Hunter College - CUNY
Department of Geography
Nature of New York
EXTRA CREDIT EXERCISE 8: Air and Wind
Due no later than the date of the Midterm Exam.

PURPOSE: This exercise looks at air quality in NYS and the potential that moving air has to produce power.

INTRODUCTION:

The Dept. of Environmental Conservation monitors air quality within its 9 regions. Go to **http://www.dec.ny.gov/about/644.html** to read about the Division of Air Resources and to **http://www.dec.ny.gov/chemical/8406.html** for NYS's program to track air quality.

According to the DEC, NYS has "one of the most comprehensive and robust ambient air monitoring programs in the nation. New York meets or exceeds current monitoring requirements in nearly all instances." Air pollution is both gaseous and particulate in nature. The time sequence maps illustrate trends in air quality, both in the types of pollution and the severity of the problem. Locate your counties within the DEC regions at **http://www.dec.ny.gov/about/50230.html.** Select **any two** of your three counties and use the DEC regional information to complete this exercise. Tracking stations are scattered around the state so you will need to look at regional assessments. If no county information is available use information from the surrounding area.

Be selective before you print. These are large documents. Find the 2017 Ambient Air Monitoring Report at **http://www.dec.ny.gov/docs/air_pdf/2017plan.pdf**. This site also has data from past years for comparison purposes.

ASSIGNMENT - This assignment has two parts.

PART I: The "State of the Air" in your counties.
1. Mapping Pollutants.
   a) Consult the air quality trend charts staring on p. 90 of the 2017 report. Choose data from one pollutant that is in the same physiographic region as your counties.
   b) Summarize your findings.
   c) Compare your areas to the entire state. Are they better or worse than the state averages? How so?

2. "State of the Air" Assessment. Consult **http://www.dec.ny.gov/chemical/8536.html**. *Scroll down to find your counties.*
   a) Discuss the change, if any, over the 10-year period (2007-2016) in the presence of pollutants in your counties (or DEC region it is in).
   b) What do you perceive to be the greatest problem facing each area?
   c) Based on your findings which of your counties (or region) has the best air?

Education Program students:
Teachers: See https://airnow.gov/index.cfm?action=learning.forteachers.

For lesson planning suggestions you may want to visit the US EPA's student acid rain web page (www.epa.gov/acidrain/education/site_students) and the NYSDEC education site http://www.dec.ny.gov/26.html.

*The online magazine "***New York State Conservationist for Kids***" is found at http://www.dec.ny.gov/education/40248.html.*

Part II Wind Power Potential

The purpose of this portion of the exercise is estimate the potential of locations within your counties to produce energy using the wind.

INSTRUCTIONS to access the wind energy potential reports:
- Go to **http://nyswe.awstruepower.com/**.
- Experiment with randomly selected locations within each of your counties before selecting one town. Note that when you drop-pin a location, the average wind speed of that location appears in the upper right corner. Also note the different between hill tops and valleys.
- For each location selected, click **Generate Report**.
- Then select **Customer Report**.
- Add a fictitious landowner name/location in the blank boxes.
  (You can use HC Geography, 695 Park Ave., New York, NY 10065)
- Click **I Agree** then click **Submit**.
- The report generated will show wind speed and energy potential at the location and indicate the location's potential as a power producer <u>from poor to excellent</u>.
- The wind rose will show predominant wind direction and percent of wind energy by direction.
- Select only **one** location from each county.
- Use the **Printer Friendly** button to print each report.

ASSIGNMENT: The "State of Wind Power" in your counties.

NYSERDA, a NYS governmental agency, sponsors renewal energy projects that do not use fossil fuels or contribute to global emissions.
1. Using the **Wind Energy Potential reports** generated at *http://nyswe.awstruepower.com/* make a statement about each county's potential to produce energy using wind turbines.
2. From the Wind Energy Potential reports (table and wind rose), describe the characteristics of wind flow at the locations you selected.
      a) What is the predominant direction of flow?
      b) How strong are these winds?
      c) How reliable are these winds?
3. Which of the three sites you surveyed has the greatest potential to use wind power to produce low cost energy? Is it a good location to do so? Is it an economically feasible location?

REMEMBER to attach the three reports to your write up.