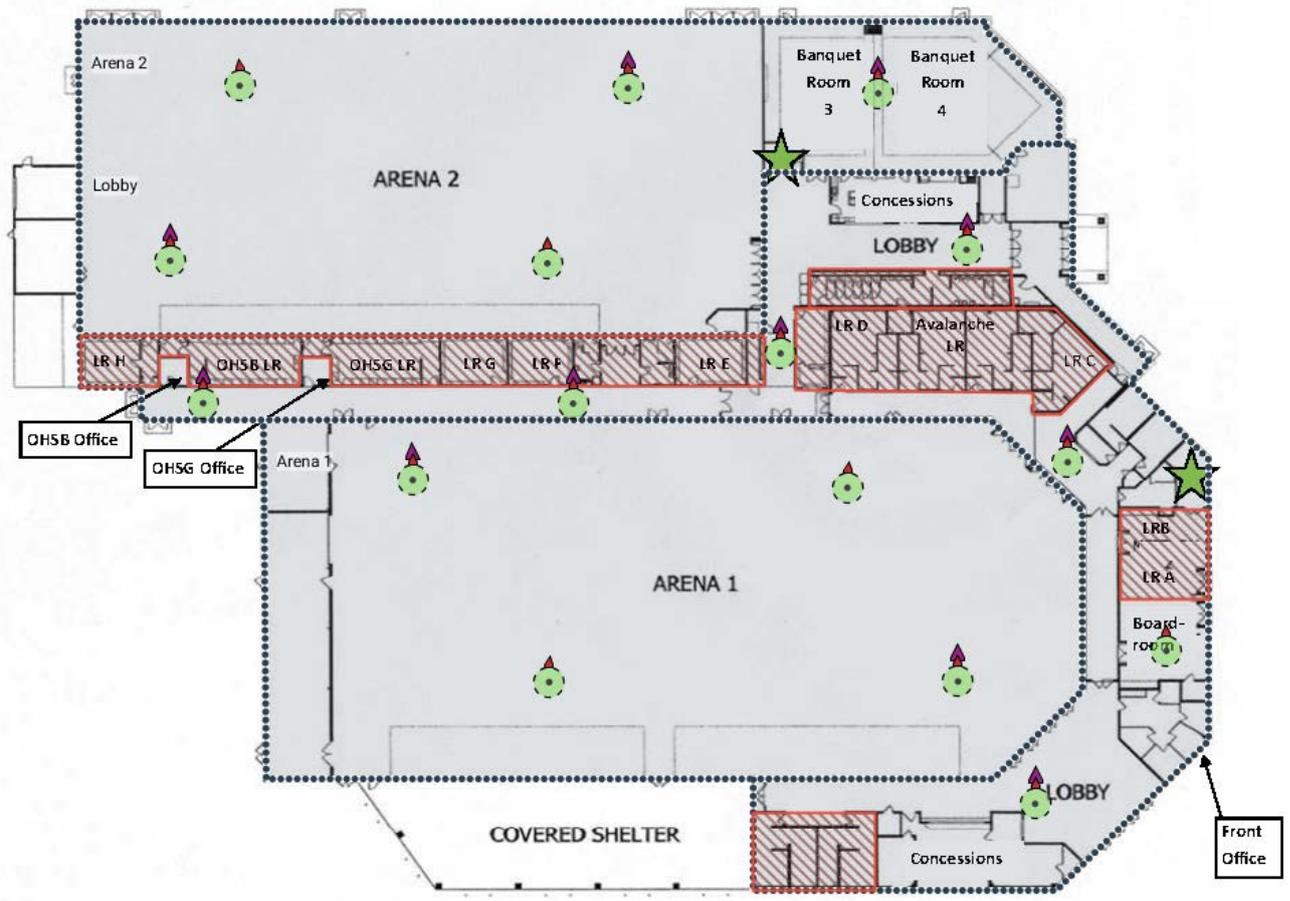
Network capacity configuration

	2.4 GHz	5 GHz
Minimum Data Rate	12 Mbits/s	12 Mbits/s
Band steering	50%	50%
Number of SSIDs	3	3
Max. Associated Clients / Radio	50	50

Assumptions:

- Using Meraki MR53E, MR52 and MR42 Access Points.
- Coverage in locker rooms/restrooms is not considered in this plan.
- Plan is based off of a 250 device per arena capacity requirement. Plan may need to be adjusted if there are more or less devices in these areas.

Predictive Access Point Locations



Omni Center Predictive Wi-Fi Assessment

Arena 1 (~26,744.8 ft²)

Coverage Requirements:	Signal Strength Min	-67 dBm
	Signal-to-noise Ratio Min	25 dB
	Data rate Min	12 Mbps
	Number of Access Points Min	2 at min. -67 dBm
	Channel Overlap Max	2 at min. -75 dBm
	Round Trip Time (RTT) Max	150ms
	Packet Loss Max	2 %
Capacity Requirements:	200	Generic Smartphone [Normal SLA (2 Mbps)]
	50	Generic Laptop [High SLA (4 Mbps)]
	Total: 250 (600 Mbits/s)	

Arena 2 (~23,789.6 ft²)

Coverage Requirements:	Signal Strength Min	-67 dBm
	Signal-to-noise Ratio Min	25 dB
	Data rate Min	12 Mbps
	Number of Access Points Min	2 at min. -67 dBm
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Capacity Requirements:	200	Generic Smartphone [Normal SLA (2 Mbps)]
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	Total: 250 (600 Mbits/s)	

Lobby/General Areas (~13,980.4 ft²)

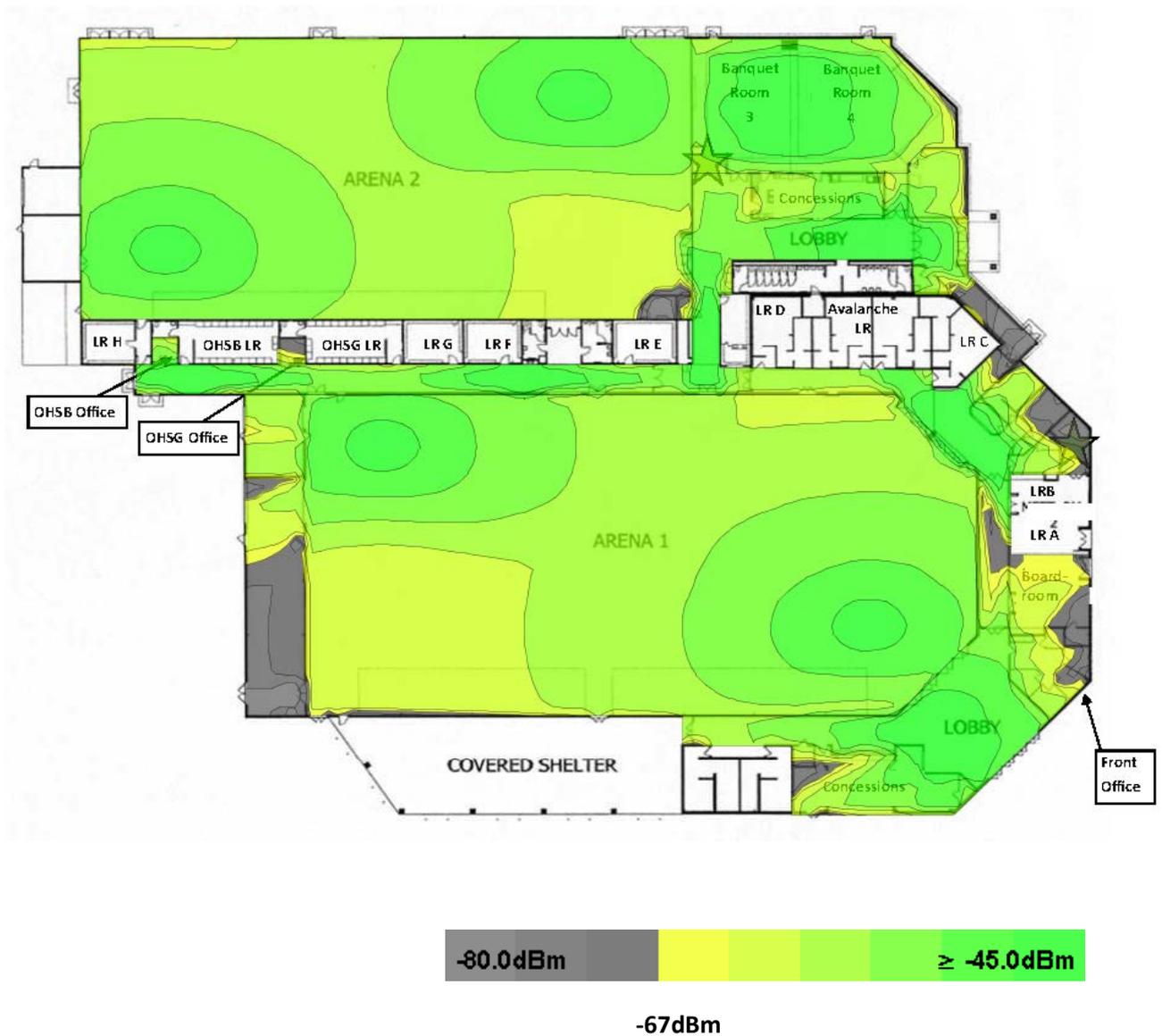
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	Packet Loss Max	2 %
Capacity Requirements:	50	Generic Smartphone [Low SLA (1 Mbps)]
	25	Generic Laptop [Normal SLA (2 Mbps)]
	Total: 75 (100 Mbits/s)	

General Recommendations:

- Recommend to implement (4) 4x4:4 AP's with external antennas (i.e. MR53E's) per arena floor for high client capacity/large venue.
- Take into consideration the ceiling height and AP mounting locations into the plan. Internal antenna AP's normally don't have enough gain to reach the floor if mounted in high ceiling locations.
- Use external antennas with a higher gain in order for the signal to reach the floor in the arenas and to avoid having to use too high of a transmit power on the AP.
- If it's an option, always consider using 4x4:4 AP's (i.e. MR53 or MR52) for all high client density areas or even in general coverage areas. 3x3:3 AP's are ok for basic connectivity/low density areas.
- Limit the use of 2.4 GHz by disabling some of the 2.4GHz radios. There are only 3 non-overlapping channels on 2.4GHz (1, 6, 11) so co-channel interference can be a problem with too many 2.4Ghz radios enabled.
- Use 40Mhz wide channels on 5Ghz and, depending on the client population, utilize all 5Ghz bands (UNII-1, UNII-2, UNII-2e and UNII-3) for the best possible channel plan and to limit channel re-use.
- Avoid enabling 802.11b wireless (disable all data rates below 12Mbps), this really helps with airtime efficiency and cell coverage.
- For seamless roaming, clients should be able to hear at least 2 AP's at any given location at least -67dBm or higher RSSI and SNR should be 20-25dB or higher.

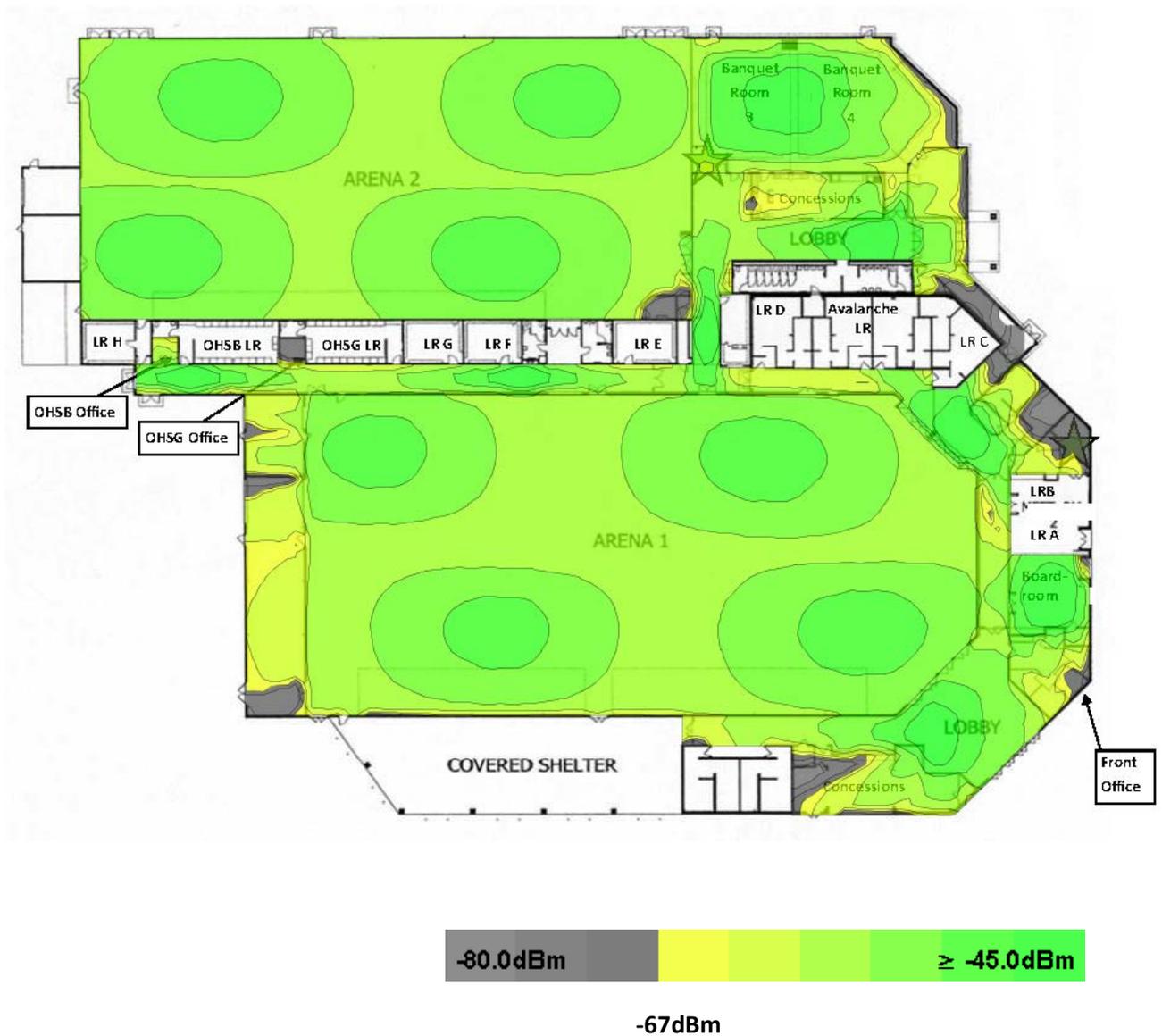
Signal Strength for Omni Center on 2.4 GHz band

Signal Strength - sometimes called coverage - is the most basic requirement for a wireless network. As a general guideline, low signal strength means unreliable connections, and low data throughput.



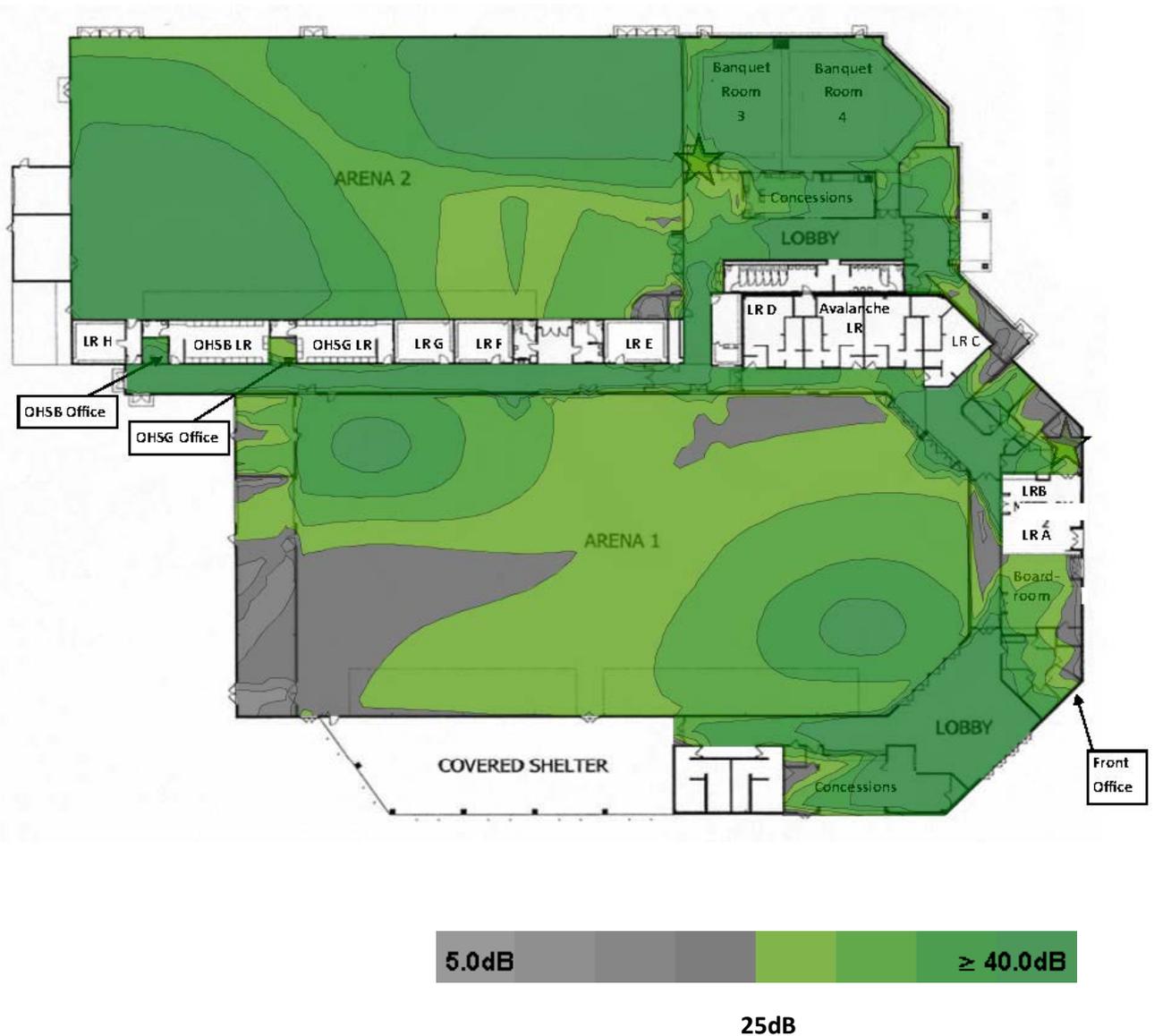
Signal Strength for Omni Center on 5 GHz band

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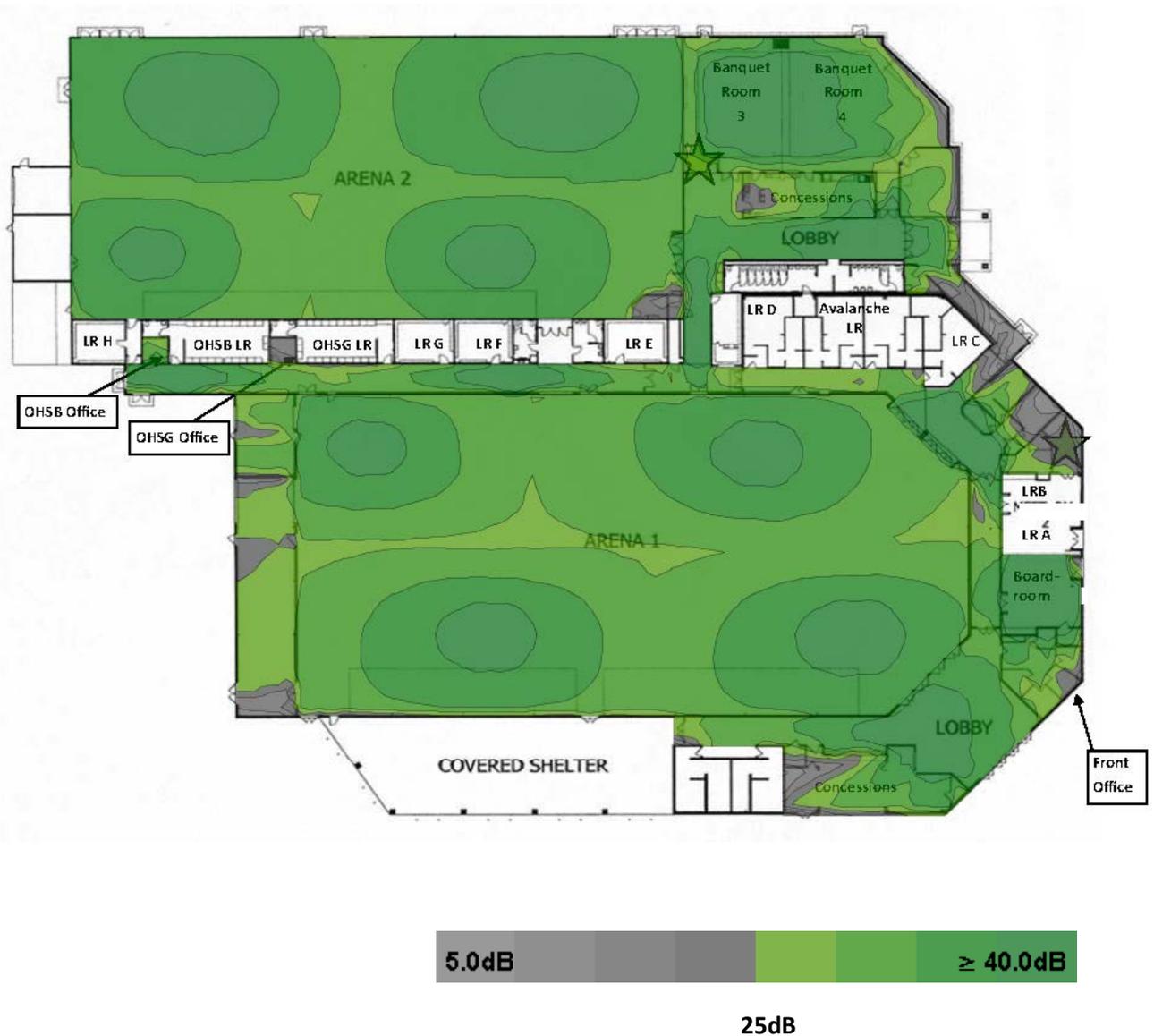
Signal To Noise Ratio (SNR) for Omni Center on 2.4 GHz band

Signal-To-Noise Ratio indicates how much the signal strength is stronger than the noise (co-channel interference). Signal must be stronger than noise (SNR greater than zero) for data transfer to be possible. If the signal is only barely stronger than noise, you may encounter occasional connection drop-offs.



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Data Rate for Omni Center on 2.4 GHz band

Data Rate is the highest possible speed (measured in megabits per second) at which the wireless devices will be transmitting data. Typically the true data throughput is about half of the data rate or less.



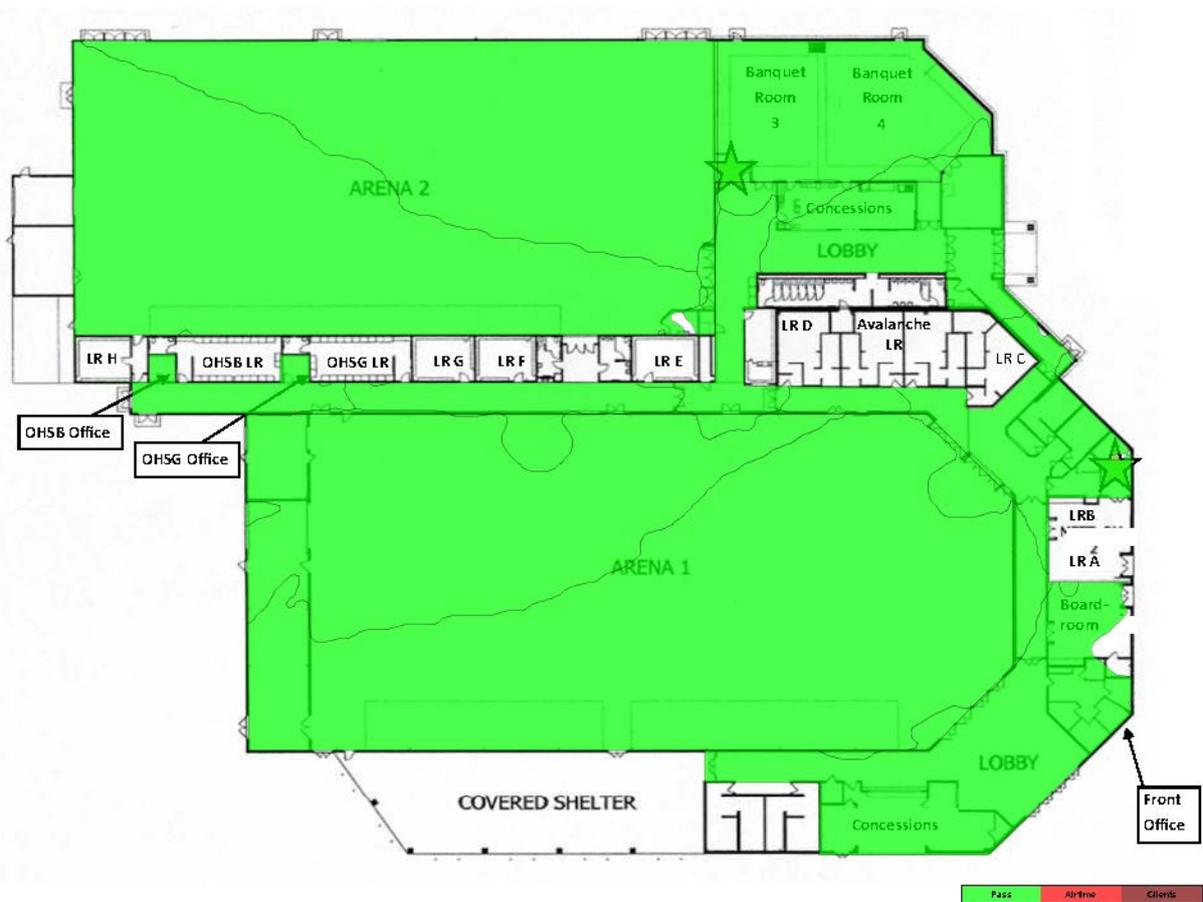
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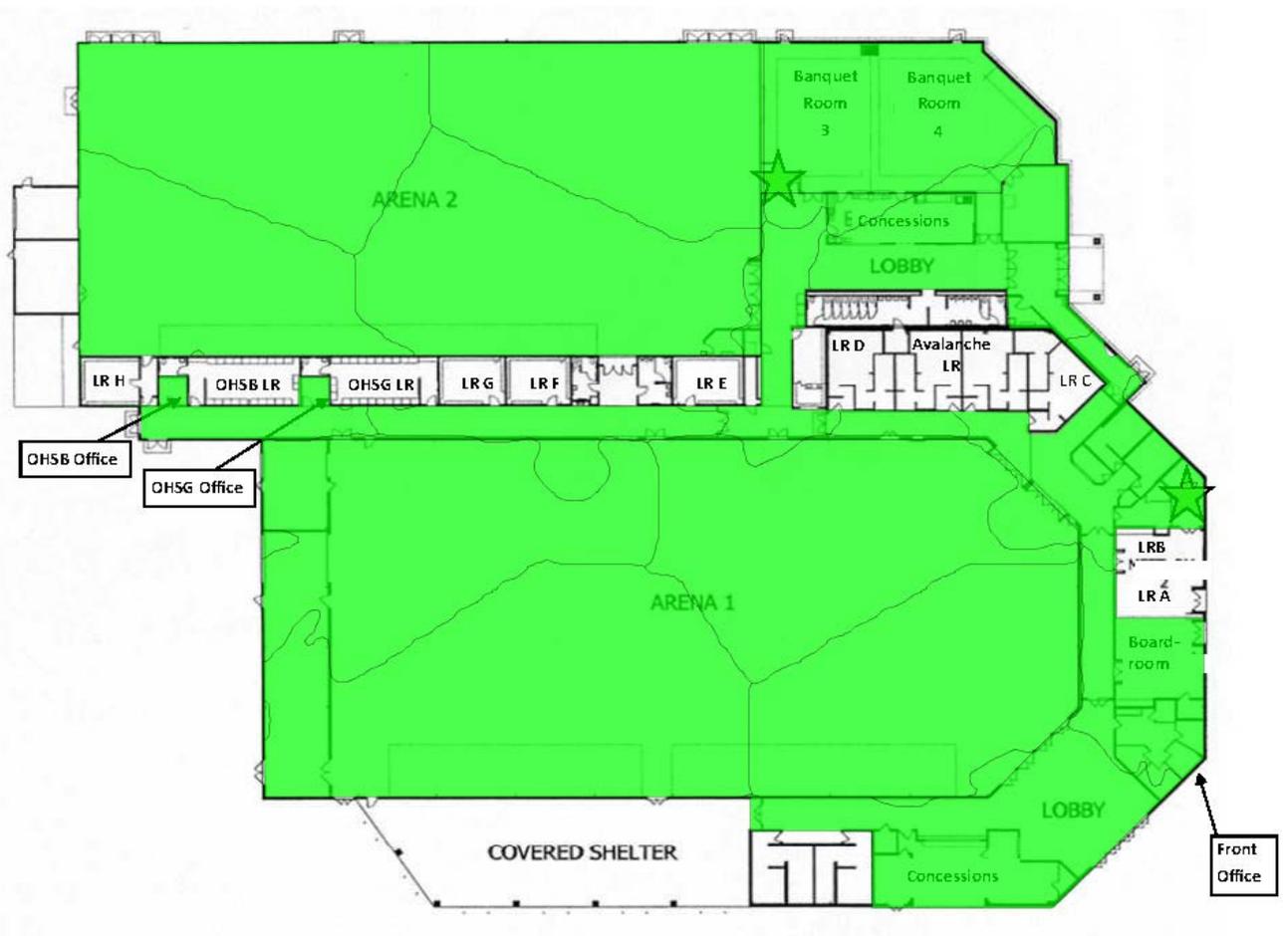
Capacity Health for Omni Center on 2.4 GHz band

Capacity Health displays if the network can handle the load of the configured Wi-Fi clients

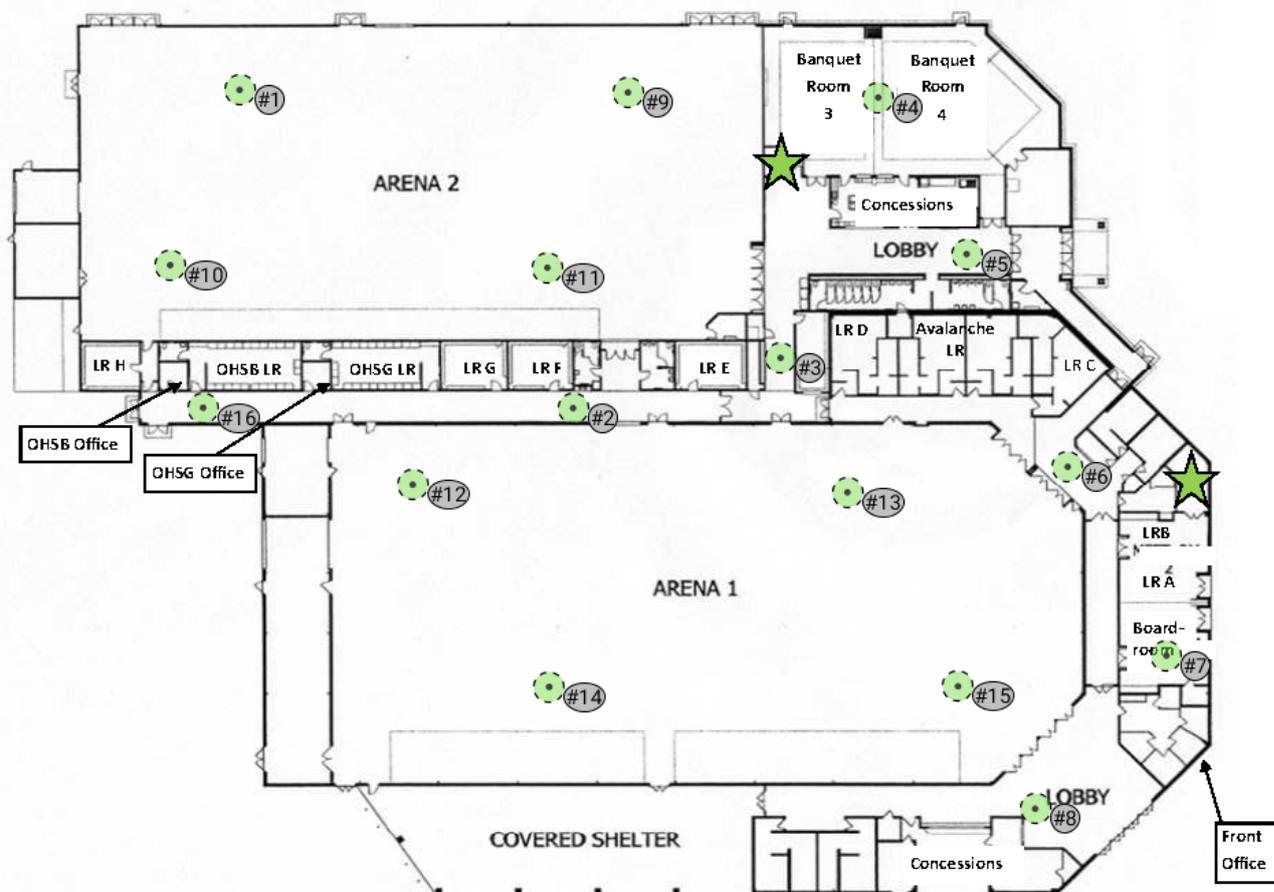


Capacity Health for Omni Center on 5 GHz band

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Simulated Access Points



Simulated Access Point Radios and Channels

AP #	Access Point			
1	AP1 (Meraki MR53E)			
	Off	-	-	Meraki MA-ANT-3-A 2.4GHz
	802.11ac	60@40	12 mW	Meraki MA-ANT-3-A 5GHz
2	AP10 (Meraki MR42)			
	802.11n	11	6 mW	Meraki MR42 2.4GHz
	802.11ac	60@40	12 mW	Meraki MR42 5GHz
3	AP11 (Meraki MR42)			
	802.11n	6	6 mW	Meraki MR42 2.4GHz
	802.11ac	52@40	12 mW	Meraki MR42 5GHz
4	AP12 (Meraki MR52)			
	802.11n	6	6 mW	Meraki MR52 2.4GHz

Omni Center Predictive Wi-Fi Assessment

	802.11ac	44@40	12 mW	Meraki MR52 5GHz
5	AP13 (Meraki MR42)			
	802.11n	1	6 mW	Meraki MR42 2.4GHz
	802.11ac	157@40	12 mW	Meraki MR42 5GHz
6	AP14 (Meraki MR42)			
	802.11n	11	6 mW	Meraki MR42 2.4GHz
	802.11ac	60@40	12 mW	Meraki MR42 5GHz
7	AP15 (Meraki MR42)			
	Off	-	-	Meraki MR42 2.4GHz
	802.11ac	52@40	12 mW	Meraki MR42 5GHz
8	AP16 (Meraki MR42)			
	802.11n	6	6 mW	Meraki MR42 2.4GHz
	802.11ac	157@40	12 mW	Meraki MR42 5GHz
9	AP2 (Meraki MR53E)			
	802.11n	1	6 mW	Meraki MA-ANT-3-A 2.4GHz
	802.11ac	149@40	12 mW	Meraki MA-ANT-3-A 5GHz
10	AP3 (Meraki MR53E)			
	802.11n	11	6 mW	Meraki MA-ANT-3-A 2.4GHz
	802.11ac	44@40	12 mW	Meraki MA-ANT-3-A 5GHz
11	AP4 (Meraki MR53E)			
	Off	-	-	Meraki MA-ANT-3-A 2.4GHz
	802.11ac	36@40	12 mW	Meraki MA-ANT-3-A 5GHz
12	AP5 (Meraki MR53E)			
	802.11n	1	6 mW	Meraki MA-ANT-3-A 2.4GHz
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13	AP6 (Meraki MR53E)			
	Off	-	-	Meraki MA-ANT-3-A 2.4GHz
	802.11ac	44@40	12 mW	Meraki MA-ANT-3-A 5GHz
14	AP7 (Meraki MR53E)			
	Off	-	-	Meraki MA-ANT-3-A 2.4GHz

Omni Center Predictive Wi-Fi Assessment

	802.11ac	149@40	12 mW	Meraki MA-ANT-3-A 5GHz
15	AP8 (Meraki MR53E)			
	802.11n	1	6 mW	Meraki MA-ANT-3-A 2.4GHz
	802.11ac	36@40	12 mW	Meraki MA-ANT-3-A 5GHz
16	AP9 (Meraki MR42)			
	802.11n	6	6 mW	Meraki MR42 2.4GHz
	802.11ac	52@40	12 mW	Meraki MR42 5GHz

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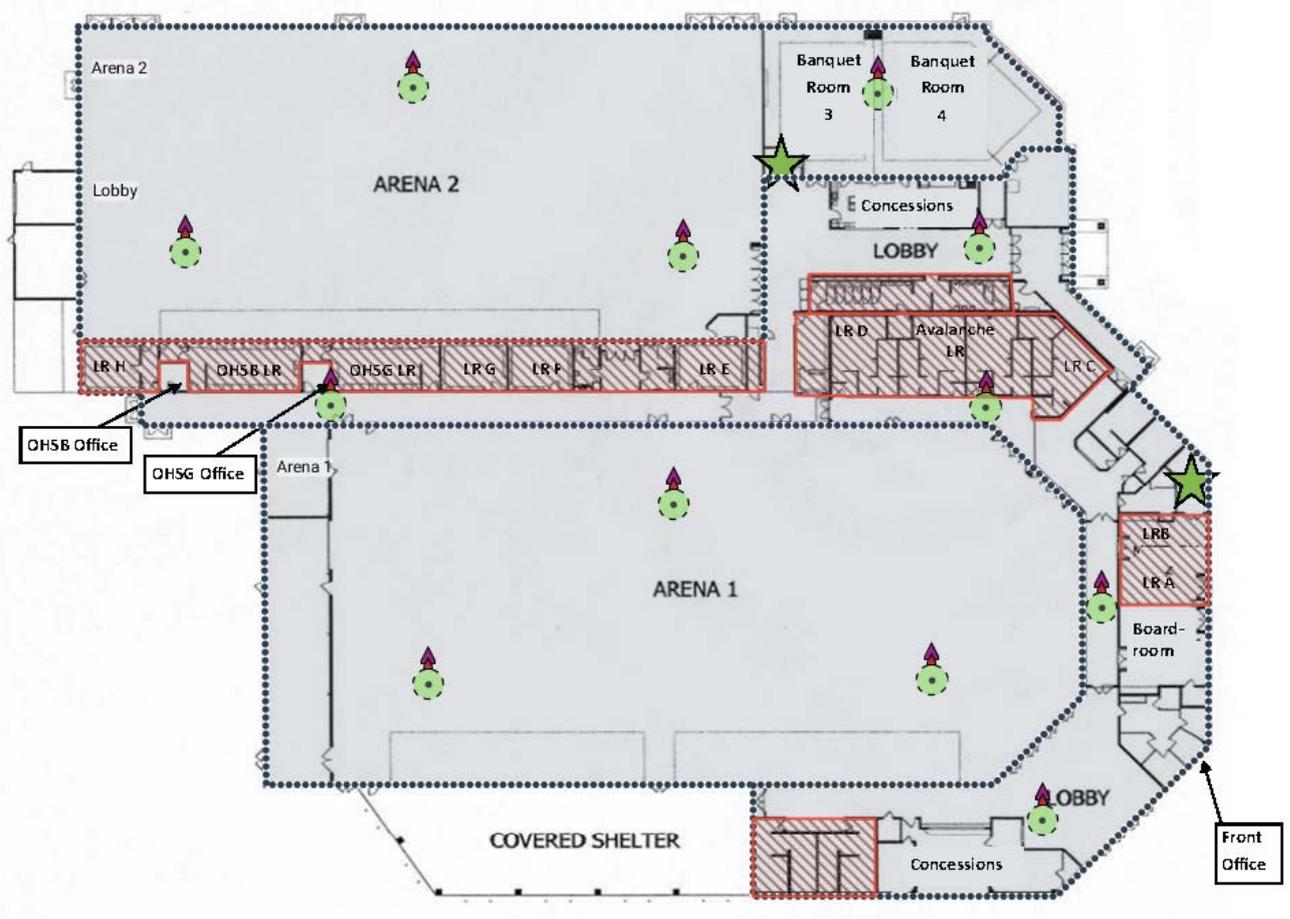
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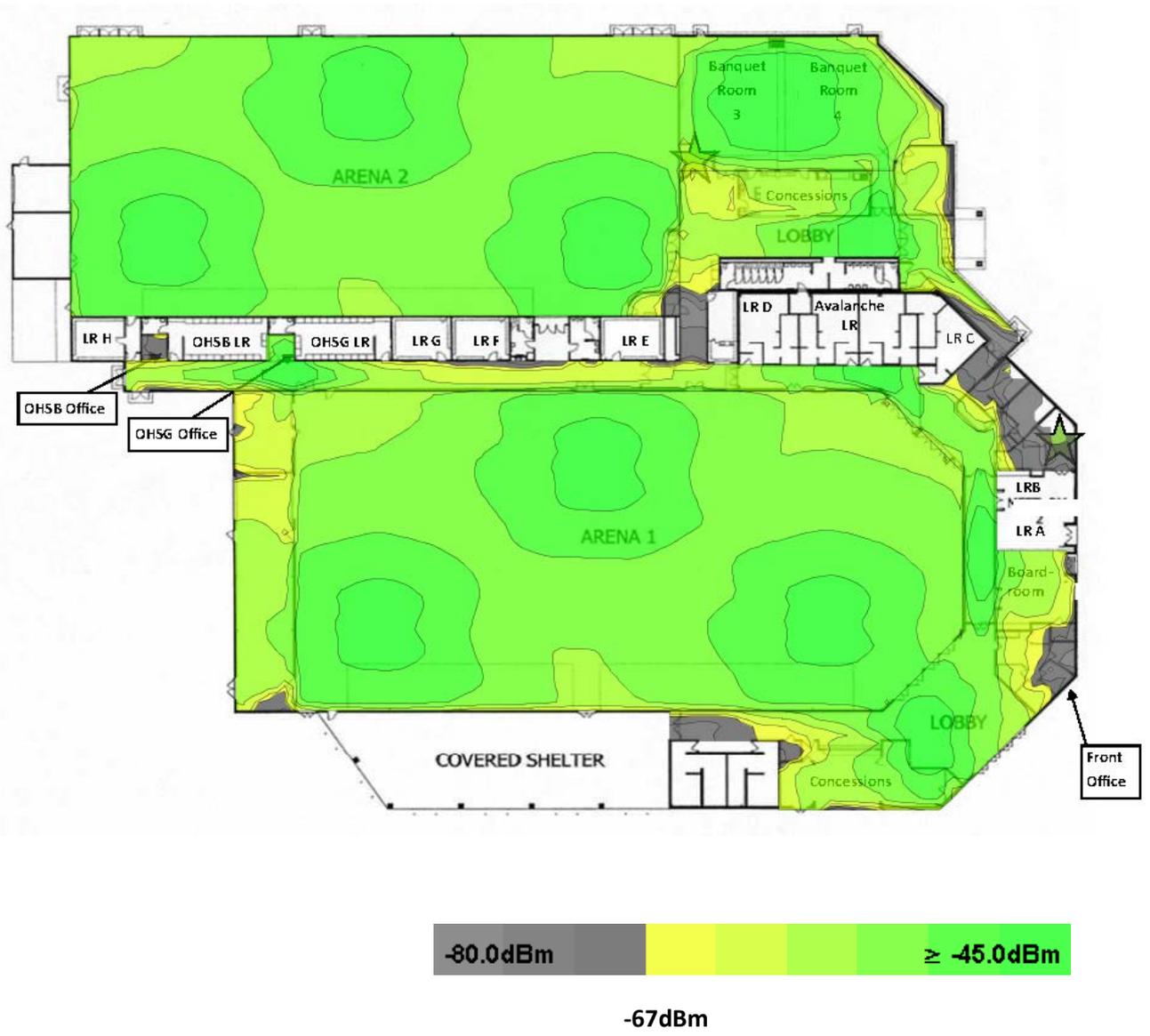
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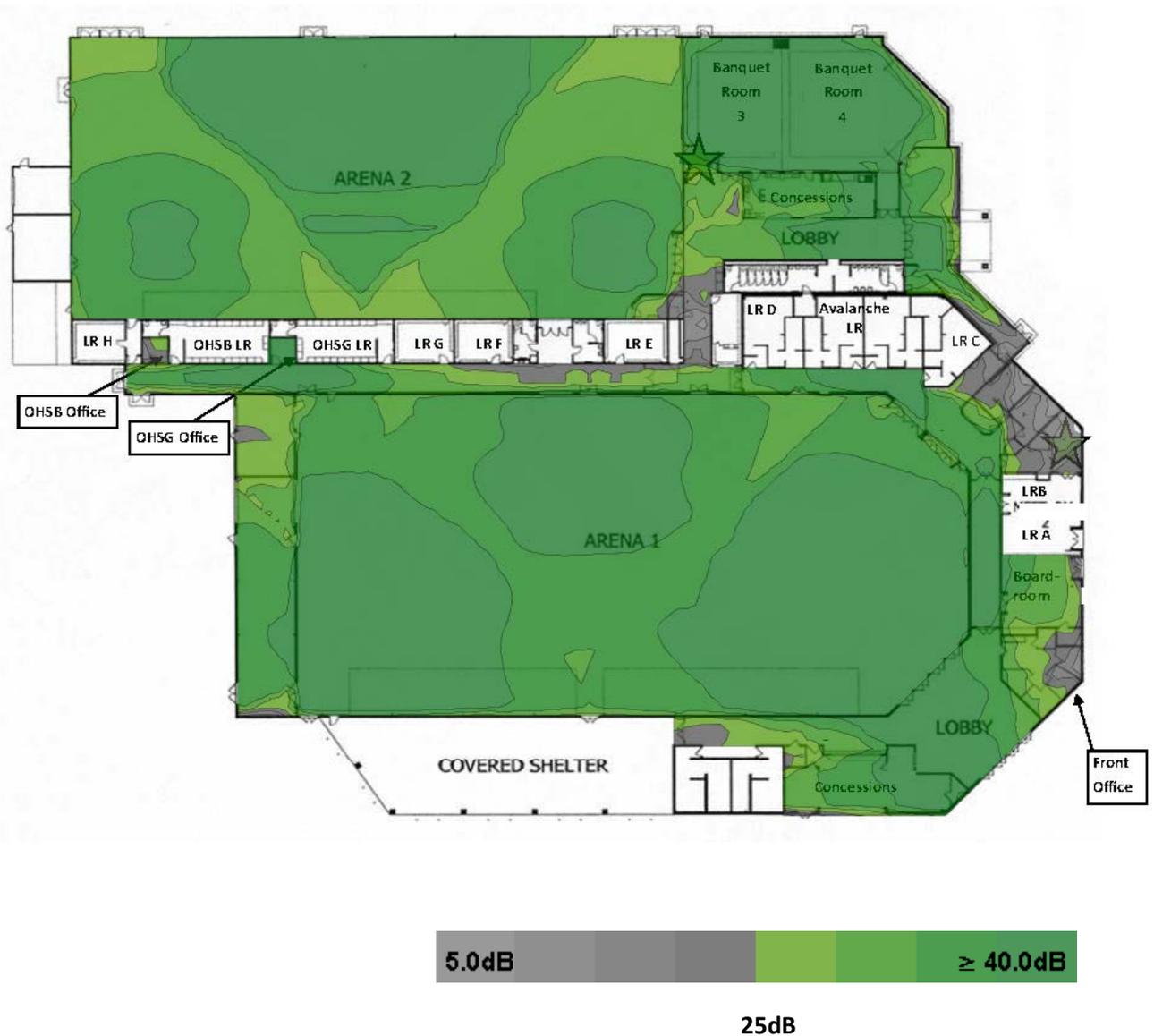
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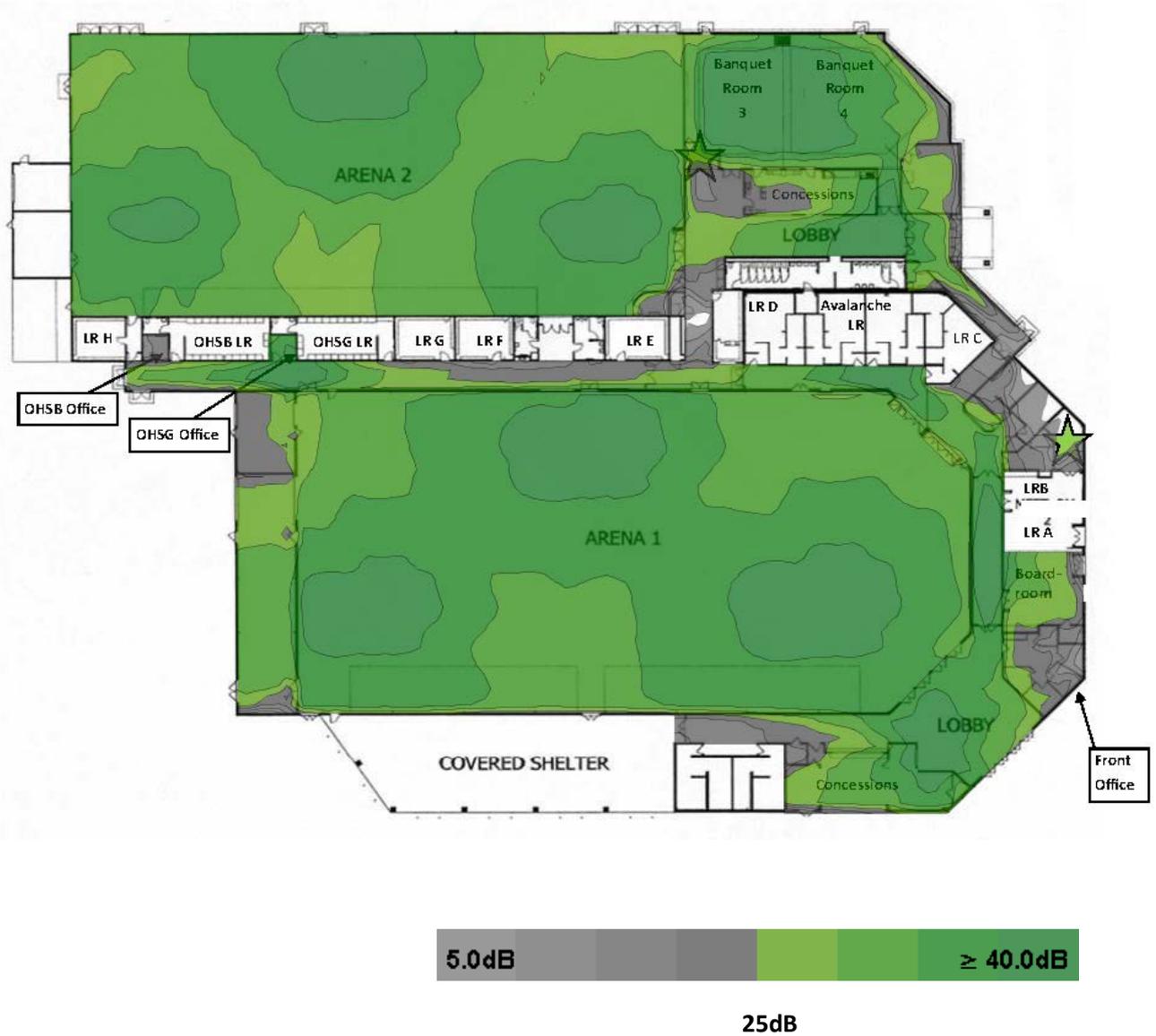
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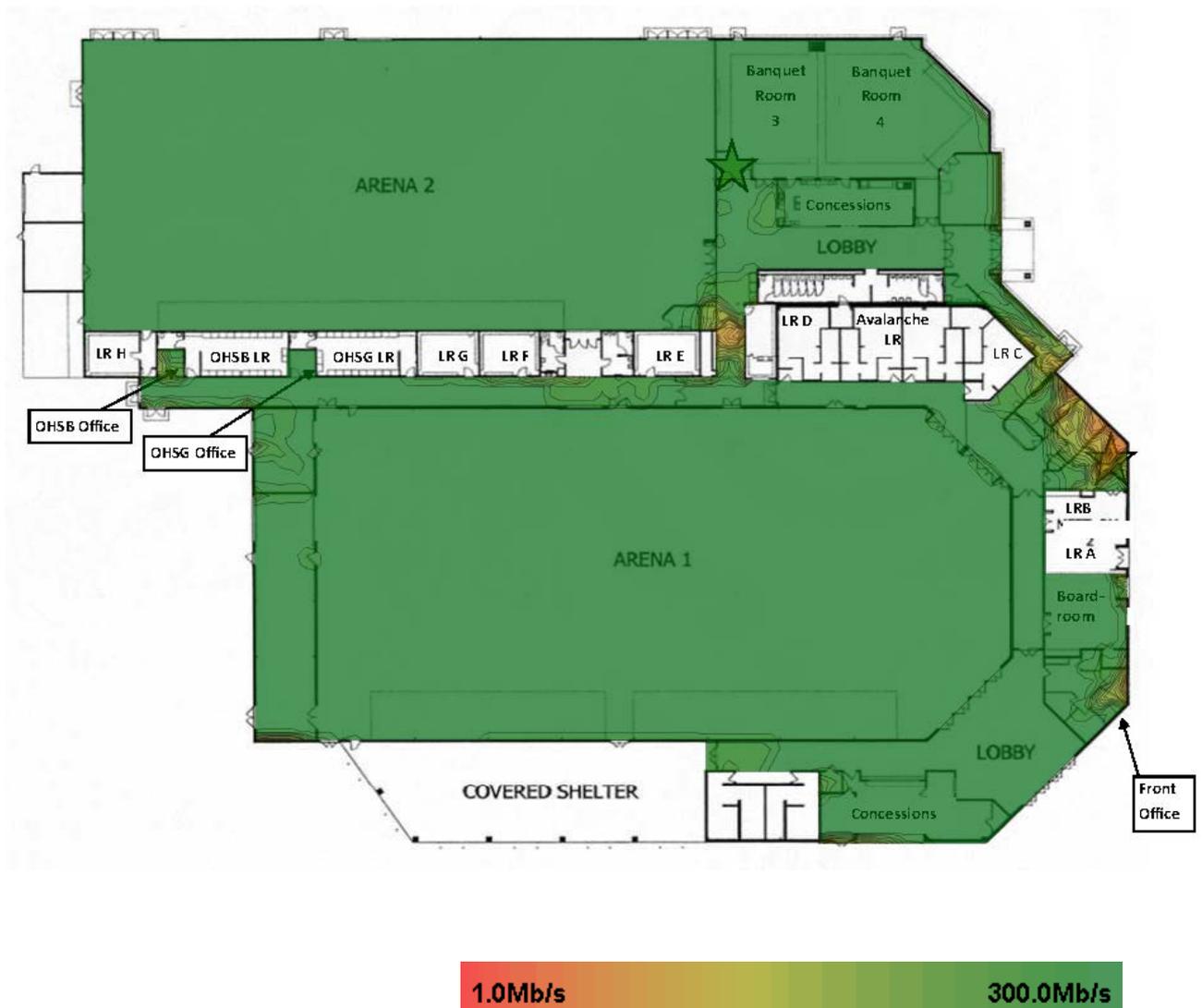
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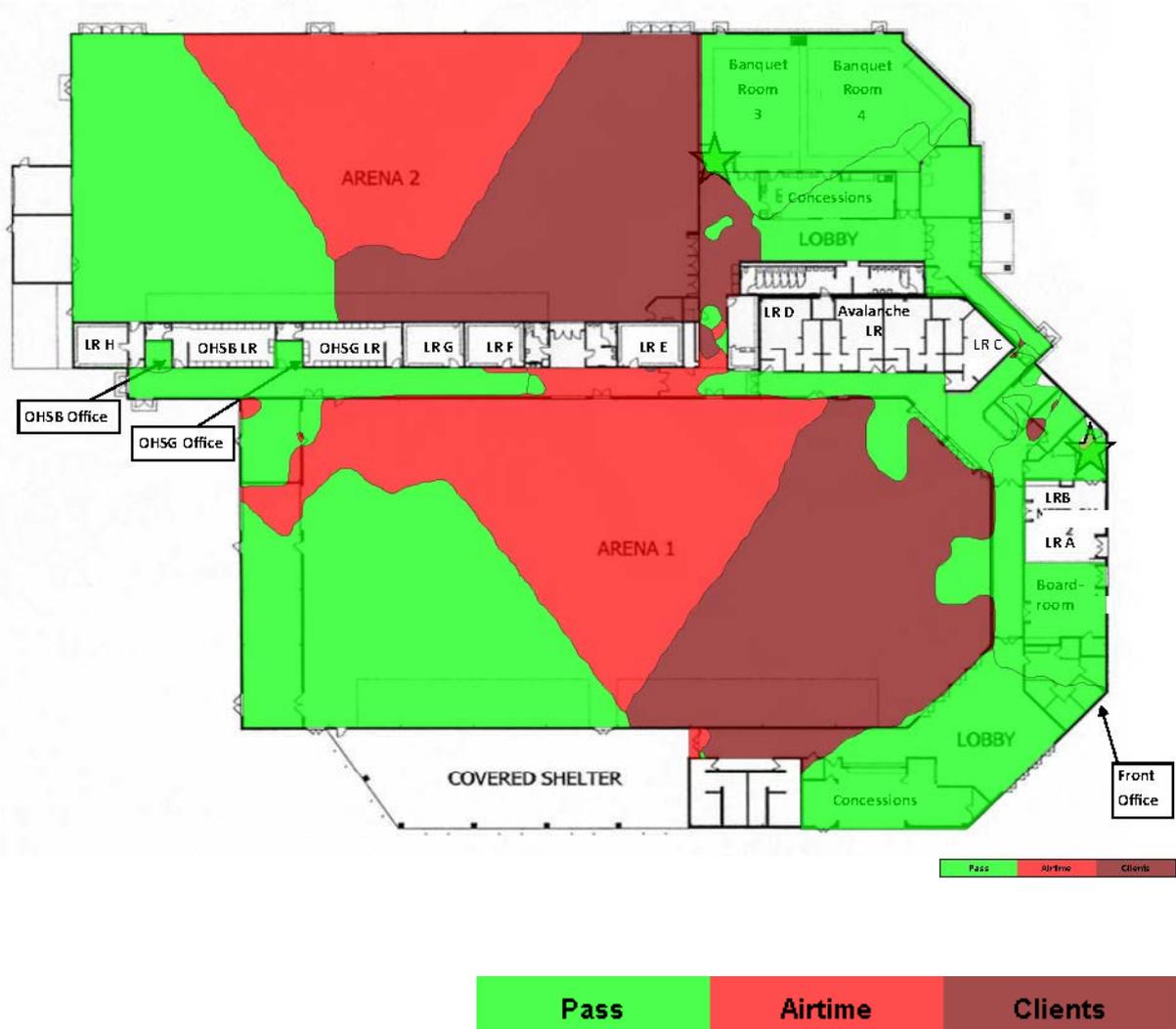
Capacity Health for Omni Center on 2.4 GHz band

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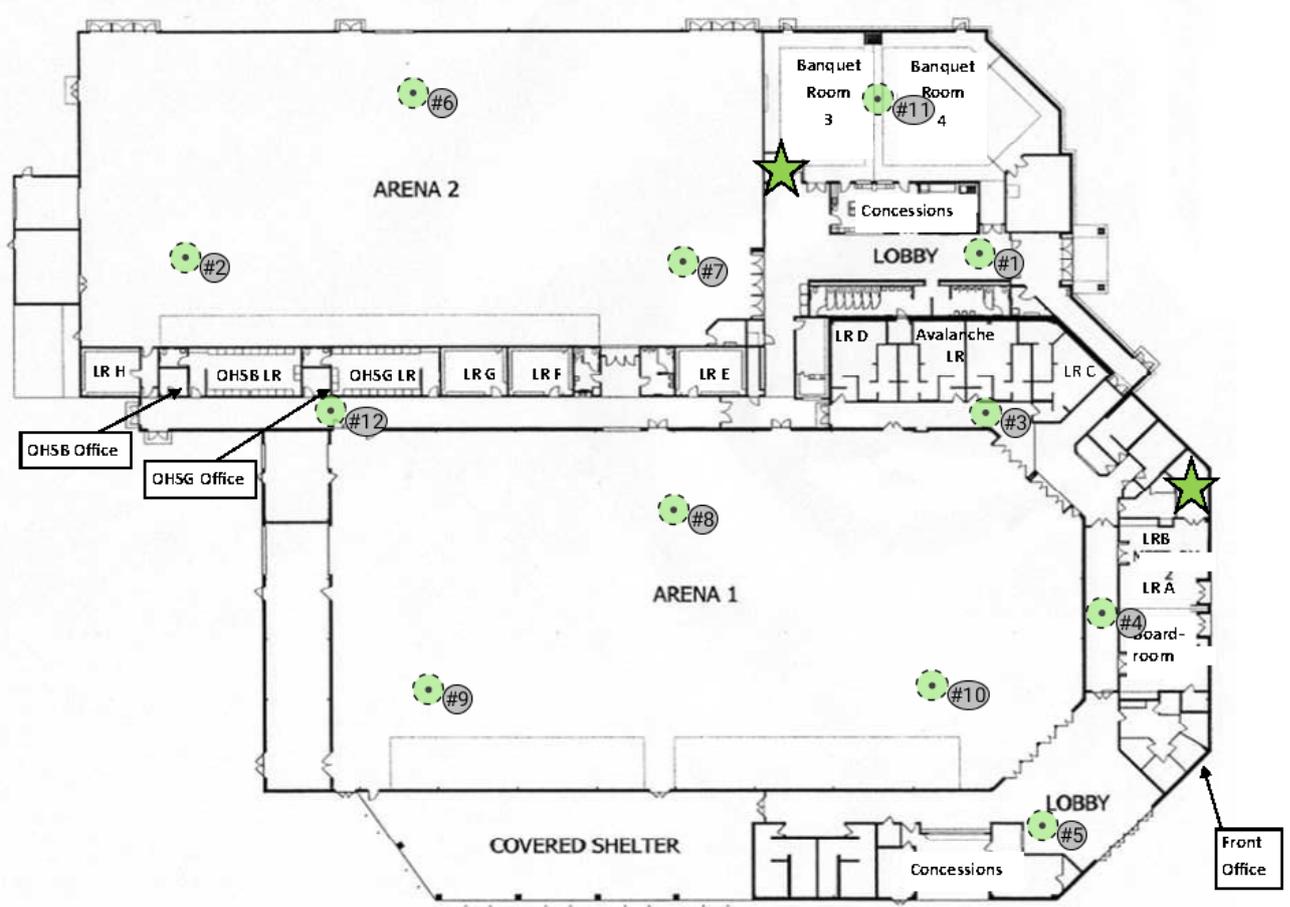


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