

# Exhibit A: 47 CFR 74.1232(b) Evaluation of Charisma Translators

## ■ Procedural Overview:

Import F(50,50) 60 dBu contours and compute areas.

Compute relative size of overlap between two translators and area covered by the translator.

Determine if a translator is a “same area” translator due to greater-than-50% area overlap.

Include plot of WHLC vs colocated W293BX.

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## KML Import and Area Calculations

```
In[716]:= kmlfiles = {"R:\\FCC\\Objections\\NC_SC Renewals\\Charisma\\W239CB.kml",
                    "R:\\FCC\\Objections\\NC_SC Renewals\\Charisma\\W249CY.kml",
                    "R:\\FCC\\Objections\\NC_SC Renewals\\Charisma\\W255CR.kml",
                    "R:\\FCC\\Objections\\NC_SC Renewals\\Charisma\\W287CD.kml",
                    "R:\\FCC\\Objections\\NC_SC Renewals\\Charisma\\W293BX.kml",
                    "R:\\FCC\\Objections\\NC_SC Renewals\\Charisma\\WHLC.kml"};

In[717]:= kml = Import[#, "Data"][[1, 2, 2, 1, 1, 1]] & /@ kmlfiles; (* Import only contours *)

In[718]:= contours = kml[[All, All, {1, 2}]];
          (* Strip zero-value elevation from KML coordinates to convert to 2D *)

In[719]:= polygons = Polygon /@ contours[[All]];

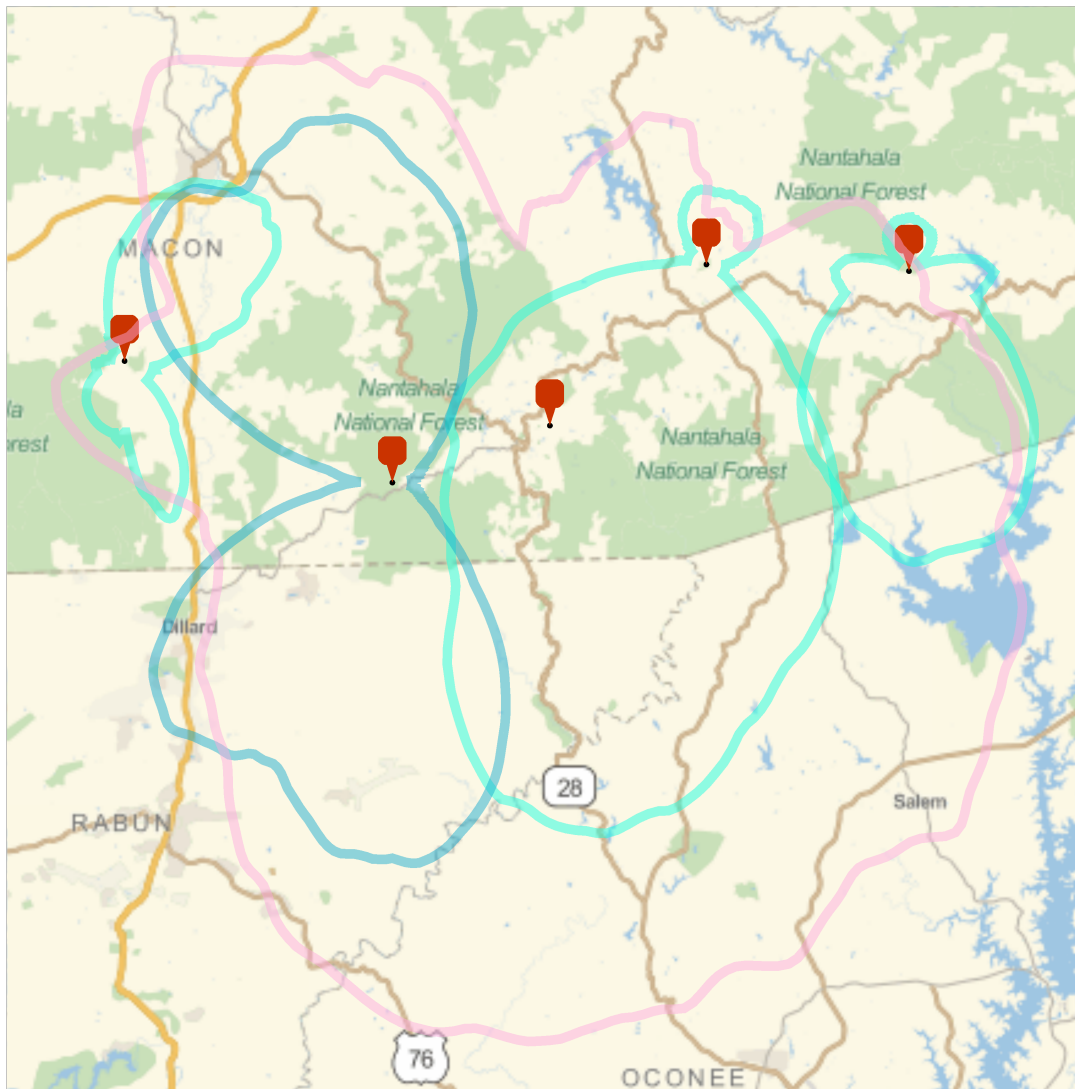
In[720]:= areas = Area /@ polygons[[All]]

Out[720]= {0.0459304, 0.0142957, 0.0078645, 0.046081, 0.169257, 0.252889}
```

## Map of Imported Contours

In[721]: Show @@ (Import[#] & /@ kmlfiles[{{1, 2, 3, 4, 5}}])

Out[721]:



# Intersecting Area Calculations

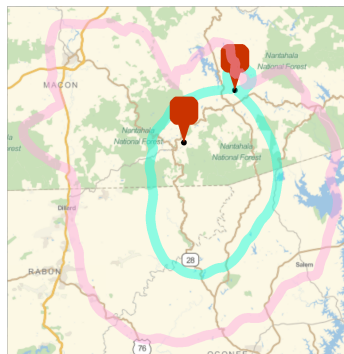
```
In[722]:= subsets = Append[Subsets[Range[5], {2}], {5, 6}];
(* All combinations of any 2 translators and W293BX/WHLC *)
samearea = {}; (* Initialize empty list *)

Do[ (*Loop through subsets and check for overlaps. If a translator is overlapped >
50% save the result. *)
  fac1 = i[[1]]; fac2 = i[[2]]; (* Get call sign *)
  overlap = BooleanRegion[And, {polygons[[fac1]], polygons[[fac2]]}];
  (* AND of areas defines common service area *)
  aoverlap = Area[overlap];
  overlap1 = 100 * aoverlap / areas[[fac1]];
  (* Common service area / area of facility, converted to % *)
  overlap2 = 100 * aoverlap / areas[[fac2]];
  If[(overlap1 > 50.0) || (overlap2 > 50.0),

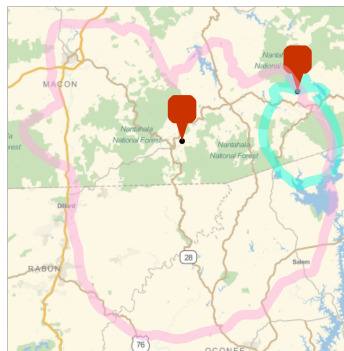
  AppendTo[samearea, {FileName[StringSplit[kmlfiles[[fac1]], "\\"]][[-1]],
    FileName[StringSplit[kmlfiles[[fac2]], "\\"]][[-1]], overlap1,
    overlap2, Show @@ (Import[#] & /@ kmlfiles[{{fac1, fac2}}])}]];
  {i, subsets}];
```

samearea

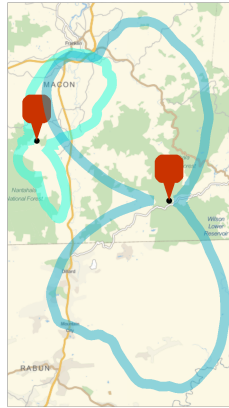
```
Out[724]= {{W239CB, W293BX, 99.1294, 26.9003,
```



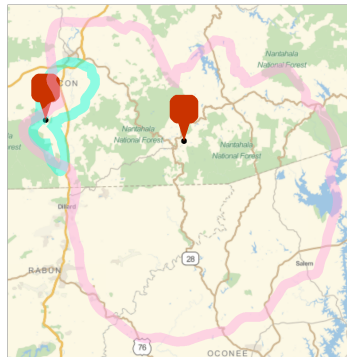
```
{W249CY, W293BX, 83.7965, 7.07759,
```



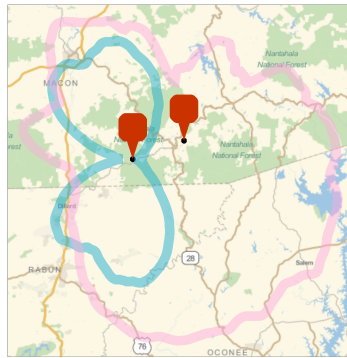
{W255CR, W287CD, 51.4748, 8.78505, },



{W255CR, W293BX, 83.2931, 3.87021, },



{W287CD, W293BX, 95.4117, 25.9763, },



{W293BX, WHLC, 100., 66.9293, }}

