**Create an Industrial Land Mask**

***Summary:***

* Create a 200 m resolution boolean grid representing likely industrial land use based on locations of known industrial facilities and the ratio of night time to day time population
* This grid will be used for two purposes:
  + To resample/reallocate industrial load from service territories to counties
  + To identify the distribution of available wind resource within a given county for industrial areas

***Processing:***

Notes:

* ArcGIS processing performed in ./mxd/industrial\_land\_mask\_us.mxd. and ./mxd/industrial\_land\_mask\_resampling\_us.mxd
* In Postgres, processing performed in S:\mgleason\DG\_Wind\SQL\industrial\_load\industrial\_land\_mask sql files

Steps:

* Use the night time/day time population ratio grid from Landscan 2011 that was calculated for the commercial land mask
  + 🡪 loaded to postgres as dg\_wind.ls2012\_popratio\_nightday\_us\_100x100
* Isolate known industrial facilities from hisp based on 2-digit naics codes associated with industrial activities
  + 🡪 view: hsip\_2012.all\_hsip\_industrial\_facilities
* Create a version of the industrial locations where all points are buffered by 90m (but polygons remain unchanged)🡪 dg\_wind.hsip\_industrial\_facility\_buffers
* Export results to three shapefiles (too large to put to one shapefile ) 🡪
  + S:\mgleason\DG\_Wind\Data\Analysis\industrial\_land\_mask\industrial\_facility\_polygons\hsip\_ commercial\_facility\_buffers\_partN.shp
* In ArcGIS, merge the three shapefiles into a single geodatabase feature class 🡪
  + F:\data\mgleason\DG\_Wind\Data\Analysis\industrial\_land\_mask\industrial\_facility\_polygons \industrial\_facs.gdb\hsip\_industrial\_fac\_bfrs\_all
* Dissolve the merged feature class, add a field “commercial”, and calculate it = 1
  + F:\data\mgleason\DG\_Wind\Data\Analysis\industrial\_land\_mask\industrial\_facility\_polygons \industrial\_facs.gdb\hsip\_industrial\_fac\_bfrs\_all\_dissolved
* Convert to Raster (Polygon to Raster with cell center option) (200 m cell size, snapped to grosscf80 raster)
  + F:\data\mgleason\DG\_Wind\Data\Analysis\industrial\_land\_mask\industrial\_facility\_polygons\indfac\_us
* Project NLCD 2006 to WGS 84 Albers with 200m cells consistent with grosscf80 raster
  + Use majority (NOT cell center)
    - F:\data\mgleason\DG\_Wind\Data\Analysis\industrial\_land\_mask\nlcd06us200mn
* Isolate classes 22, 23, and 24 (Low, Medium, and High Intensity Developed Land) in Projected as a new raster
  + Con(("nlcd06us200mn" == 22) | ( "nlcd06us200mn" == 23) | ( "nlcd06us200mn" == 24),1)
  + 🡪 F:\data\mgleason\DG\_Wind\Data\Analysis\industrial\_land\_mask\nlcd\_22\_23\_24
* Erase residential land mask (F:\data\mgleason\DG\_Wind\Data\Analysis\residential\_load\residential\_land\_masks\combined\_mask\resmaskus200m) from nlcd\_22\_23\_24
  + Con((IsNull("resmaskus200m") == 1) & (IsNull("nlcd\_22\_23\_24") <> 1),1)
  + 🡪 F:\data\mgleason\DG\_Wind\Data\Analysis\industrial\_land\_mask\devnotres
* Combine devnotres with indfac\_us to create the final industrial land mask
  + D
* 🡪 Combine the facilities grid and thresholded ratio grid to create the final boolean commercial raster
  + Con((IsNull("devnotres") <> 1) | (IsNull("indfac\_us2") <> 1),1)
  + 🡪 F:\data\mgleason\DG\_Wind\Data\Analysis\industrial\_land\_mask\combined\indmask\_us
  + \*\* this is the final commercial land mask
* Convert to points
  + F:\data\mgleason\DG\_Wind\Data\Analysis\industrial\_land\_mask\combined\ind\_points.gdb\ind\_points\_200m\_us
* Export points to ASCII txt file
* F:\data\mgleason\DG\_Wind\Data\Analysis\industrial\_land\_mask\combined\ind\_points\_200m\_us.csv
* Load grid and points to postgres for further analyses
  + Grid 🡪 dg\_wind.industrial\_land\_mask\_us\_100x100
  + Points 🡪 wind\_ds.pt\_grid\_us\_ind