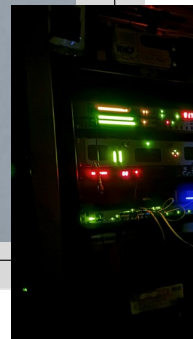


**WHY PROPAGATION
ENGINEERS ANITA
LONGLLEY AND PHIL
RICE STILL RULE THE
DAY**

WINNING AN FCC NCE CHANNEL





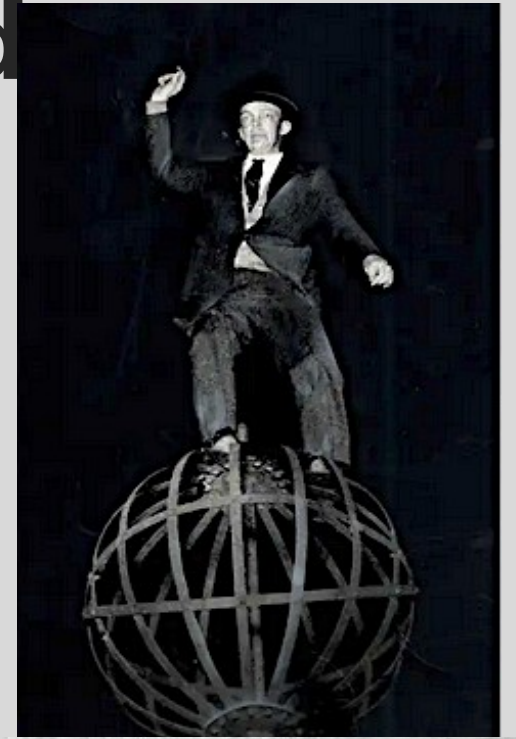
**Tonight, it
is a dark
and
stormy
night**

**But inside
the
transmitter
room it
feels like
Christmas**



We Owe It All to Edwin Howard Armstrong

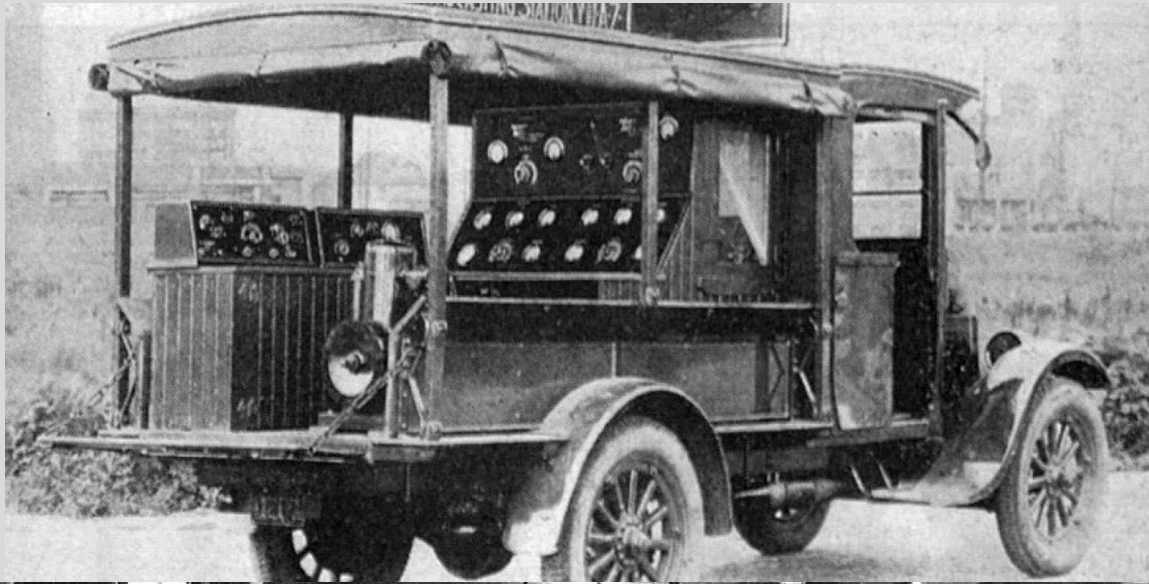
- Armstrong developed and patented regeneration in 1912 at age 22
- Nemesis # 1 DeForest claimed it couldn't work, then claimed he invented it first
 - DeForest won the patent dispute in a misguided 1934 Supreme Court ruling
- Armstrong had made Nemesis # 2 David Sarnoff rich with the development of Super-regeneration and then super-heterodyne reception in the 1920's - the backbone of RCA mass market receivers that propelled NBC to prominence
- Along the way Armstrong had been taken with Sarnoff's secretary Marion McInnes and did a handstand atop the WJZ tower atop the RCA building in 1922
- They married not long there-after and he presented her the world's first "portable receiver" for their honeymoon to Miami beach
- By the time of the Supreme Court ruling of 1934 Armstrong had begun development of FM Radio
- Sarnoff realized better fidelity would be a threat to AM and fought back
- Including forcing FM to move from the original 42-48 Meg band to 88-108



QRM bedlam in 1920's!

Radio regulation existed in its infancy in the aftermath of the Titanic disaster with passage of the Radio Act of 1912, which gave the Secretary of Commerce control of radio licenses.

- But in 1926 the Government lost the court battle against Zenith Radio Corporation for the non-licensed broadcasts of WJAZ in Chicago on a frequency reserved for Canadian stations.
- One listener wrote Congress that "the minions of Hades can be no worse than the radio noises that reach us in Albuquerque" New federal regulation restricting licenses became the Radio Act of 1927.
- WJAZ had only been granted a shared time of 2 hours a day, but had a portable transmitting truck roaming the countryside outside of Chicago looking for a better frequency and transmitting site. Ultimately, WJAZ chose the vacant Canadian channel and even had publicity photos of their broadcast engineers dressed up as Pirates.
- The Radio Act of 1927 was the immediate precursor of the Communications Act of 1934 and established the licensing principles we follow today



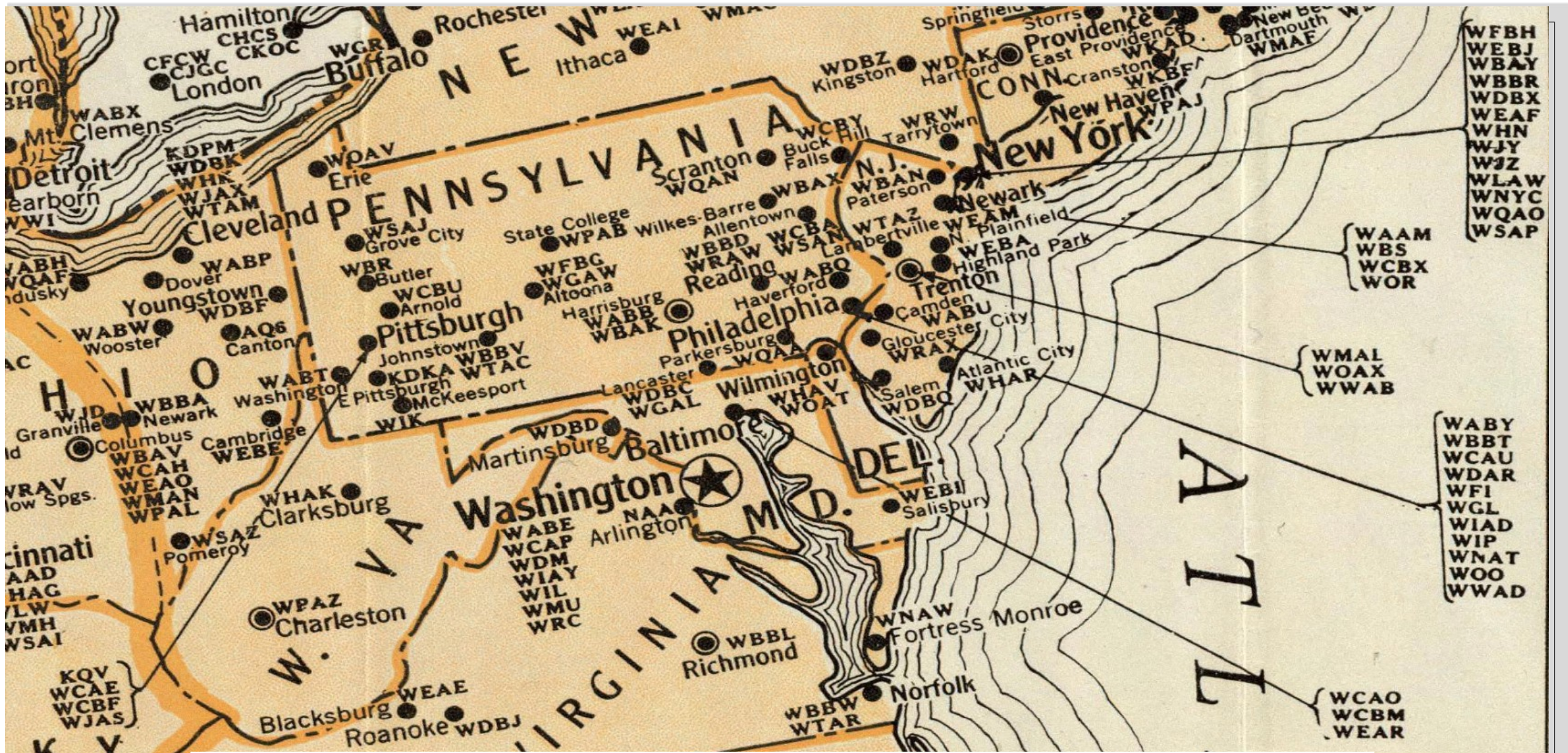
Communications Act of 1934 - Section 307 a & b

(a) GRANT

The Commission, if public convenience, interest, or necessity will be served thereby, subject to the limitations of this chapter, shall grant to any applicant therefor a station license provided for by this chapter.

(b) ALLOCATION OF FACILITIES

In considering applications for licenses, and modifications and renewals thereof, when and insofar as there is demand for the same, the Commission shall make such distribution of licenses, frequencies, hours of operation, and of power among the several States and communities as to provide a fair, efficient, and equitable distribution of radio service to each of the same.



By the early-1920's hundreds of stations had appeared ; four in Maryland !

Judging the Competition for Scarce Licenses

- For decades the FCC used **comparative hearings** awarding only one the exclusive license to broadcast on a specific location with specific power (13 categories of “required exhibits”).
- FCC Chairman Dean Burch recounted in the early 1970’s *“Comparative hearings are much like a professional wrestling match – the grunts and groans resound throughout the land, but no permanent injury seems to result.”* Confusion reigned and no one could tell you who should prevail.
- So, the Congress and FCC gave up and no longer decided applicants based on “meritorious” service proposals, but rather in **the commercial side based on winning frequency auctions**. “Highest, best use was a financial calculation of what is that frequency worth”. Indeed this is a major reason, along with license fees for why the FCC actually makes more money than it uses in its operations. **For noncom’s however (religious broadcasters and community stations like ours), it’s now a series of “points” for technical and legal and ownership attributes.**
- Today there are over 16,000 radio stations across America, 4,000 noncommercial (religious & community)

So who wins the noncommercial MX channels?

You get:

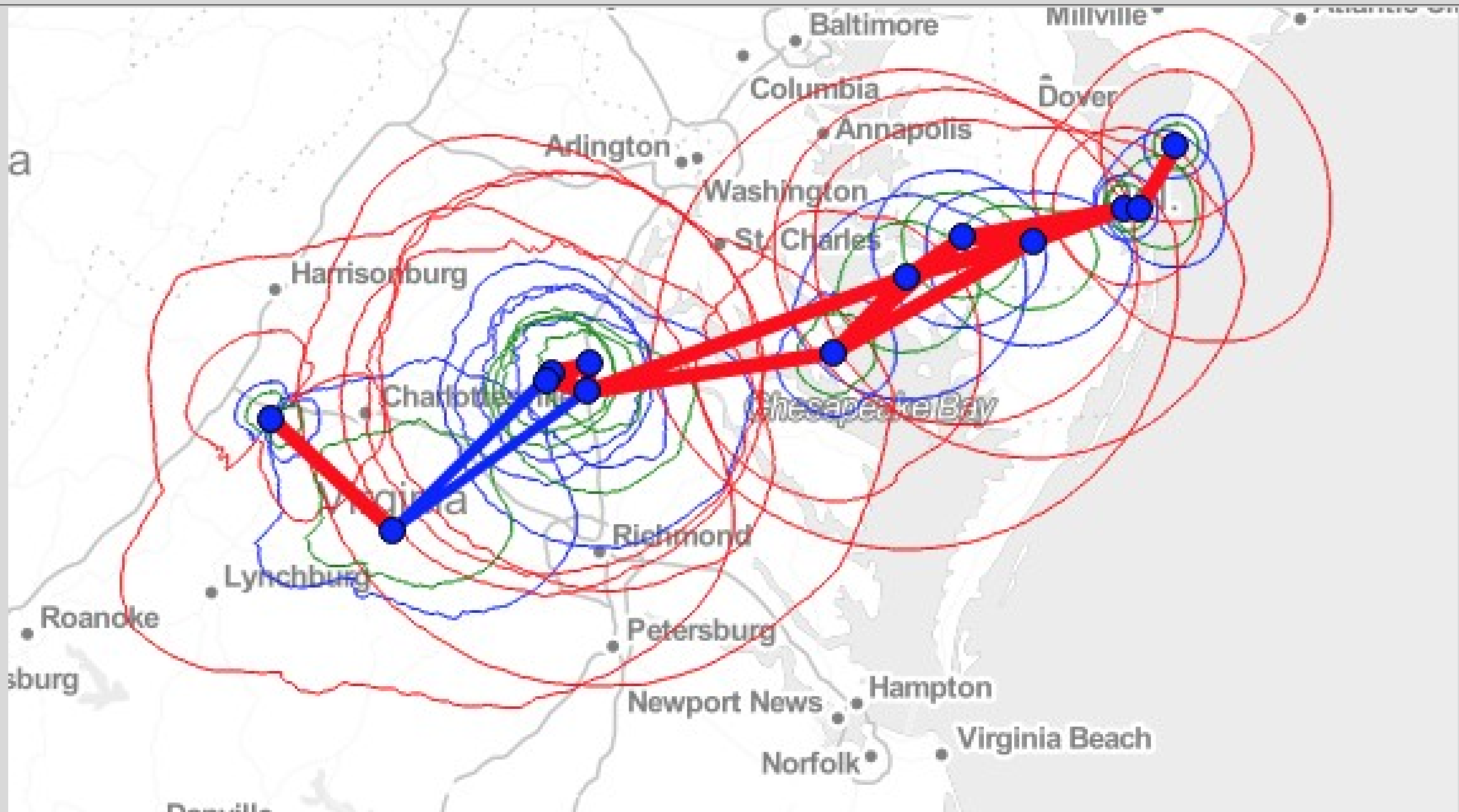
- **3 Point for established local applicants**
- **2 Points for Diversity of ownership - no other nearby station interest**
- **2 Points if you are a “State network” or “Tribal applicant”, etc.**
- **1 point if you will serve 10% or (2 points) 20% *more people and area***
- ***5 points is fairly easy to achieve if you try at all. . .***
- **Commission continues every 10-20 years to open a window and to fine-tune this process (2021 was 14 years after 2007 Window)**

BUT! §307B Rule (Fair Distribution) “White or Gray Service” Preempts the Point System

- **“First and Second NCE-FM” Service can create a 307B preference (fair distribution of service analysis) - “white and gray” - THE TOP ALLOCATION PRIORITY**
- **Must provide first NCE service to 10% of the people within the proposed coverage area (60 dBu; 1 millivolt) contour, provided that number is at least 2,000 people per the latest Census.**
- **And if two applicants meet this threshold, if the one providing the greatest such service, does so by more than 5,000 people more than the next highest applicant, the FCC will declare that one superior and award it a decisive preference**

NCE 2021 Window at a Glance

- **231 Mutually Exclusive Groups were filed - over 1,000 competing applicants**
- **368 stations were granted as “singletons” - no mutual exclusivity**
- ***Historic Oxford, Limited* - was one of 13 bound up in FCC MX Group 49 stretching from Waynesboro, VA to Cape May, NJ**
- **Historic Oxford, Limited was revived to take advantage of much earlier founding date which yields favorable “choose first” dayparting if advancing in MX Group to forced Time-Share Order.**

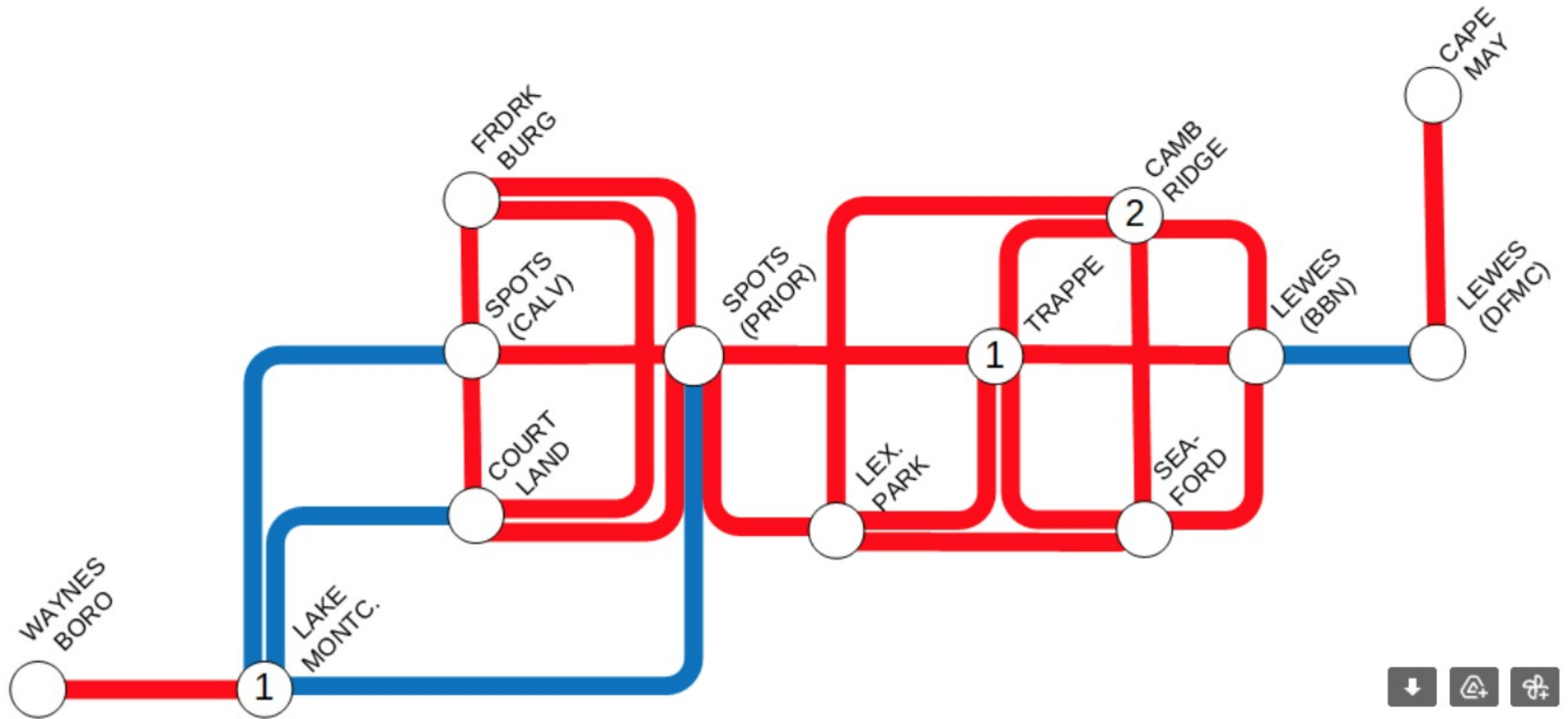


to point method of determining MX groups. The official designation of the MX group from the FCC may be different. This listing is shown for your information only. REC is not liable for any incorrect information on this first look.

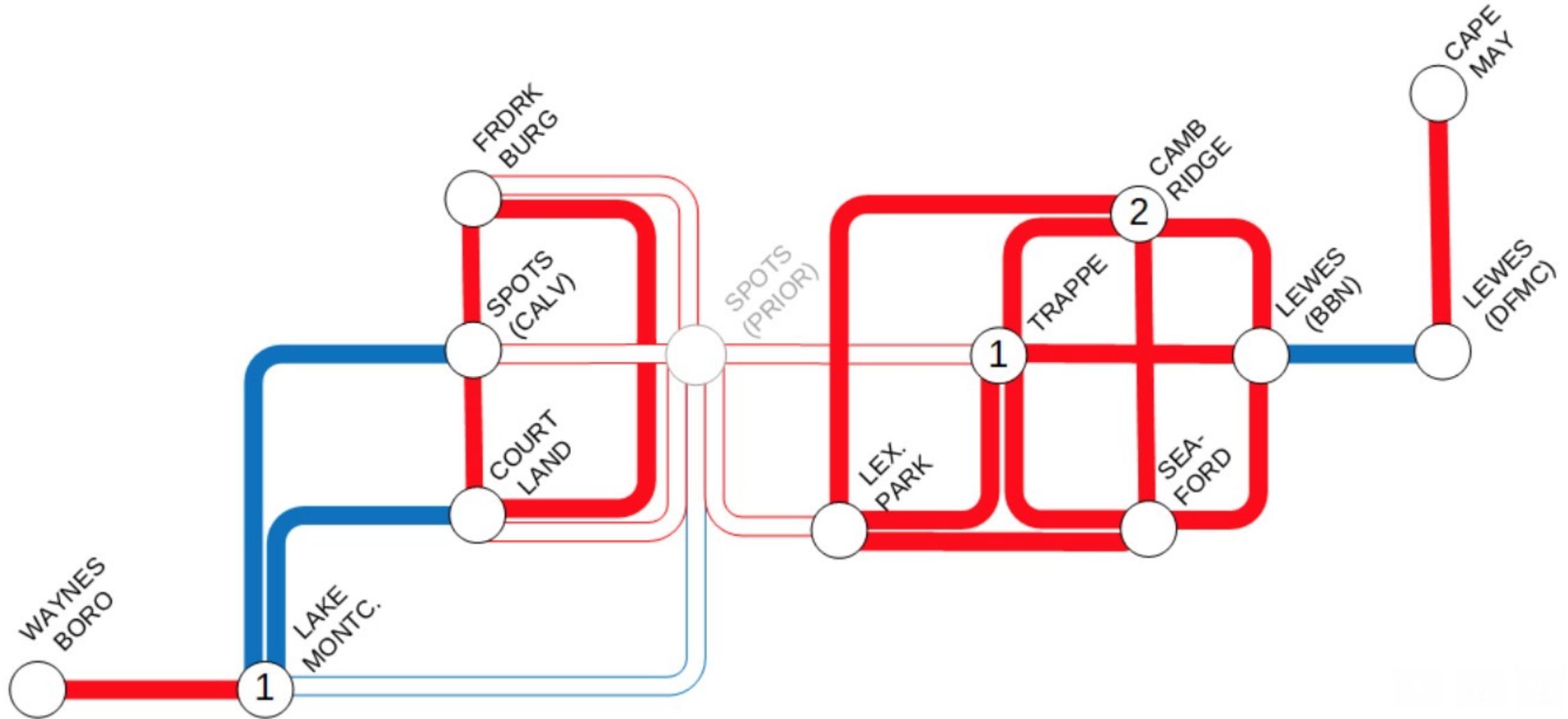
Facility			Fair Distribution			Point System			Tie-Breaker		
Facility ID	Community	Ch	Priority Level	First Svc.	First/2nd	Pts	Land Area	Population	Curr Auth.	Pend Apps	Prior Wndw
767399	AMELIA COURT HOUSE VA**	219A**	None			2	265.66	3964	18	4	No
	Priority Radio, Inc. <i>(broke out from MX group)</i>										
767736	GREENVILLE VA**	217A**	None			2	231.85	9508	6	5	No
	Rising Tide Broadcasting, Inc <i>(broke out from MX group)</i>										
764203	Lake Monticello VA	218B	1st Svc	17230	41848	2	3367	66929	1	3	Yes
	Solid Foundation Broadcasting Corporation <i>(broke out from MX group)</i>										
SPLIT GROUP A											
763589	LEWES DE	218A	None			2	208	37746	1	1	No
	Delaware First Media Corporation Dismissal Reason: Eliminated in Threshold Analysis.										
762133	LEWES DE	219A	None			2	216.7	35393	146	7	Yes
	Bible Broadcasting Network, Inc. Dismissal Reason: Eliminated in Threshold Analysis.										
763917	SEAFORD DE	219A	None			2	1581	102285	1	1	No
	Delaware First Media Corporation Dismissal Reason: Eliminated in Threshold Analysis.										
766326	CAMBRIDGE MD	219A	2nd Svc	423	30281	2	1325.7	50131	18	4	No
	Priority Radio, Inc. Dismissal Reason: Eliminated in Threshold Analysis.										
768338	LEXINGTON PARK MD	219A	None			2	449.5	56268	0	0	No
	IGLESIA DE EVANGELIZATION MISIONERA JOVENES CRISTIANOS DE MARYLAND, INC. Dismissal Reason: Eliminated in Threshold Analysis.										
762627	TRAPPE MD	219A	1st Svc	2988	23731	5	874	24238	0	1	No
	Historic Oxford, Limited <i>(tentative selectee)</i>										
768596	Cape May NJ	218A	None			5	56.77	18335	3	0	No
	Maranatha Ministries/Joy Comm. Dismissal Reason: Eliminated in Threshold Analysis.										
SPLIT GROUP B											
767150	Courtland VA	219A	None			0	1764.2	153432	90	4	No
	Positive Alternative Radio, Inc.										
768418	FREDERICKSBURG VA	219B1	None			2	1163.7	133089	6	3	No
	REDEEMER BROADCASTING, INC.										
766728	SPOTSYLVANIA VA	219A	None			5	1407.48	146515	0	0	No
	Calvary Baptist Church of Spotsylvania <i>(predicted winner)</i>										

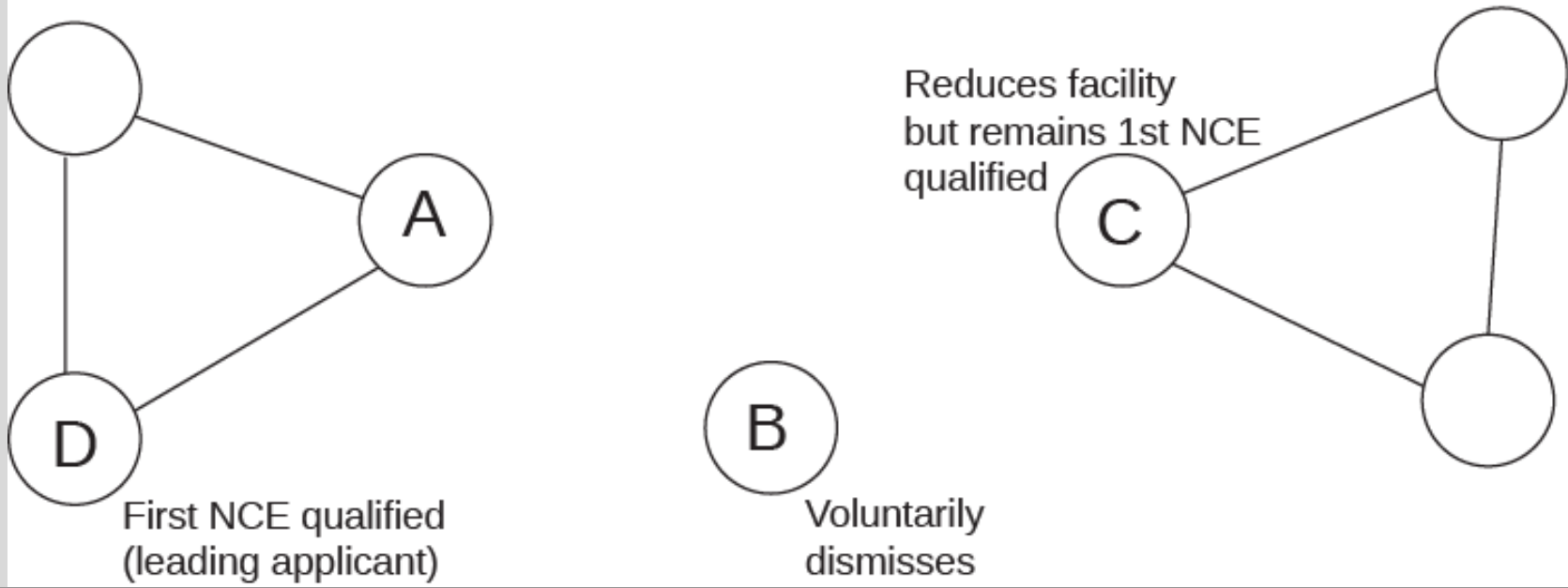
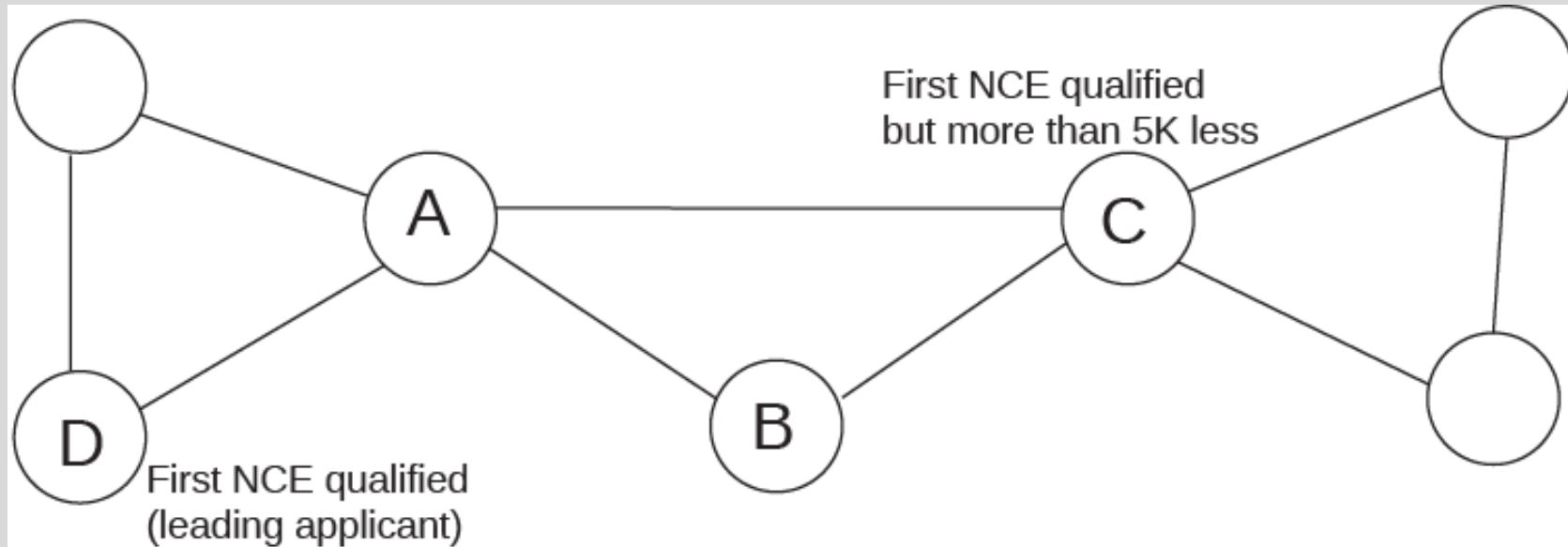
** shown by record out from official website

Here's a schematic map of the MX group right now:



If Spottsylvania (Priority R.) drops out, it breaks the entire group into two. Lexington Park would still be MX to Trappe but Trappe would have priority in the split group:





NCE Window Nov. 2-9, 2021

- Only one nearby channel remained for assignment - it was channel 219, also known as 91.7 FM

Our experts were all wrong:

- One said ***“there won’t be any competing applicants*** as comparatively speaking no one really lives on the Mid-shore” - there were 13.
- Another said **“you have already won based on superior technical numbers”** - but we were actually bound up in MX 49 chain with 12 others
- And the third at one point said **“don’t worry about maximizing your technical score, go for the most economical transmitter site”** - we would never have won without having the superior 307b population count from a **DIFFERENT CITY OF LICENSE THAN ANYONE ELSE**
- Another said **don’t use a highly directional technical pattern to maximize your score**, if you can’t actually deliver 85% of the coverage, you can’t build it (but another said ***“That’s wrong. The 85% rule doesn’t matter - you can always modify after winning).***

Historic Oxford was the only local applicant

- **Lake Monticello was our problem - they would win, and you couldn't get a CP once the winner is announced in the MX Group**
- **But one of our consultants, Michelle Bradley of Riverton (K3UE) determined how they could become a singleton by modifying their application and moving just a few miles to the Southwest; afterwards they could move back closer to Charlottesville, VA which was their obvious primary interest.**
- **I had identified that their application was as crazy as ours, simply designed to get the best numbers and win at the 307B stage.**
- **Winning at the point-award stage requires a vote of all 5 FCC Commissioners and is often subject to Petitions to Deny, etc. Our lawyer warned us "there's no free lunch" and advised that one of the competing applicants was notorious for fighting tooth and nail for years.**

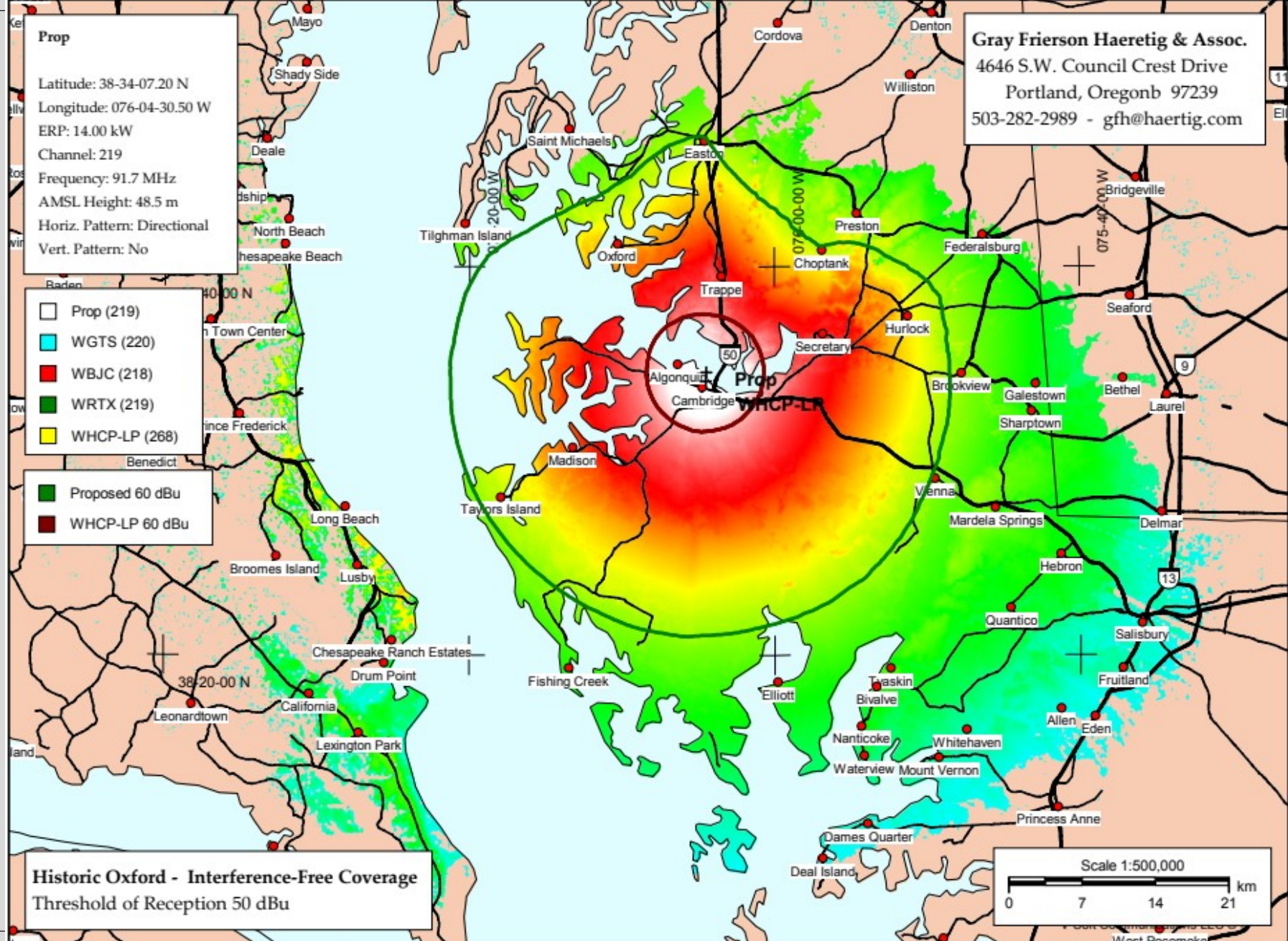


- # **ITS Table Mountain Test Range in Colorado**
- **Original propagation work was done by Anita Longley and Phil Rice at the Central Radio Propagation Lab via NBS "Tech Note 101" in 1965**
 - **Range still in use by NOAA and others for GPS, microwave,**

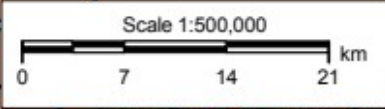
Prop
 Latitude: 38-34-07.20 N
 Longitude: 076-04-30.50 W
 ERP: 14.00 kW
 Channel: 219
 Frequency: 91.7 MHz
 AMSL Height: 48.5 m
 Horiz. Pattern: Directional
 Vert. Pattern: No

Gray Frierson Haeretig & Assoc.
 4646 S.W. Council Crest Drive
 Portland, Oregonb 97239
 503-282-2989 - gfh@haertig.com

- Prop (219)
 - WGTS (220)
 - WBJC (218)
 - WRTX (219)
 - WHCP-LP (268)
-
- Proposed 60 dBu
 - WHCP-LP 60 dBu

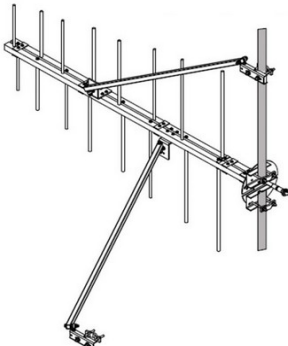


Historic Oxford - Interference-Free Coverage
 Threshold of Reception 50 dBu



No Petition to Deny Challenges - WHCP Grows Up

- **CP issued on June 2, 2022**
- **Got busy on fundraising and program planning**
- **Good news: As of end of 2022, we had funds on hand for transmitter and antenna, but final antenna design had to be worked out on the Shively test range in Maine**
- **Still to be raised: funds for upgrade to all digital infrastructure (using 40 year old donated analog consoles)**
- **Final studio location (more space for newsroom, oral histories, interns, have 2100 square feet now - looking for 4,000)**
- **Desire for Talbot satellite studio**
- **Will still be a largely volunteer-driven station (80% of air product is community radio hosts across genres)**
- **Diversity of musical genres hosted by local experts - Blues, Classic Country, Jazz, Indie, Celtic, Classical Rock, R&B**
- **Mid-Shore Mid-Day noontime public affairs show**
- **Shore Stories**
- **Active student internship program**
- **Radio reading service subcarrier for Blind & print disabled**

HOME / RF AM/FM/TV / ANTENNAS / FM

Shively Labs 6025-1/1-2D Log Periodic Antenna One Level, Medium Power

One Level, two azimuths (one single-boom, one double), unequal pwr div, mts, etc.

SKU: 6025-1/1-2D

Category: FM

[f](#) [t](#) [e](#) [i](#) [+](#) [i](#)



Stellar Towers out of Delaware did a truly stellar job of installing the two bay three around 6025 Log Periodic Array

ALL KEY FACTORS HAD TO GO RIGHT

- **The Shively test range pulled a rabbit out of the hat and with the directional two-bay, three around, slant polarized 6025 Log Periodic Array & neatly matched the required 85% of theoretical pattern for the License to Cover**
- **The PE s/off KCI Structural Analysis on the tower came back clean (at 93%)**
- **The pros at Tower Structures did a great job over 5 working days**
- **The licensed surveyor had to bring them back for a final “point” tuning**
- **William Harrison saved our bacon with contacts at WGTS for BE-10S**
- **The Sub Light engineering consultant had to make multiple trips to prove biohazard compliance to the FCC**
- **License to cover issued early December; full power and stereo same day**

Lessons learned . . .

- **You can't provide a good service without Board control & net revenue**
- **"Keep it small" - me & two other "founders" of the LP as the Board**
- **We are in positive cash flow, despite having to raise the funds and hire staff to be an NPR Member Station on Day 1**
- **As Ed Murrow said "In the final analysis what comes out of the loudspeaker is all that really matters."**
- **Be humble, be grateful, learn daily**

A progress report -

- **Daily news and public affairs noontime show (Mid-Shore Mid-day)**
- **Free Mid-Shore Reader radio reading service for vision impaired**
- **First paid employee was AA HS intern (so he wouldn't go to McDonalds)**
- **First full time employee was female HS intern who got her Music Engineering degree and came back to work with us**
- **Thanks to a generous benefactor, we already have a studio in Easton, and anchor ATC from there daily**
- **ATC host is former college intern, who was rescued from pizza deliveries**
- **ME host was former GM at local four station commercial cluster that was bought and closed in favor of studio cluster at the co-owned TV station**
- **All station ID's are read by members of the community. . . .**

Check out whcp.org - 91.7 WHCP-FM On Air Date: July 15th, 2023

