

# Coordination Guideline

## Application of Selective Access

20-Apr-2015	Reduce regional draft document to Wisconsin specific version
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# Preface

The coordinator's role is to provide recommendations which avoid interference. In order for this process to work, each person or persons performing that role must have a clear understanding of how their counterparts perform their roles.

This document outlines the application of selective access for Wisconsin.

## Policy

- All new coordination recommendations, inclusive of any significant change in coordinated parameters, shall include a CTCSS, CDCSS, or equivalent means of selective access, as a condition of coordination.
- All existing coordinated recommendations that lack a stated selective access method shall have a coordinated CTCSS tone or digital code assigned as a condition of continued coordination.
- To the extent permitted by the conditional access method, the tone or code selection process shall exclude the tones and codes used in any areas within approximately 150 miles. Regions which regularly experience periods of enhanced propagation, such as across one of the Great Lakes, should make every effort to make choices that look beyond the minimum recommended distance.
- The tone or code selection shall be from the area covered by the largest percentage of the service area<sup>1</sup>. The intent is to coordinate for the primary service area, even if the physical location of the repeater lies within an adjoining region, which may be in a different state.
- The published plans should be periodically reviewed by the affected parties to identify areas where alternate choices are occurring, or as new digital modalities are deployed, and propose additions or changes to the plan as appropriate.
- Digital modes shall not utilize "default" or "all access" codes such as P25's \$293, \$F7E, \$F7F, NXDN RAN 0, Yaesu's DSQ 0 (zero), and so on. DMR Color Code "1" may be reserved for an area, but is not suggested for use as an alternative code.

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<sup>1</sup> FCC R-6602 (Carey) Service

## Background

The geographic areas outlined in the tone plan were created more than 15 years ago.

### North East region tone conflict, round duex

The north eastern region had originally used 107.2 Hz, but that ultimately proved problematic during periods of enhanced propagation up and down Lake Michigan creating a conflict with co-tone systems in North Eastern Illinois. Wisconsin repeater owners made elective changes to utilize 100.0 Hz, and later WAR changed its policy to reflect its use within the North Eastern Area.

In more recent times, coordination requests for the Upper Peninsula of Michigan have requested use of 100.0 Hz, and Wisconsin has objected due to conflict with a published tone plan.

The coordinator for the UP has not unilaterally conditioned coordination upon the use of selective access methods and thus not established a tone plan, however a popular tone choice in the UP has become 100.0 Hz and is forward looking problem.

Records indicate that the predominant use of 100.0 Hz in the UP began prior to 2003, and precedes WAR's 2004 decision to utilize that tone within its North Eastern Area.

To rectify this situation, and potentially others, the use of 100.0 Hz within North Eastern Wisconsin will be deprecated and alternate recommendation(s) made.

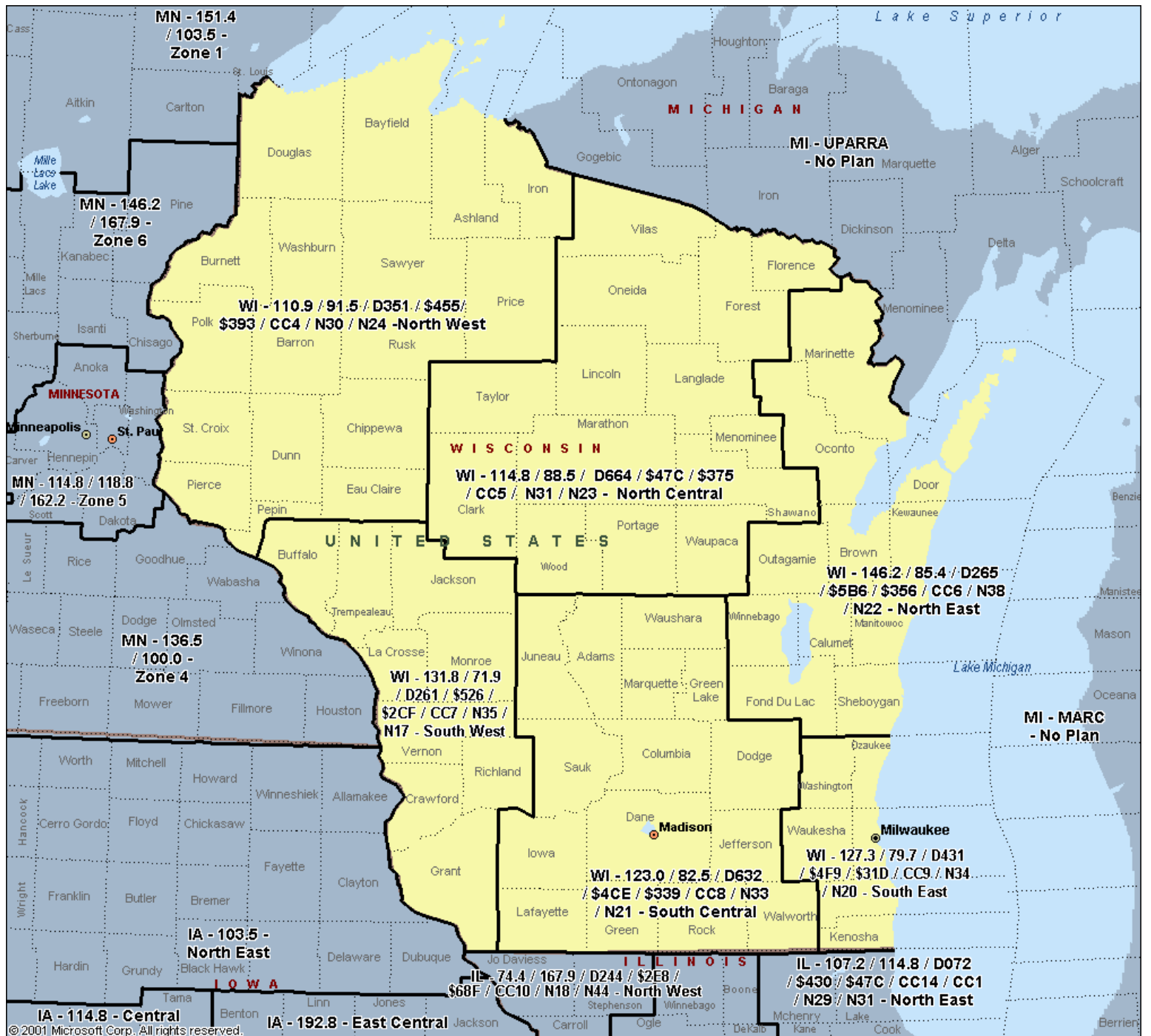
It is further proposed that the counties of Oconto and Marinette be included within the North Eastern area, and that Wisconsin and the Upper-Peninsula be coordinated from the same tone and code pool.

### Tone not available

With recurring frequency, it is not uncommon to be able to coordinate two co-channel repeaters within the same area and now be left with a potentially large array of tones that could be used.

Given that having a second standard tone defined for a area would resolve this need, an additional tone is recommended for each of the currently defined regions. Additionally, primary CDCSS, DMR, P25, and Yaesu DSQ codes and secondary P25 and Yaesu DSQ codes are defined.

# Areas



# North West

Counties: Douglass, Bayfield, Ashland, Iron, Burnett, Washburn, Sawyer, Price, Polk, Barron, Rusk, St. Croix, Dunn, Chippewa, Pierce, Pepin, Eau Claire

CTCSS 1: 110.9

CTCSS 2: 91.5

CDCSS 1: 351

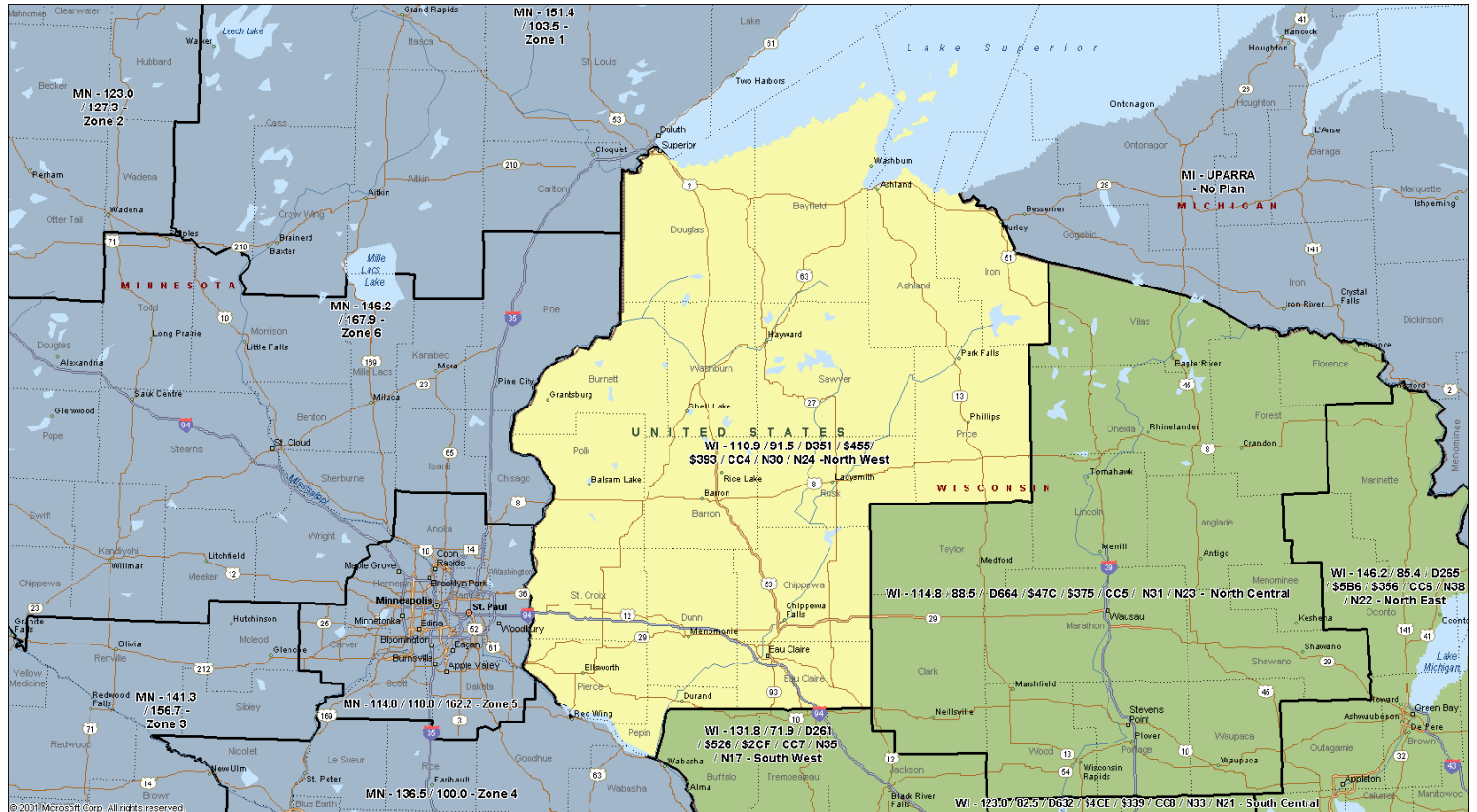
P25 1: \$455

P25 2: \$393

DMR: CC 4

NXDN / Yaesu 1: 30

NXDN / Yaesu 2: 24



# North Central

Counties: Vilas, Forest, Florence, Onieda, Lincoln, Langlade, Taylor, Marathon, Shawno, Menominee, Clark, Wood, Portage, Waupaca

CTCSS 1: 114.8

CTCSS 2: 88.5

CDCSS 1: 664

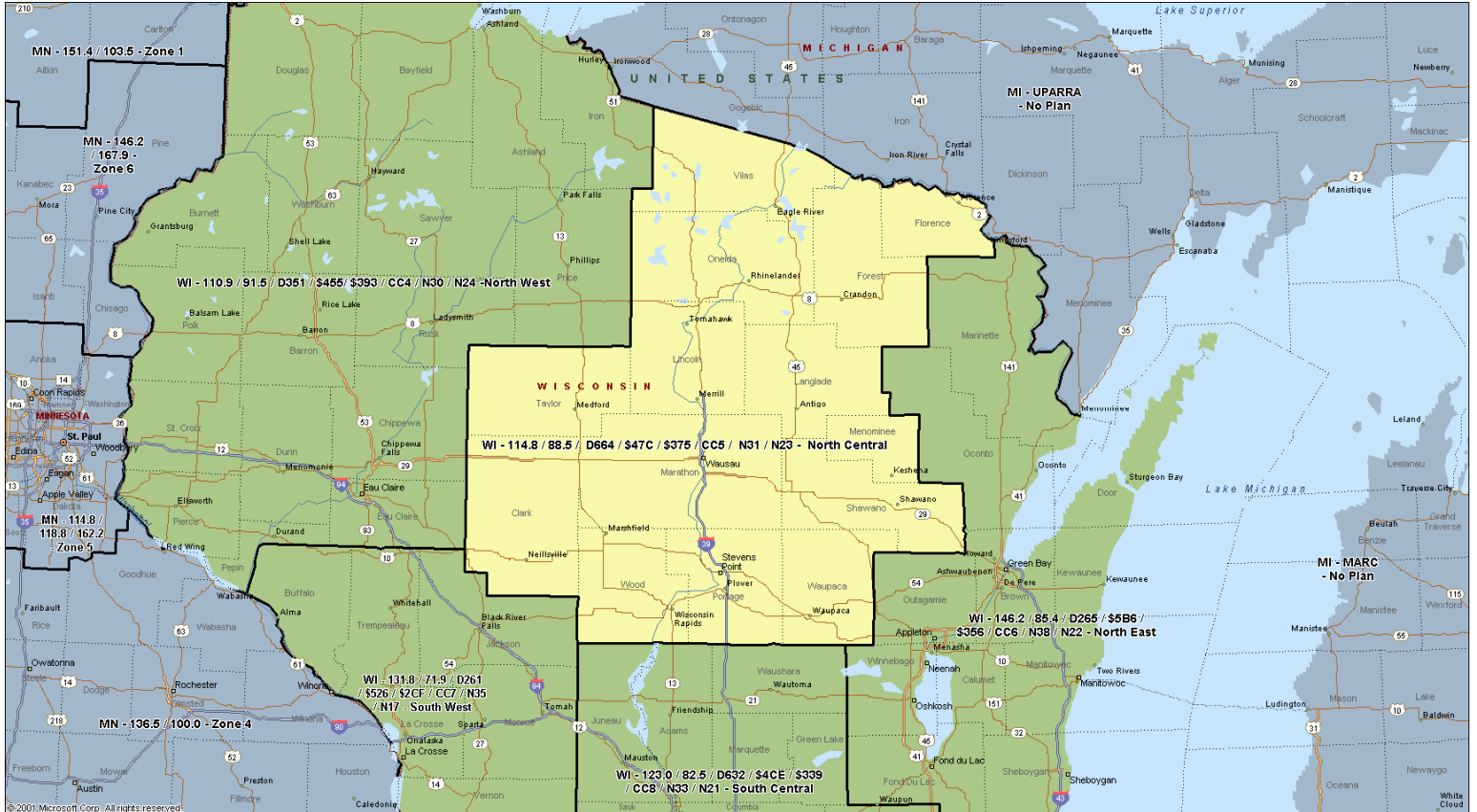
P25 1: \$47C

P25 2: \$375

DMR: CC 5

NXDN / Yaesu 1: 31

NXDN / Yaesu 2: 23



# South West

Counties: Buffalo, Trempealeau, Jackson, La Crosse, Monroe, Vernon, Richland, Crawford, Grant

CTCSS 1: 131.8

CTCSS 2: 71.9

CDCSS 1: 261

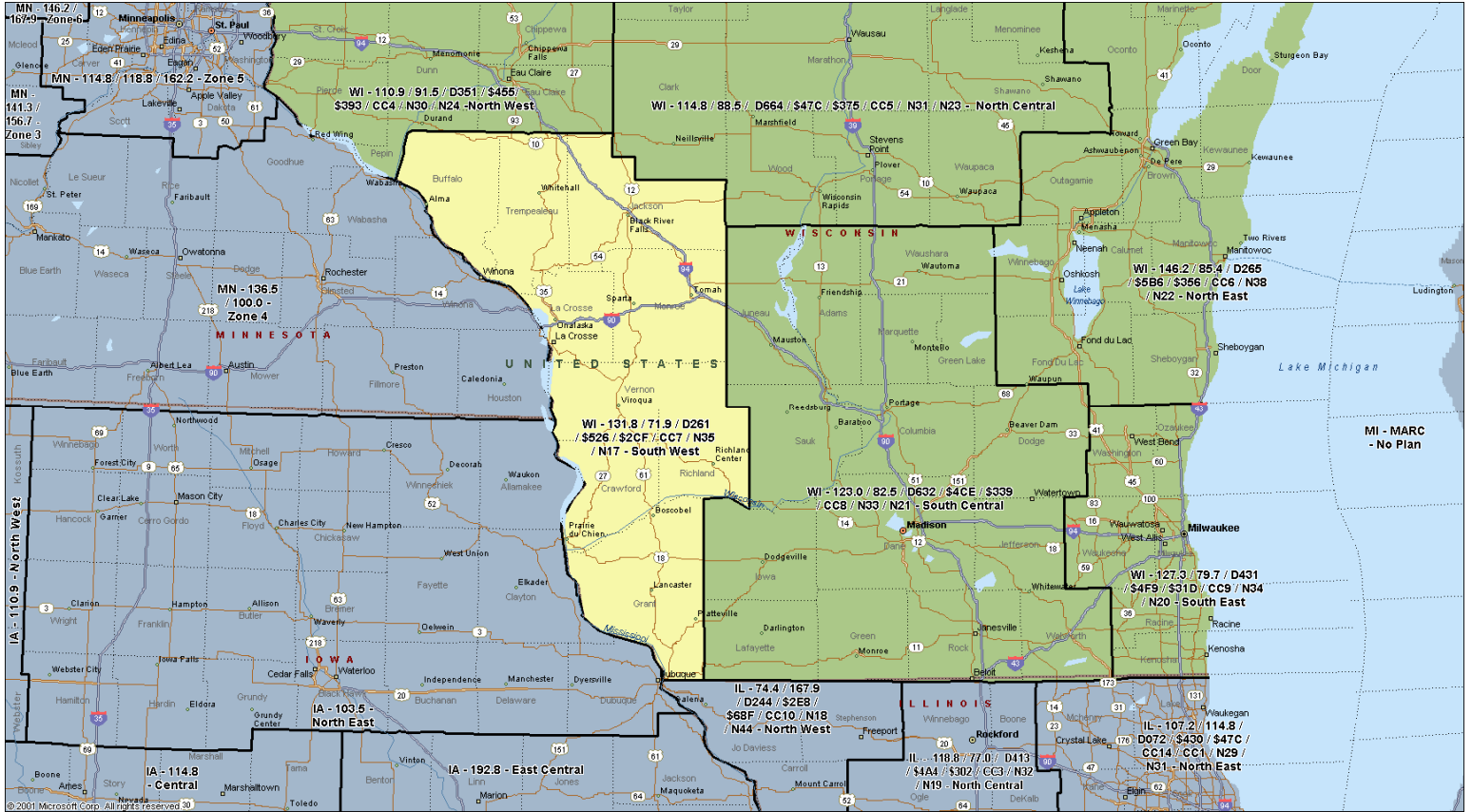
P25 1: \$526

P25 2: \$2CF

DMR: CC 7

NXDN / Yaesu 1: 35

NXDN / Yaesu 2: 17





# South Central

Counties: Juneau, Adams, Waushara, Marquette, Green Lake, Sauk, Columbia, Dodge, Iowa, Dane, Jefferson, Lafayette, Green, Rock, Walworth

CTCSS 1: 123.0

CTCSS 2: 82.5

CDCSS 1: 632

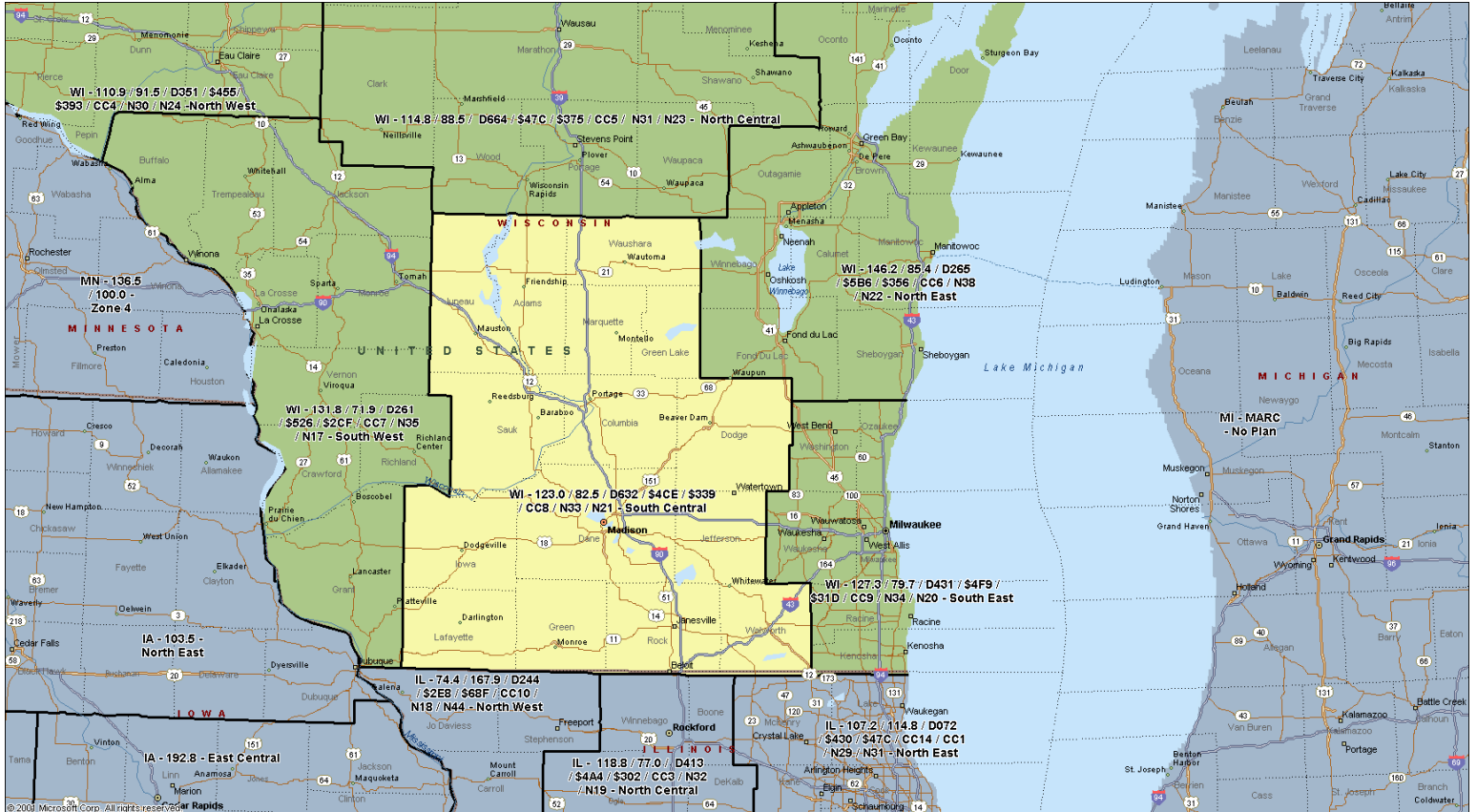
P25 1: \$4CE

P25 2: \$339

DMR: CC 8

NXDN / Yaesu 1: 33

NXDN / Yaesu 2: 21



# North East

Counties: Marinette, Oconto, Door, Kewaunee, Outagamie, Brown, Manitowoc, Winnebago, Calumet, Fond du Lac, Sheboygan

CTCSS 1: 146.2

CTCSS 2: 85.4

CDCSS 1: 265

P25 1: \$5B6

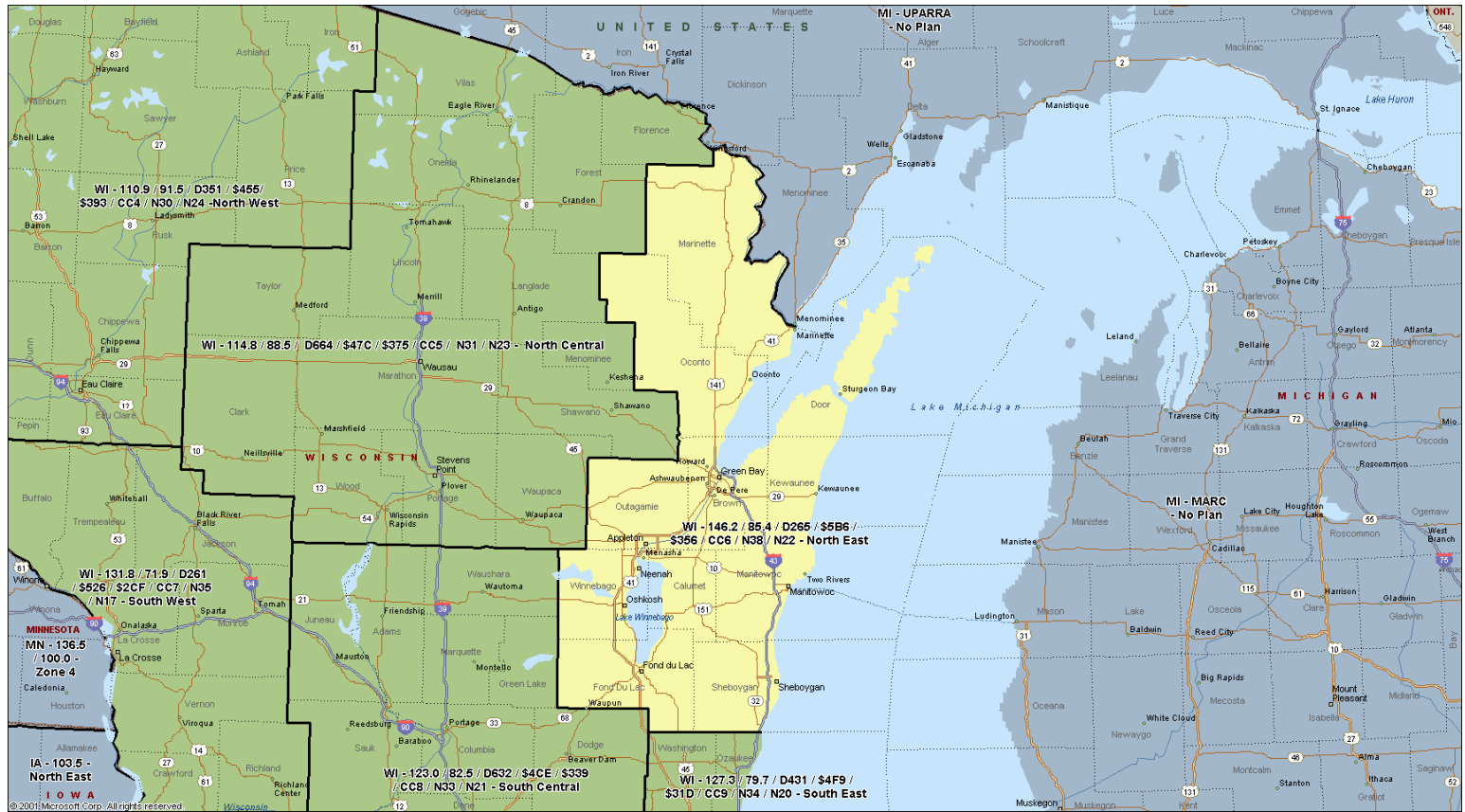
P25 2: \$356

DMR: CC 6

NXDN / Yaesu 1: 38

NXDN / Yaesu 2: 22

The use of 100.0 Hz is deprecated; primary use will recognize upper Michigan.



# South East

Counties: Washington, Ozaukee, Waukesha, Milwaukee, Racine, Kenosha

CTCSS 1: 127.3

CTCSS 2: 79.7

CDCSS 1: 431

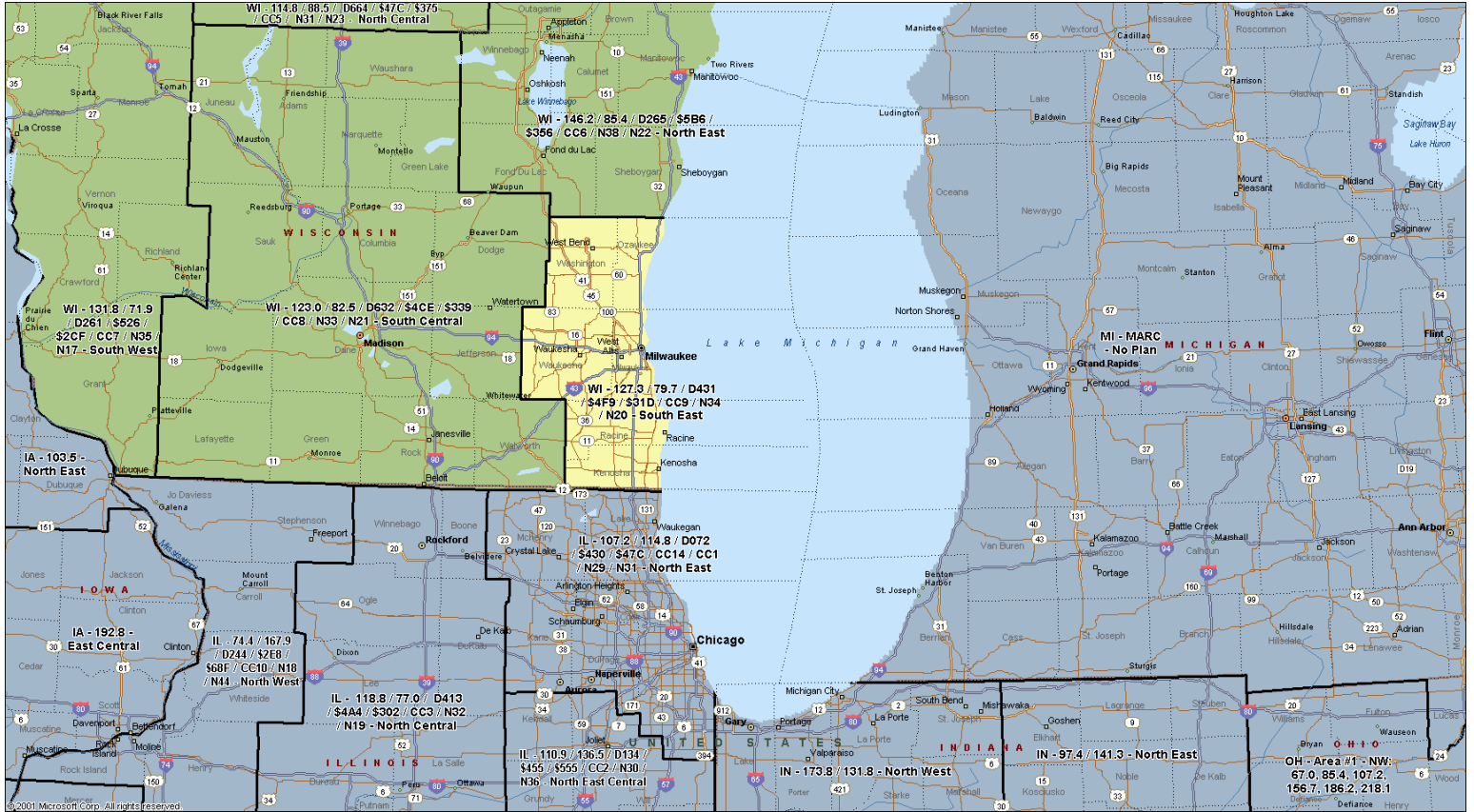
P25 1: \$4F9

P25 2: \$31D

DMR: CC 9

NXDN / Yaesu 1: 34

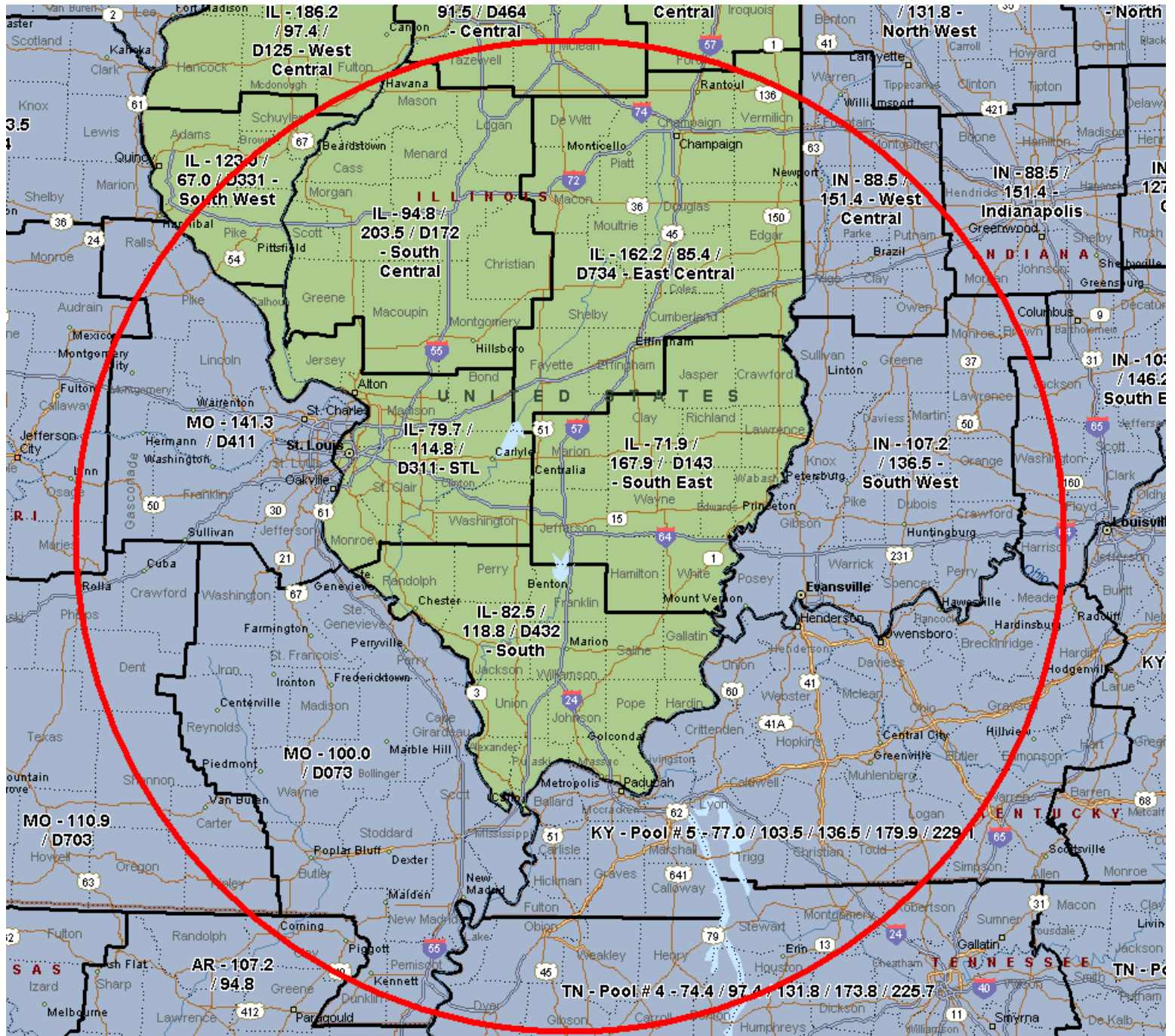
NXDN / Yaesu 2: 20



# Example

Selection of non-regional tone

Southern Illinois near the intersection of US57 and US64.



Rule out all published tones in all regions within approximately 150 miles from the proposed location.

Ruled out

67.0 - IL  
71.9 - IL  
74.4 - TN  
77.0 - KY  
79.7 - IL  
82.5 - IL  
85.4 - IL  
88.5 - IN, and IL  
94.8 - IL  
97.4 - TN (not a EIA/TIA standard tone)  
100.0 - MO  
103.5 - KY, AR, IN, and MO  
107.2 - AR, and IN  
110.0 - MO  
114.8 - IL  
118.8 - IL  
123.0 - IL  
127.3 - MO  
131.8 - TN  
136.5 - KY, and IN  
141.3 - MO  
146.2 - IN  
151.4 - IN  
156.7 - IL  
162.2 - IL  
167.9 - IL  
173.8 - TN  
179.9 - KY  
186.2 - IL  
203.5 - IL  
225.7 - TN  
229.1 - KY

That potentially leaves 192.8 Hz available for use.

With the understanding that some older radios may not support the use of a tone frequency greater than 203.5 Hz, then higher frequency EIA/TIA RS-220 standard tones such as 210.7, 218.1, 233.6, 241.8 and 250.3 Hz would also be available.

# CTCSS to Digital Access Code Mapping

CTCSS value is multiplied by 10 and represented as a hexadecimal number.

NXDN RAN codes range from 1 to 63, Yaesu DSQ codes range from 1 to 126.

CTCSS	EIA Tone	NAC	NXDN Yaesu	Yaesu Alt
67.0	Y	\$29E	15	78
69.3		\$2B5	16	79
71.9	Y	\$2CF	17	80
74.4	Y	\$2E8	18	81
77.0	Y	\$302	19	82
79.7	Y	\$31D	20	83
82.5	Y	\$339	21	84
85.4	Y	\$356	22	85
88.5	Y	\$375	23	86
91.5	Y	\$393	24	87
94.8	Y	\$3B4	25	88
97.4		\$3CE	26	89
100.0	Y	\$3E8	27	90
103.5	Y	\$40B	28	91
107.2	Y	\$430	29	92
110.9	Y	\$455	30	93
114.8	Y	\$47C	31	94
118.8	Y	\$4A4	32	95
123.0	Y	\$4CE	33	96
127.3	Y	\$4F9	34	97
131.8	Y	\$526	35	98
136.5	Y	\$555	36	99
141.3	Y	\$585	37	100
146.2	Y	\$5B6	38	101
151.4	Y	\$5EA	39	102
156.7	Y	\$61F	40	103
159.8		\$63E	41	104
162.2	Y	\$656	42	105
165.5		\$677	43	106
167.9	Y	\$68F	44	107
171.3		\$6B1	45	108
173.8	Y	\$6CA	46	109
177.3		\$6ED	47	110
179.9	Y	\$707	48	111
183.5		\$72B	49	112
186.2	Y	\$746	50	113
192.8	Y	\$788	51	114
196.6		\$7AE	52	115
199.5		\$7CB	53	116
203.5	Y	\$7F3	54	117
206.5		\$811	55	118
210.7	Y	\$83B	56	119
218.1	Y	\$885	57	120
225.7	Y	\$8D1	58	121
229.1		\$8F3	59	122
233.6	Y	\$920	60	123
241.8	Y	\$972	61	124
250.3	Y	\$9C7	62	125
254.1		\$9ED	63	126