**Create a Commercial Land Mask  
*Summary:***

* Create a 0.0018 degree (~200 m) resolution boolean grid representing likely commercial land use based on locations of known commercial facilities and the ratio of night time to day time population
* This grid will be used for two purposes:
  + To resample/reallocate commercial load from service territories to counties
  + To identify the distribution of available wind resource within a given county for commercial areas

***Processing***

Notes:

* ArcGIS processing performed in ./mxd/commercial\_land\_mask\_resampling\_us\_revised\_2014\_02\_05.mxd
* In Postgres, processing performed in S:\mgleason\DG\_Wind\SQL\commercial\_load\commercial\_land\_mask sql files

Steps:

* Isolate known commercial locations using navtec points with factypes associated with commercial building types and hsip points with 2-digit naics codes associated with commercial activities --> dg\_wind.hsip\_and\_navteq\_commercial\_facilities
* Create a version of the commercial locations where all points are buffered by 90 m (but polygon commercial locations from HSIP and NAVTEC remain unchanged)🡪 dg\_wind.hsip\_and\_navteq\_commercial\_facility\_buffers
  + 90 m is selected as the buffer size as a somewhat arbitrary estimator of property sizes for industrial facilities. I tested a larger radius (200 m) and it resulted in a huge overestimation of industrial land based on areas I am familiar with
* Export results to three shapefiles (too large to put to one shapefile ) 🡪
  + F:\data\mgleason\DG\_Wind\Data\Analysis\commercial\_land\_mask\commercial\_facility\_polygons\hsip\_and\_navteq\_commercial\_facility\_buffers\_partN.shp
* In ArcGIS, merge the three shapefiles into a single geodatabase feature class 🡪
  + F:\data\mgleason\DG\_Wind\Data\Analysis\commercial\_land\_mask\commercial\_facility\_polygons\commercial\_facs.gdb\commercial\_facilities\_combined
* Add a definition query to ignore oil and gas field:
  + table\_name <> ‘enrg\_gas\_prod’
* Dissolve the merge feature class, add a field “com\_bool”, and calculate it = 1
  + F:\data\mgleason\DG\_Wind\Data\Analysis\commercial\_land\_mask\commercial\_facility\_polygons\commercial\_facs.gdb\commercial\_facilities\_dissolved
* Convert to Raster (Polygon to Raster with cell center option)
  + Set extent, snap raster, cell size, and mask to: F:\data\mgleason\aws\_2014\_update\gis\conus\cf\_rasters\derived\onshoremask
  + F:\data\mgleason\DG\_Wind\Data\Analysis\commercial\_land\_mask\revised\_2014\_02\_05\commercial\_facility\_polygons\com\_mask
* Extract By Mask the ind\_mask raster using:
  + F:\data\mgleason\aws\_2014\_update\gis\conus\cf\_rasters\derived\onshoremask
  + Not sure why this is necessary…
  + Output:
    - F:\data\mgleason\DG\_Wind\Data\Analysis\commercial\_land\_mask\revised\_2014\_02\_05\com\_mask\_clip
    - \*\* this is the final commercial land mask
* Convert to points (Point to Raster)
  + F:\data\mgleason\DG\_Wind\Data\Analysis\commercial\_land\_mask\revised\_2014\_02\_05\commercial\_facs.gdb\com\_mask\_pts
* Export points to ASCII txt file using Export Feature Attributed to ASCII
  + F:\data\mgleason\DG\_Wind\Data\Analysis\commercial\_land\_mask\revised\_2014\_02\_05\com\_mask.csv
* Load grid and points to postgres for further analyses
  + Grid 🡪 dg\_wind.commercial\_land\_mask\_500x500
  + Points 🡪 wind\_ds.pt\_grid\_us\_com