

# Coordination Guideline

## Application of Selective Access

|             |   |
|-------------|---|
| 20-Apr-2015 | Reduce regional draft document to Illinois 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 Illinois.

## 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

## Methodology

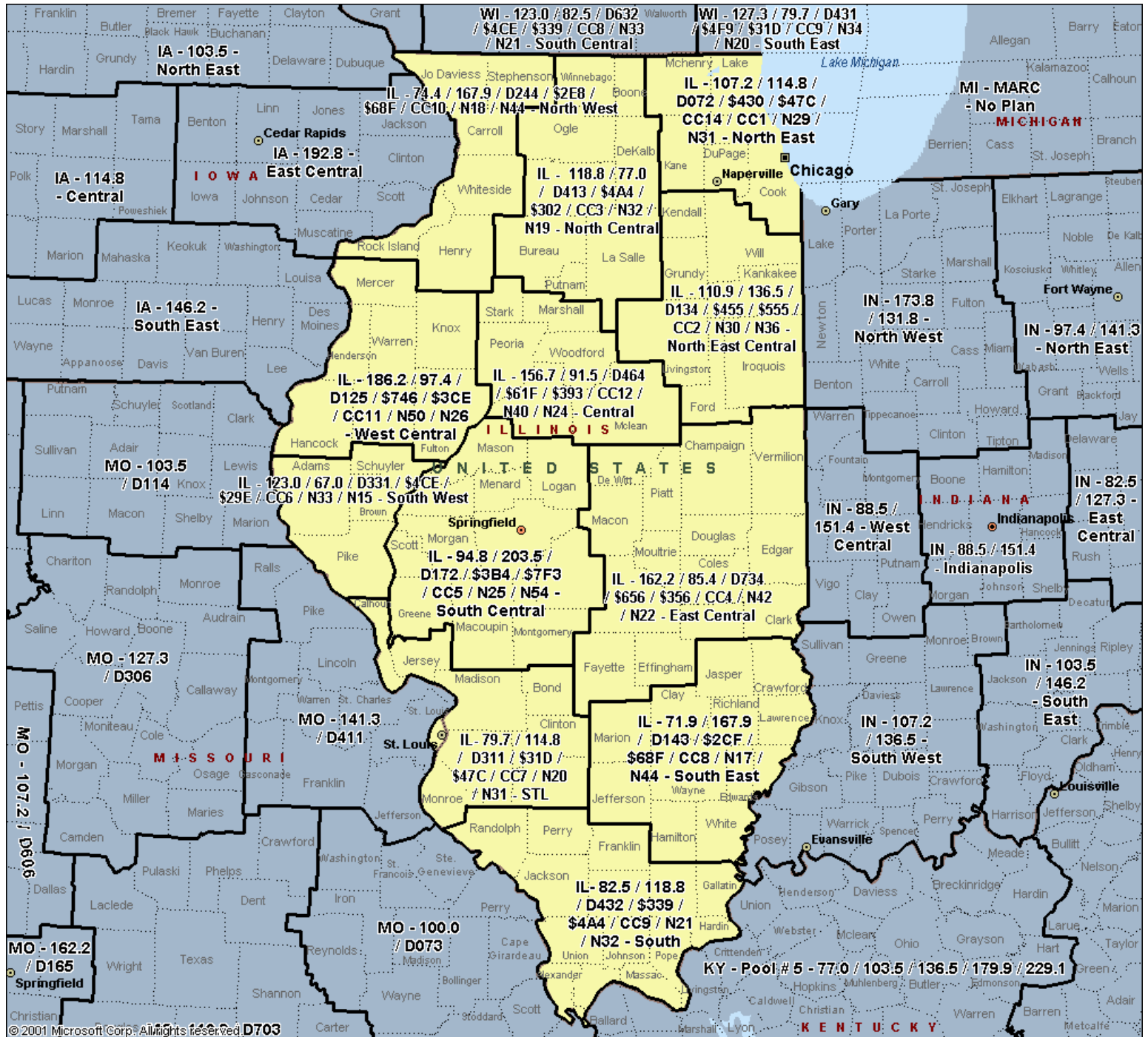
In determining a regional use plan, a tone or tones already commonly in use within a given population center were initially selected as long as the tone did not create a conflict with a previously published plan in one or more adjacent areas.

Region boundaries were selected to surround each population center by roughly the representative service area of one of the higher profile 70cm repeater's existing within the area, and where none existed, a location was selected coinciding with another typical repeater within the area operating on a different band, such as 2 meters.

Boundaries were further refined by considering terrain features which may otherwise describe regional RF boundaries, and were sized to roughly align with the intersections of abutting plans.

In determining region sizes, it was noted that larger regions have a smaller number of tones available that meet the stated separation goals from all bordering regions. Though smaller regions provide fewer conflicts and thus a greater variety of tone choices, the greater quantity of regions generally requires more tones overall. The approach taken in this report was to find a balance between region sizes that roughly match the region sizes, and intersection points, of the various adjoining area's plans.

## Areas

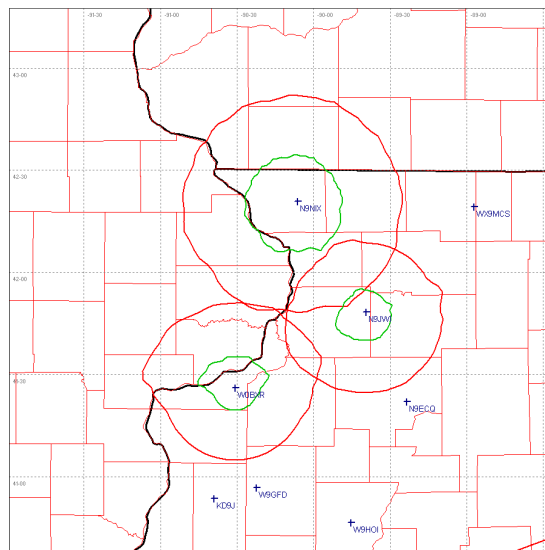
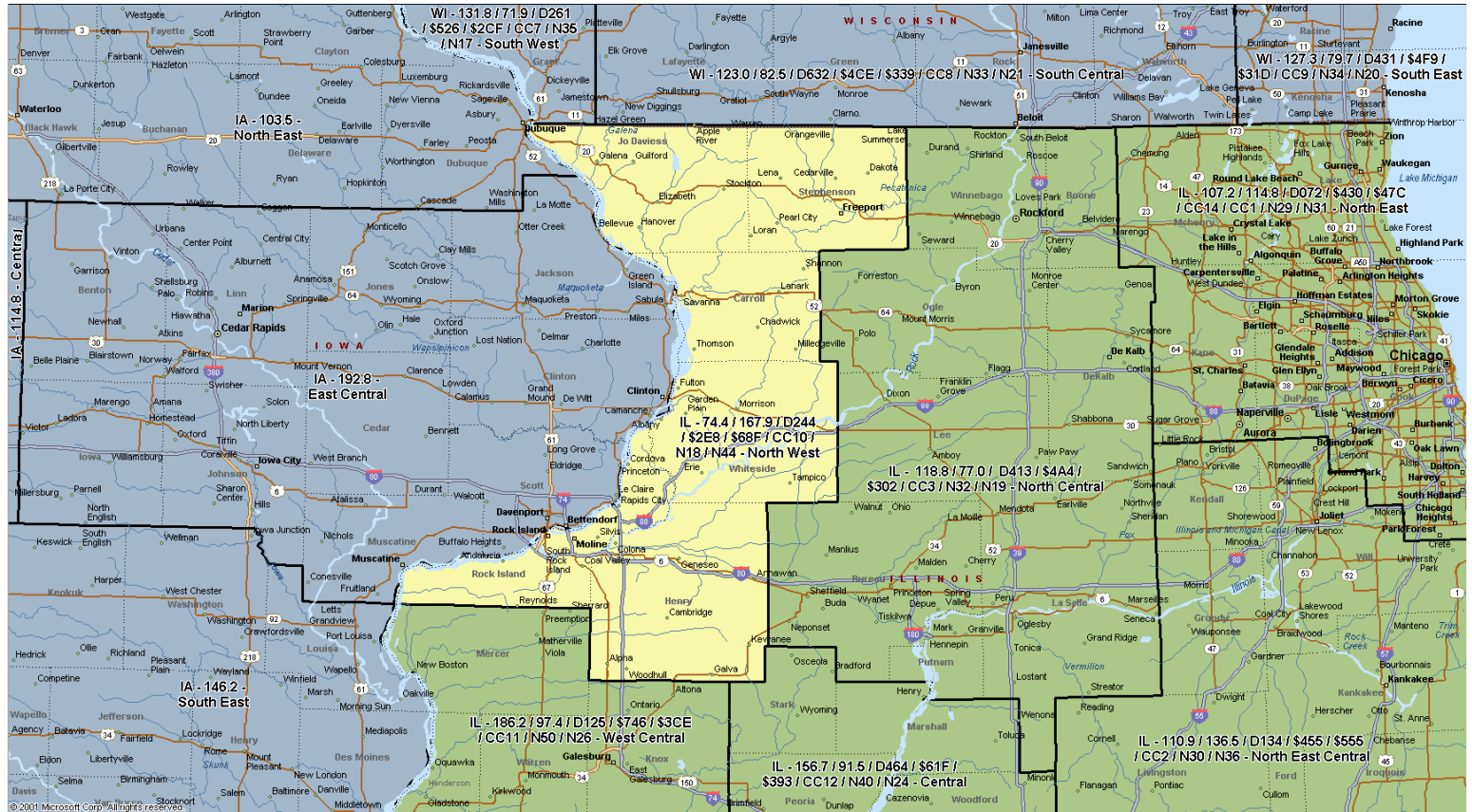


# North West

Counties: Jo Daviess, Stephenson, Carroll, Whiteside, Rock Island, Henry

CTCSS 1: 74.4  
CTCSS 2: 167.9  
CDCSS 1: 244  
P25 1: \$2E8  
P25 2: \$68F

Alternate CTCSS 1: 179.9  
Alternate CTCSS 2: 151.4  
DMR: CC 10  
NXDN / Yaesu 1: 18  
NXDN / Yaesu 2: 44



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# North Central

Counties: Winnebago, Boone, Ogle, DeKalb, Lee, Bureau, La Salle, Putnam

CTCSS 1: 118.8

CTCSS 2: 77.0

CDCSS 1: 413

P25 1: \$4A4

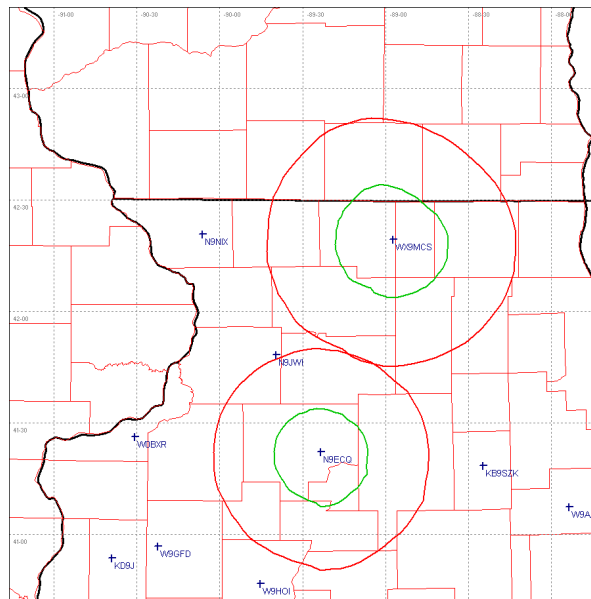
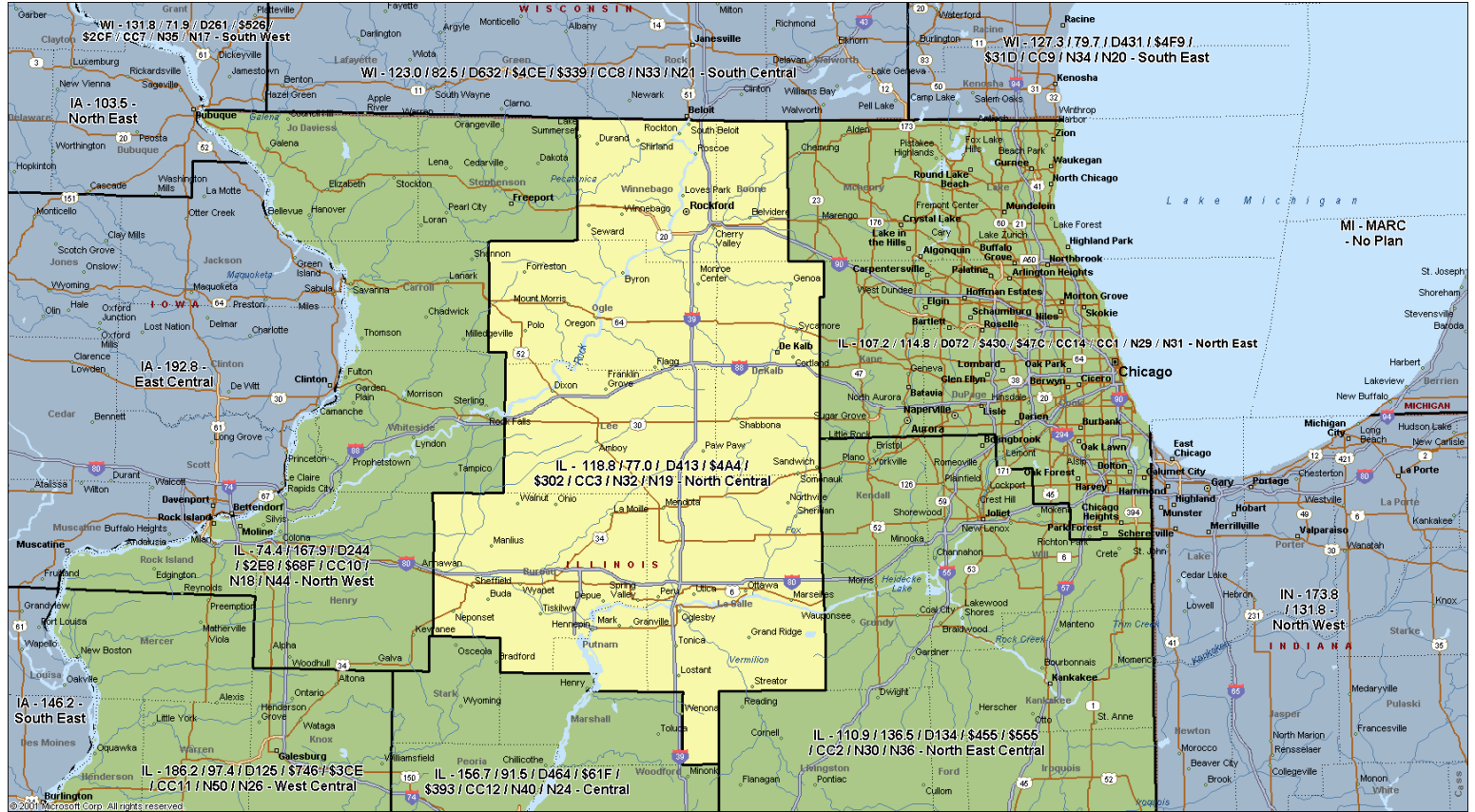
P25 2: \$302

Alternate CTCSS 1: 179.9

DMR: CC 3

NXDN / Yaesu 1: 32

NXDN / Yaesu 2: 19





# North East

Counties: McHenry, Lake, Kane, DuPage, Cook

CTCSS 1: 107.2

CTCSS 2: 114.8

CDCSS 1: 072

P25 1: \$430

P25 2: \$47C

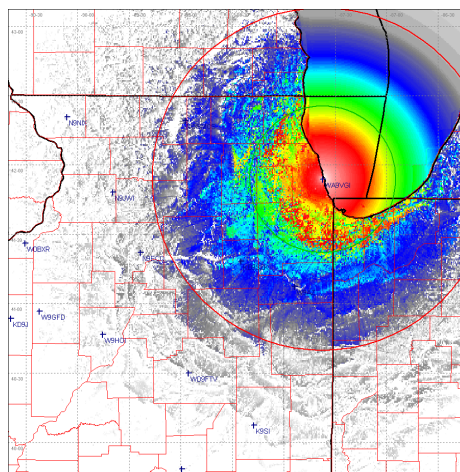
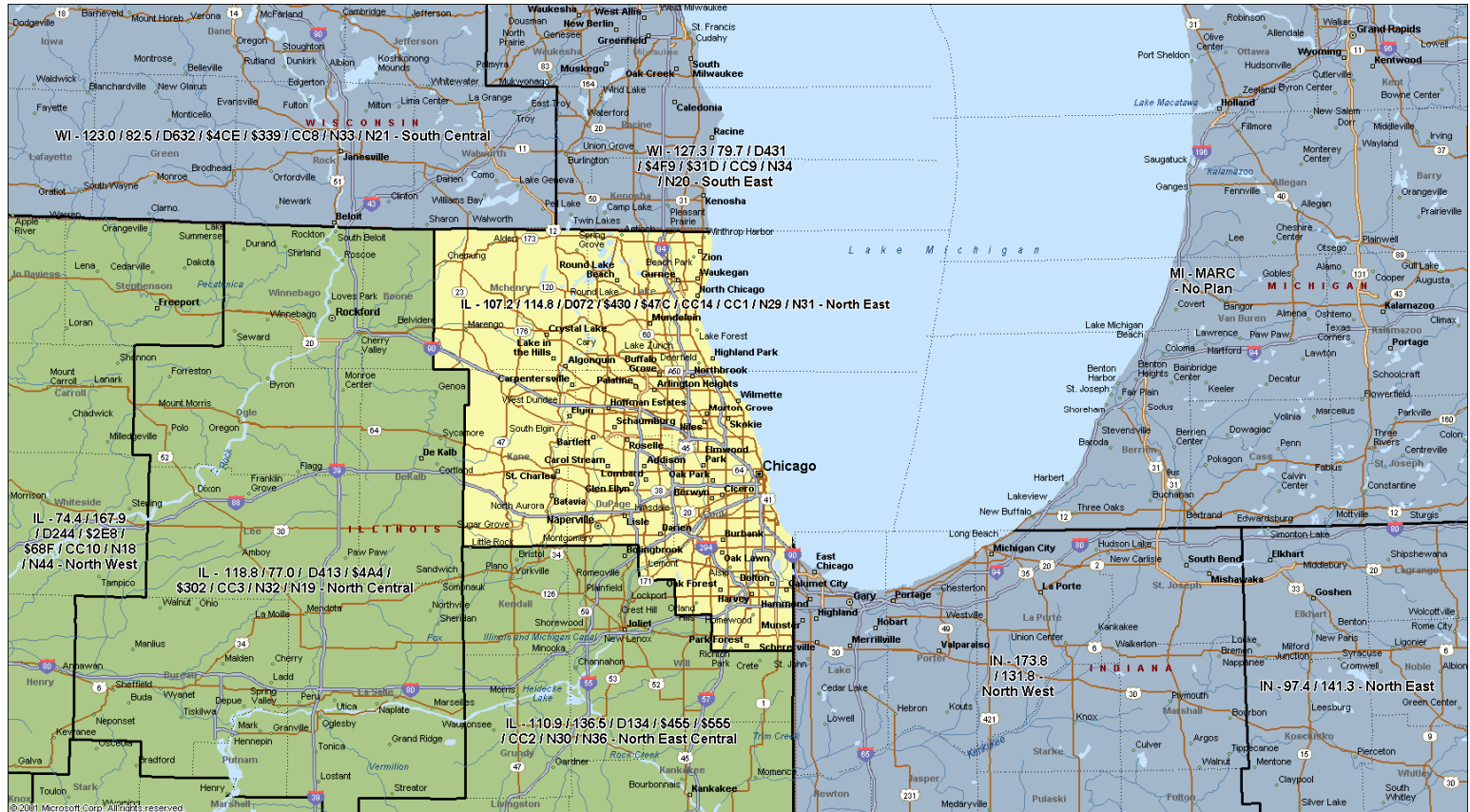
Alternate CTCSS 1: 179.9

DMR 1: CC 14

DMR 2: CC 1

NXDN / Yaesu 1: 29

NXDN / Yaesu 2: 31



The coverage shown assumes an omni-directional radiator, presenting a best case scenario, in order to show where the terrain limitations occur.

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# North East Central

Counties: Kendall, Will, Grundy, Livingston, Kankakee, Ford, Iroquois

CTCSS 1: 110.9

CTCSS 2: 136.5

CDCSS 1: 134

P25 1: \$455

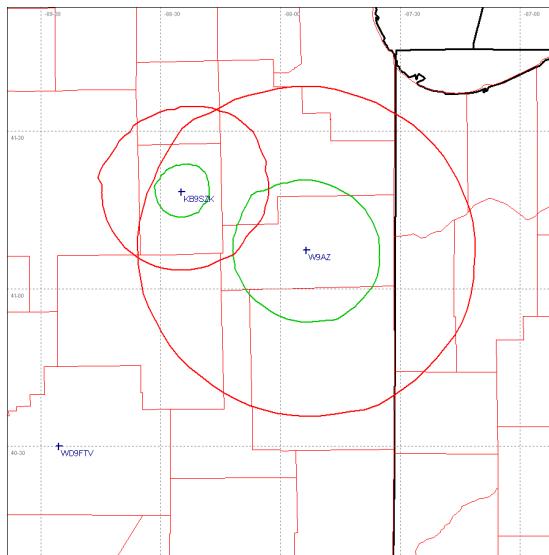
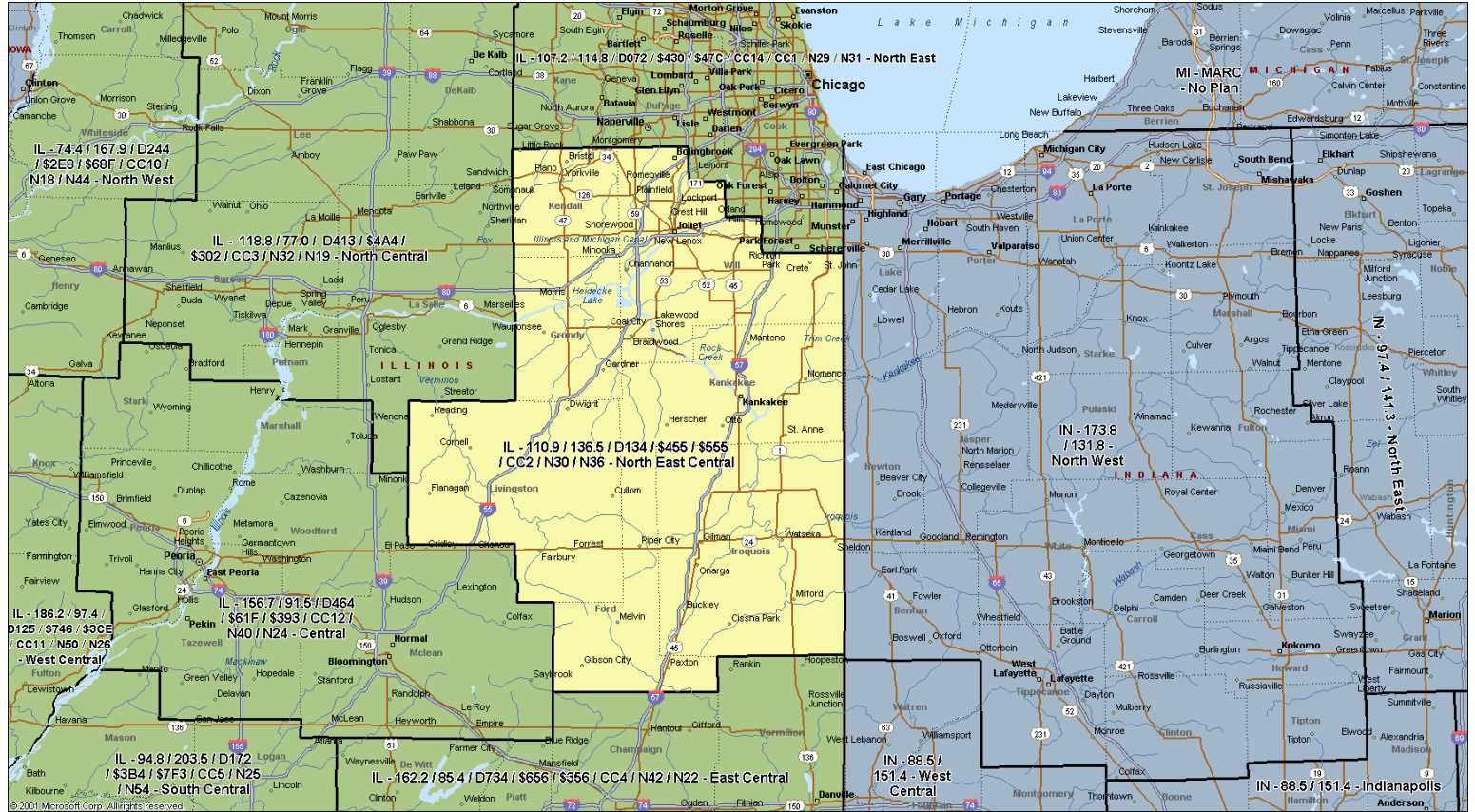
P25 2: \$555

Alternate CTCSS 1: 179.9

DMR: CC2

NXDN / Yaesu 1: 30

NXDN / Yaesu 2: 36



# West Central

Counties: Mercer, Henderson, Warren, Knox, Hancock, McDonough, Fulton

CTCSS 1: 186.2

Alternate CTCSS 1: 179.9

CTCSS 2: 97.4

CDCSS 1: 125

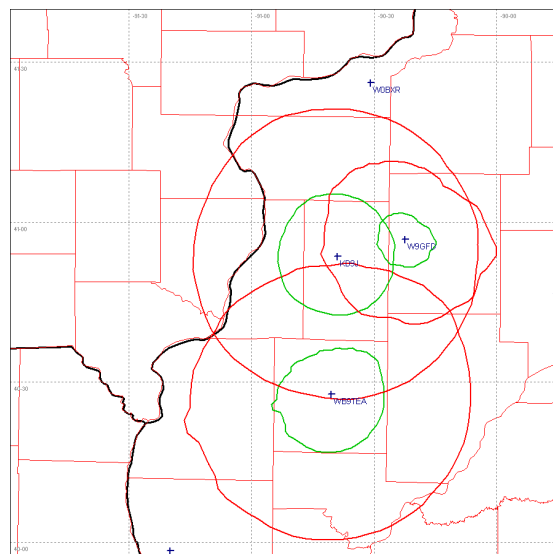
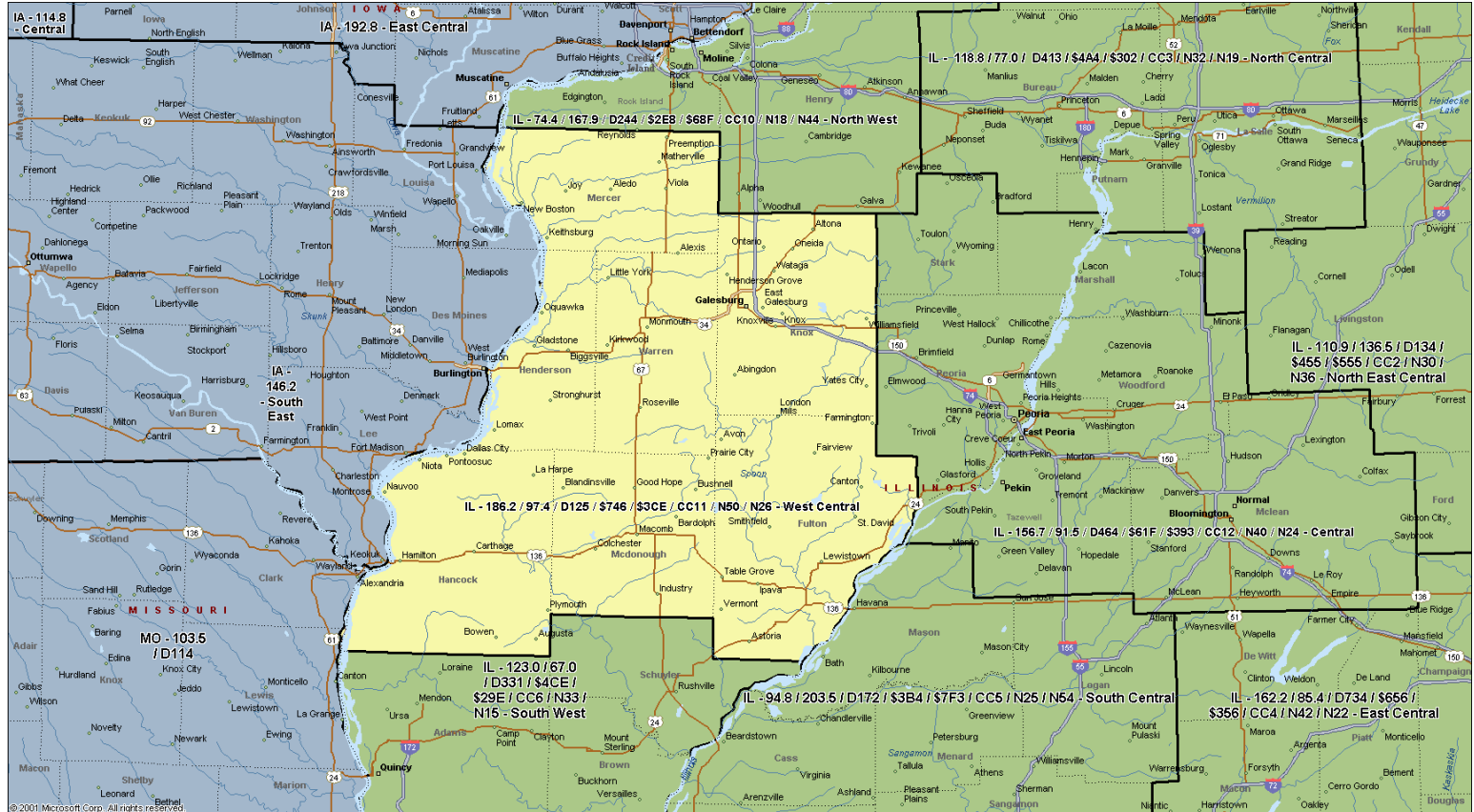
DMR: CC 11

P25 1: \$746

NXDN / Yaesu 1: 50

P25 2: \$3CE

NXDN / Yaesu 2: 26



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# Central

Counties: Stark, Marshall, Peoria, Woodford, Tazewell, Mclean

CTCSS 1: 156.7

CTCSS 2: 91.5

CDCSS 1: 464

P25 1: \$61F

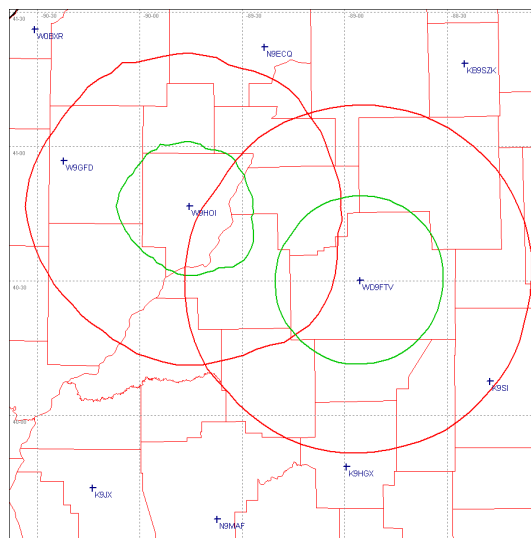
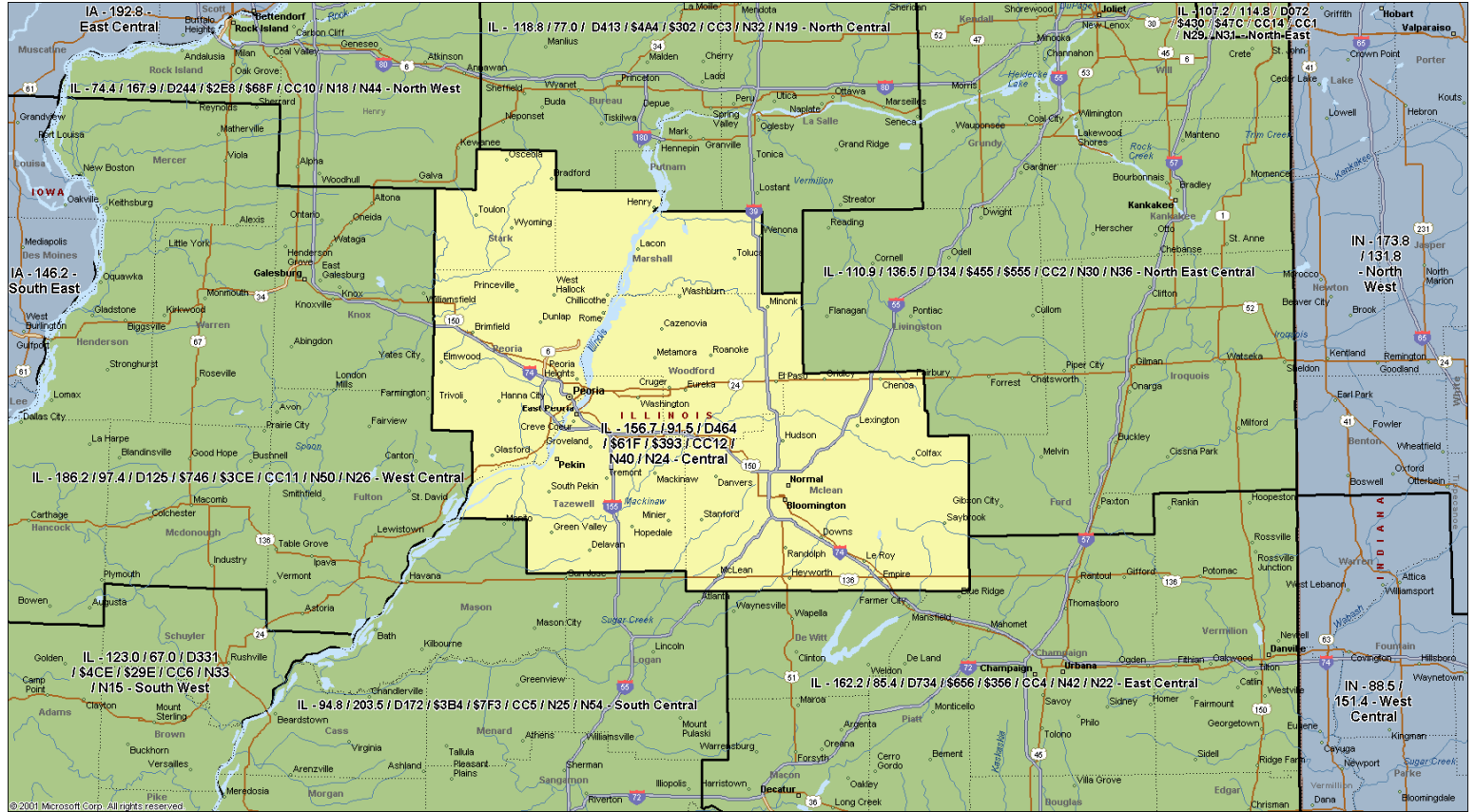
P25 2: \$393

Alternate CTCSS 1: 179.9

DMR: CC 12

NXDN / Yaesu 1: 40

NXDN / Yaesu 2: 24





# South West

Counties: Adams, Schuyler, Brown, Pike

CTCSS 1: 123.0

CTCSS 2: 67.0

CDCSS 1: 331

P25 1: \$4CE

P25 2: \$29E

Alternate CTCSS 1: 173.8

Alternate CTCSS 2: 79.7

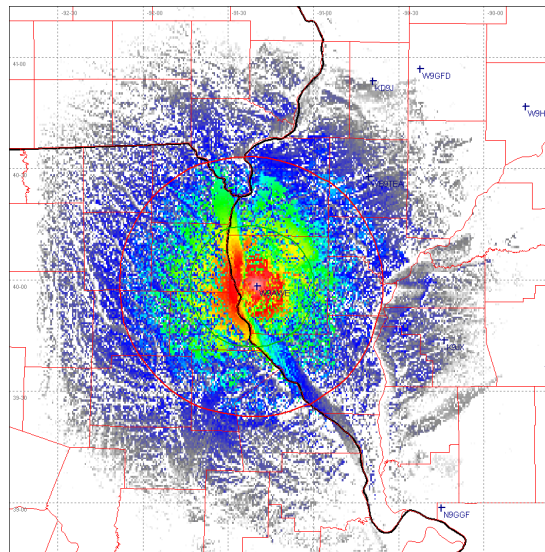
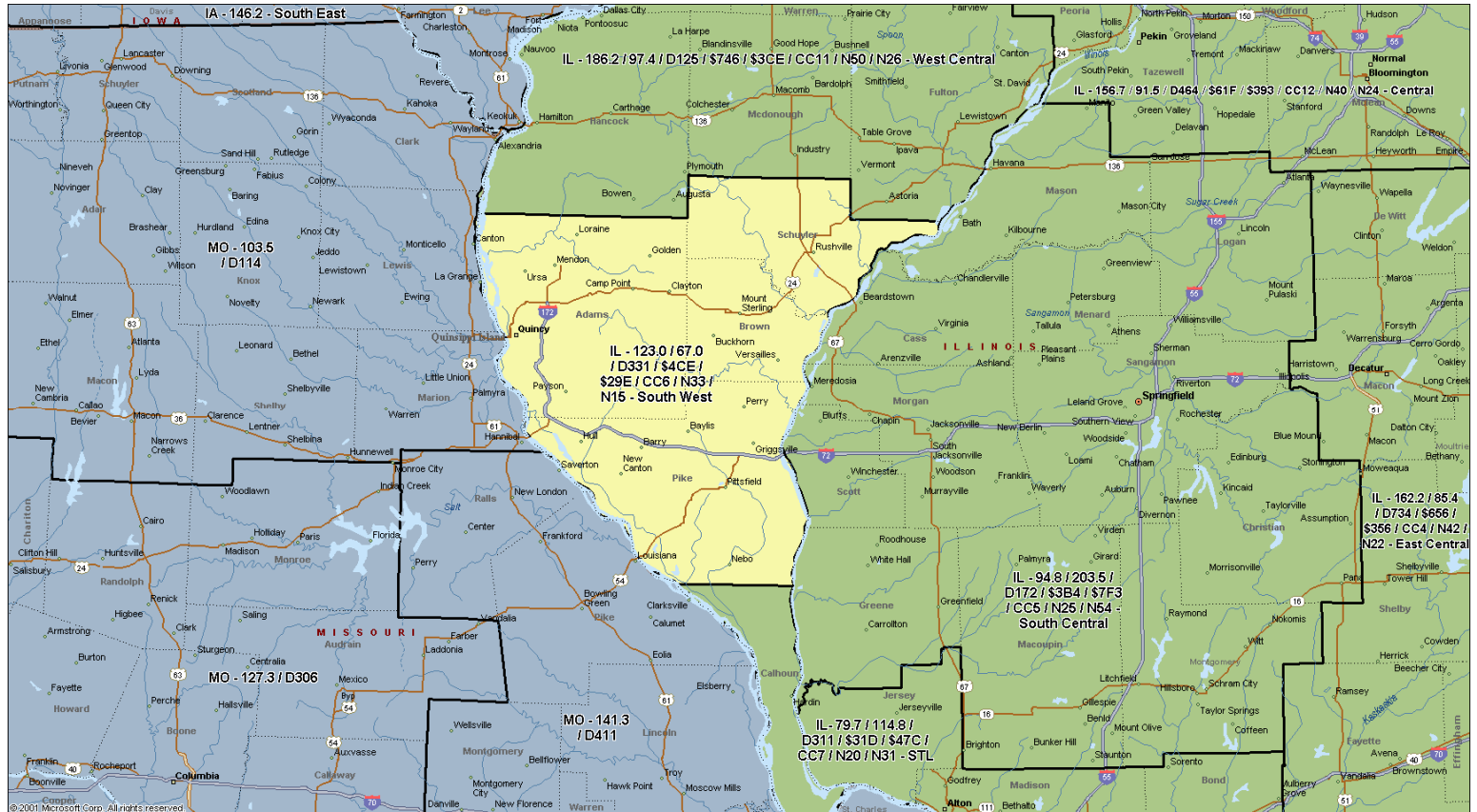
Alternate CTCSS 3: 151.4

DMR: CC 6

NXDN / Yaesu 1: 33

NXDN / Yaesu 2: 15

Alternate CTCSS 4: 179.9



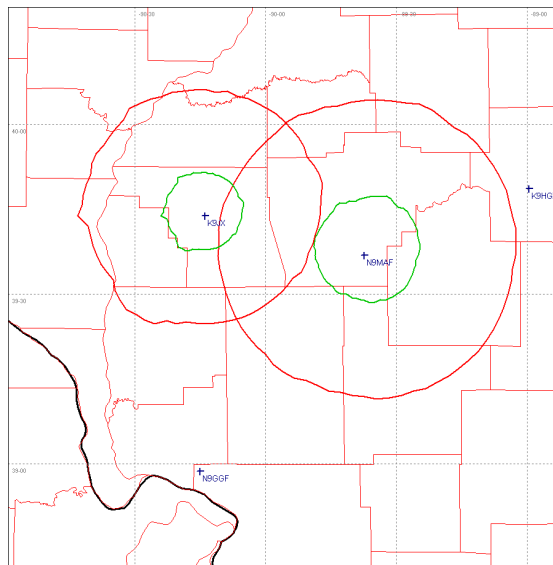
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# South Central

Counties: Mason, Logan, Cass, Menard, Morgan, Sangamon, Scott, Christian, Greene, Macoupin, Montgomery

CTCSS 1: 94.8  
CTCSS 2: 203.5  
CDCSS 1: 172  
P25 1: \$3B4  
P25 2: \$7F3

Alternate CTCSS 1: 79.7  
DMR: CC 5  
NXDN / Yaesu 1: 25  
NXDN / Yaesu 2: 54



# East Central

Counties: De Witt, Piatt, Champaign, Vermillion, Macon, Douglas, Edgar, Moultrie, Shelby, Cumberland, Coles, Clark, Fayette, Effingham

CTCSS 1: 162.2

CTCSS 2: 85.4

CDCSS 1: 734

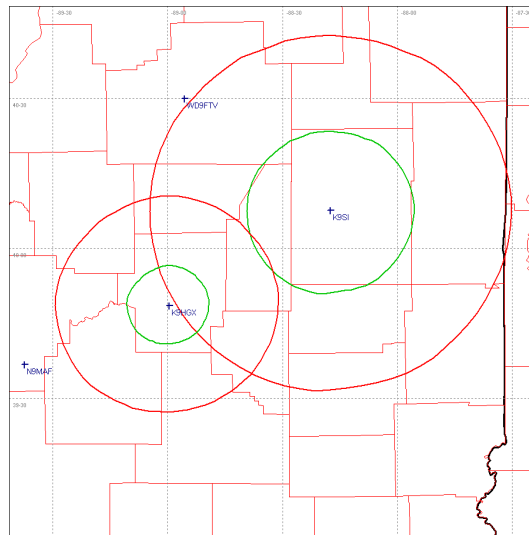
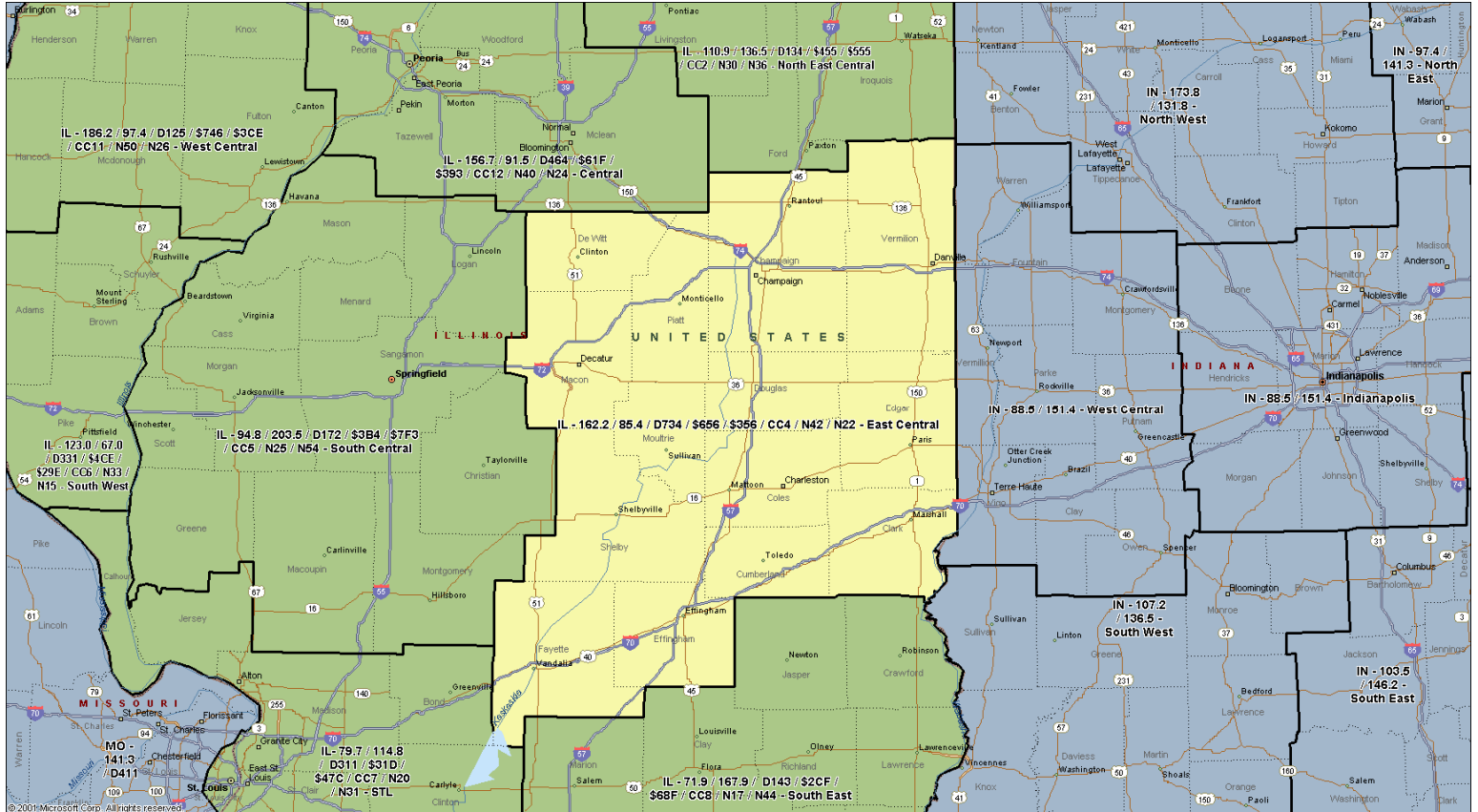
P25 1: \$656

P25 2: \$356

DMR: CC 4

NXDN / Yaesu 1: 42

NXDN / Yaesu 2: 22



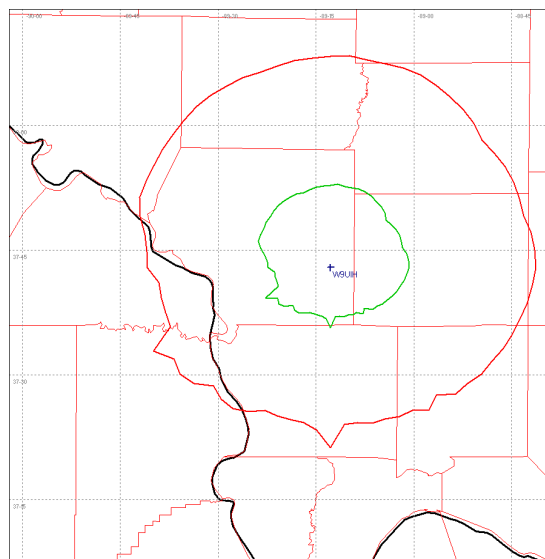
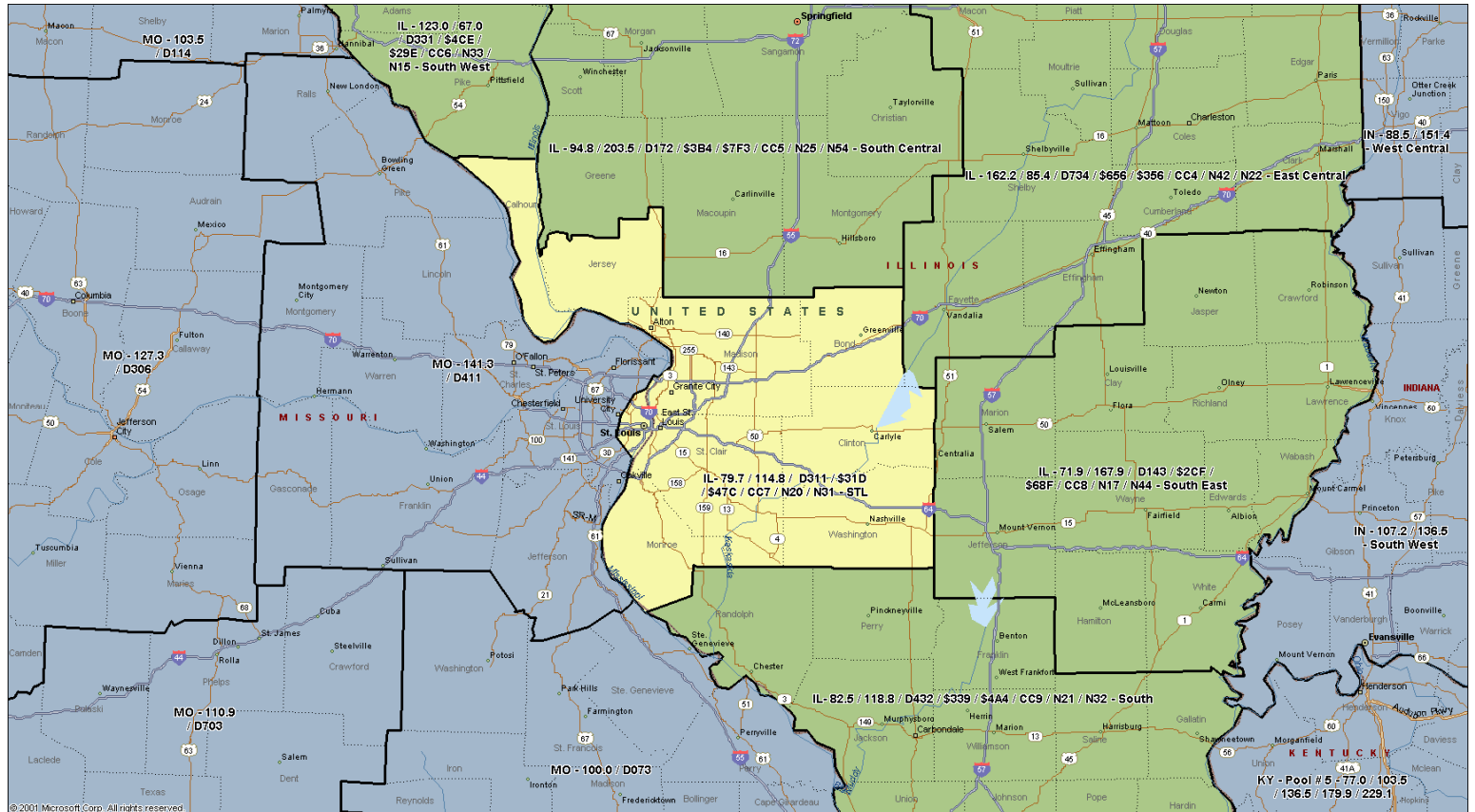


## St Louis

Counties: Calhoun, Jersey, Madison, Bond, St. Clair, Clinton, Monroe, Washington

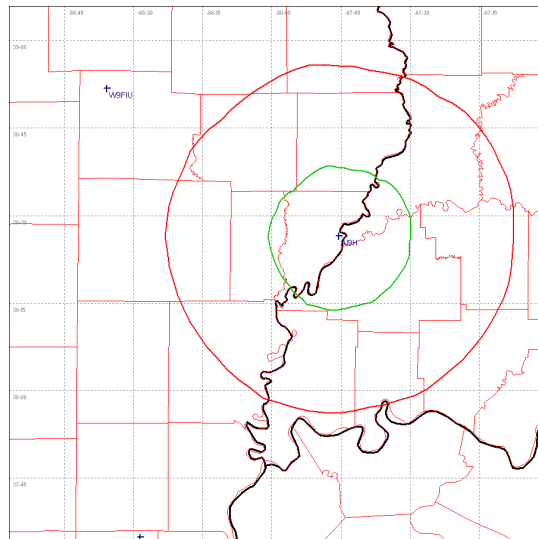
CTCSS 1: 79.7  
CTCSS 2: 114.8  
CDCSS 1: 311  
P25 1: \$31D  
P25 2: \$47C

DMR: CC 7  
NXDN / Yaesu 1: 20  
NXDN / Yaesu 2: 31



Counties: Jasper, Crawford, Marion, Clay, Richland, Lawrence, Wayne, Edwards, Wabash, Jefferson, Hamilton, White.

DMR: CC 8  
NXDN / Yaesu 1: 17  
NXDN / Yaesu 2: 44

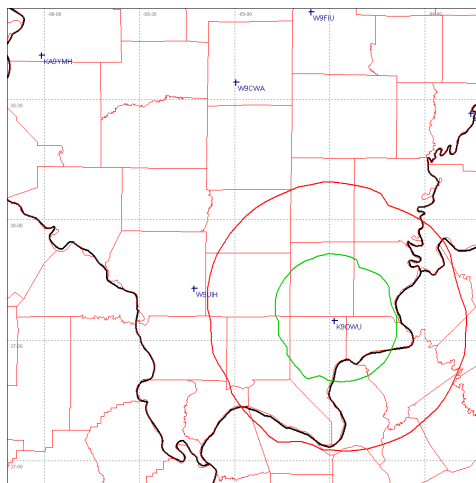
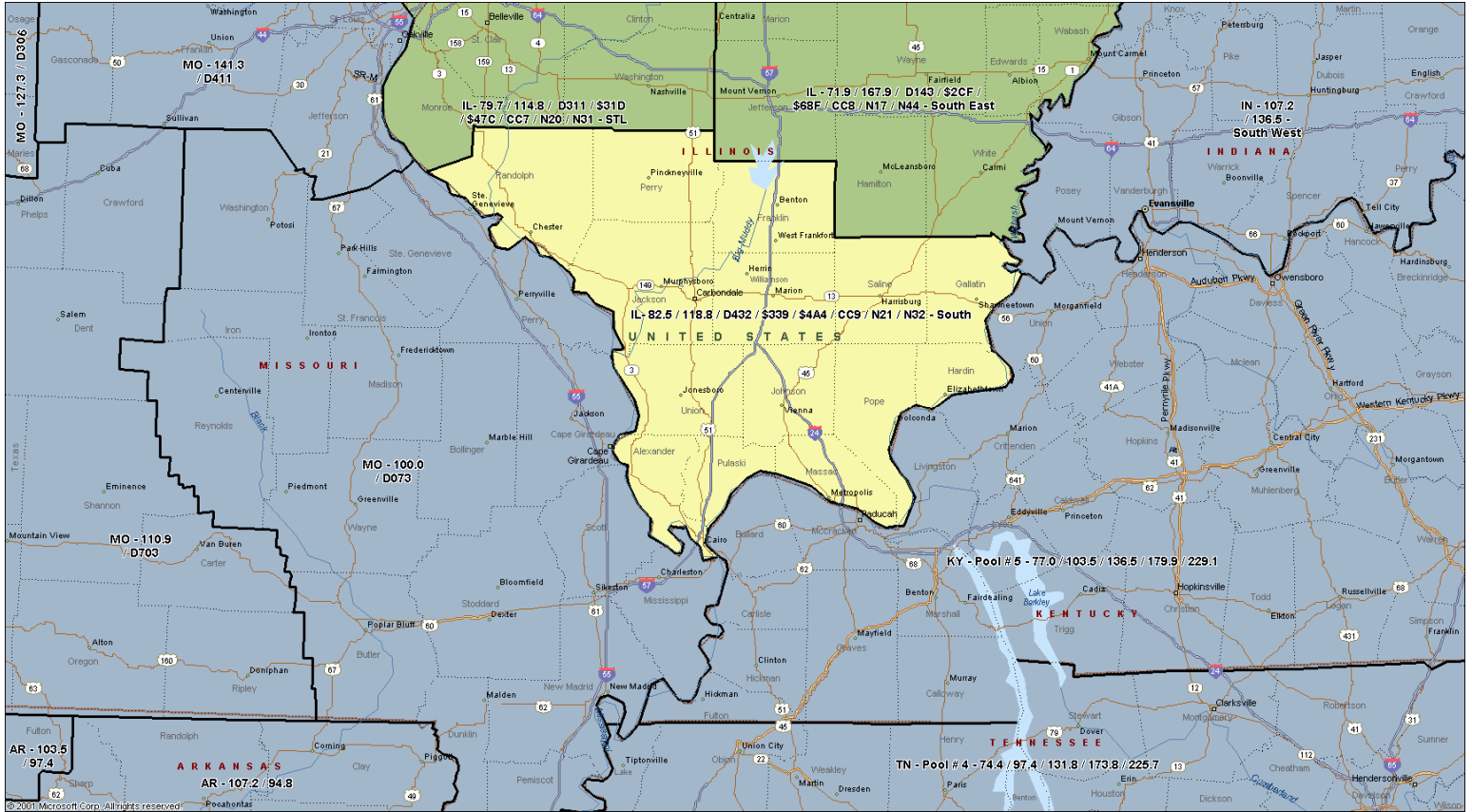


# South

Counties: Randolph, Perry, Franklin, Jackson, Williamson, Saline, Gallatin, Union, Johnson, Pope, Hardin, Alexander, Pulaski, Massac.

CTCSS 1: 82.5  
CTCSS 2: 118.8  
CDCSS 1: 432  
P25 1: \$339  
P25 2: \$4A4

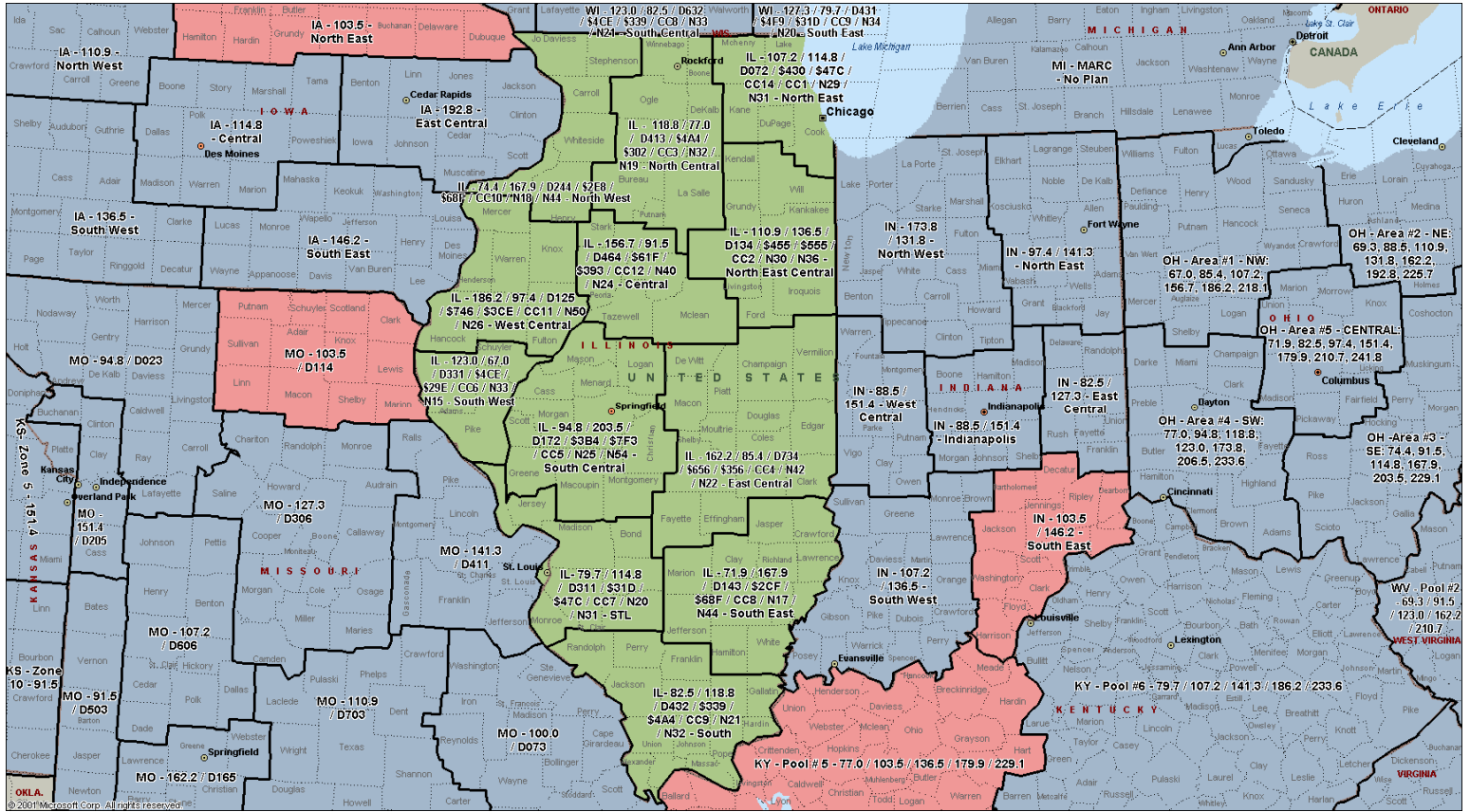
Alternate CTCSS 1: 192.8  
DMR: CC 9  
NXDN / Yaesu 1: 21  
NXDN / Yaesu 2: 32



# The use of 103.5 Hz

As part of developing a published plan, it was noted that:

- Missouri has reserved 103.5 Hz for its North Eastern area.
- Indiana has reserved 103.5 Hz for its South Eastern area.
- Iowa has reserved 103.5 Hz for its North Eastern area.
- Kentucky has reserved 103.5 Hz for its Western area.
- The tone has common use in Upper Lake Michigan.



Despite its current use within the state, in order to protect these pre-existing plans, the use of 103.5 Hz within Illinois will be deprecated.

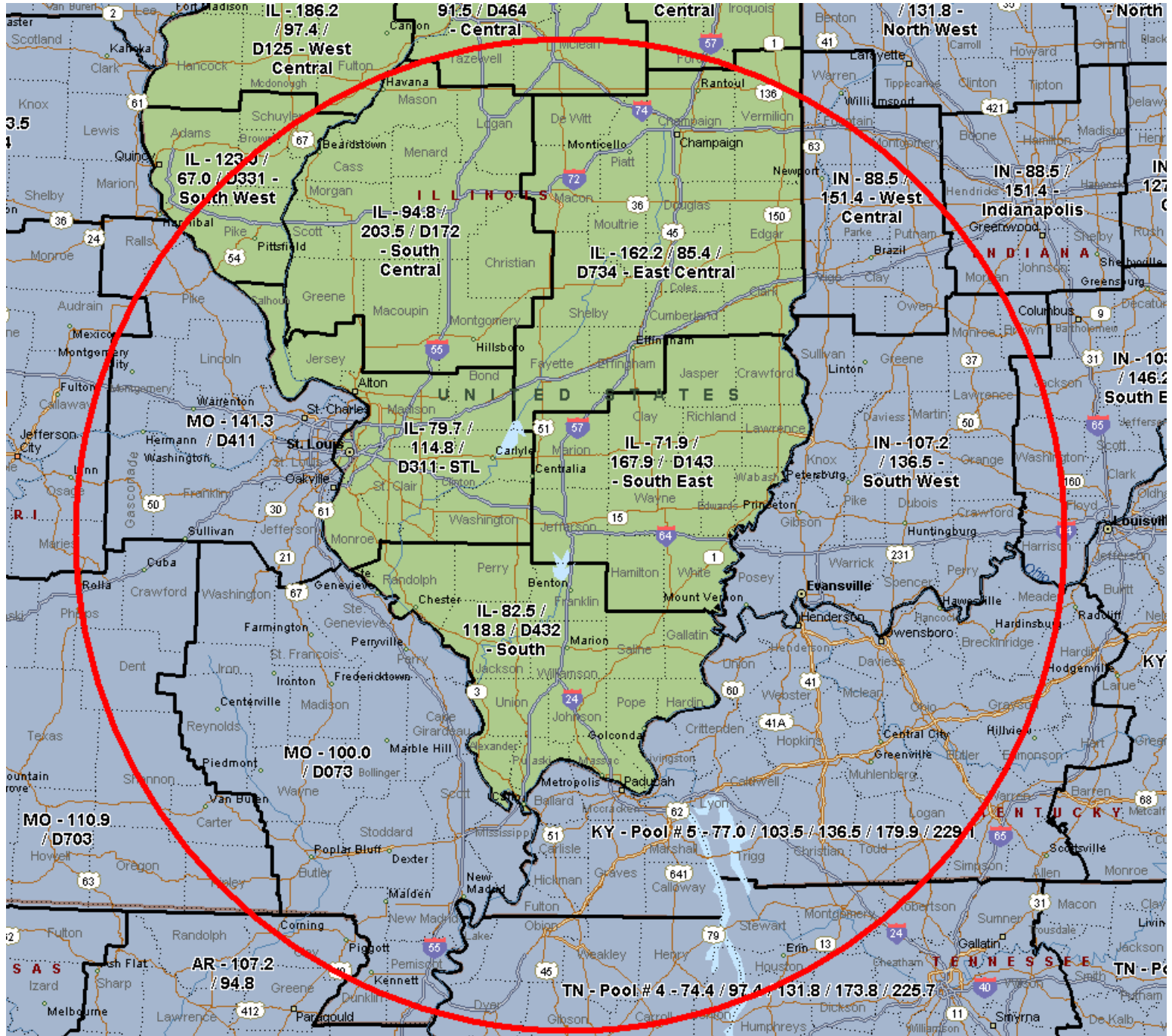
New coordinated use of 103.5 Hz within Illinois only upon concurrence of coordinators serving Missouri, Kentucky, Iowa, and Indiana.



## 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<br>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       |