Case Study Activity – Bats and Wind Energy Development Risk – Manager Level

Objective:

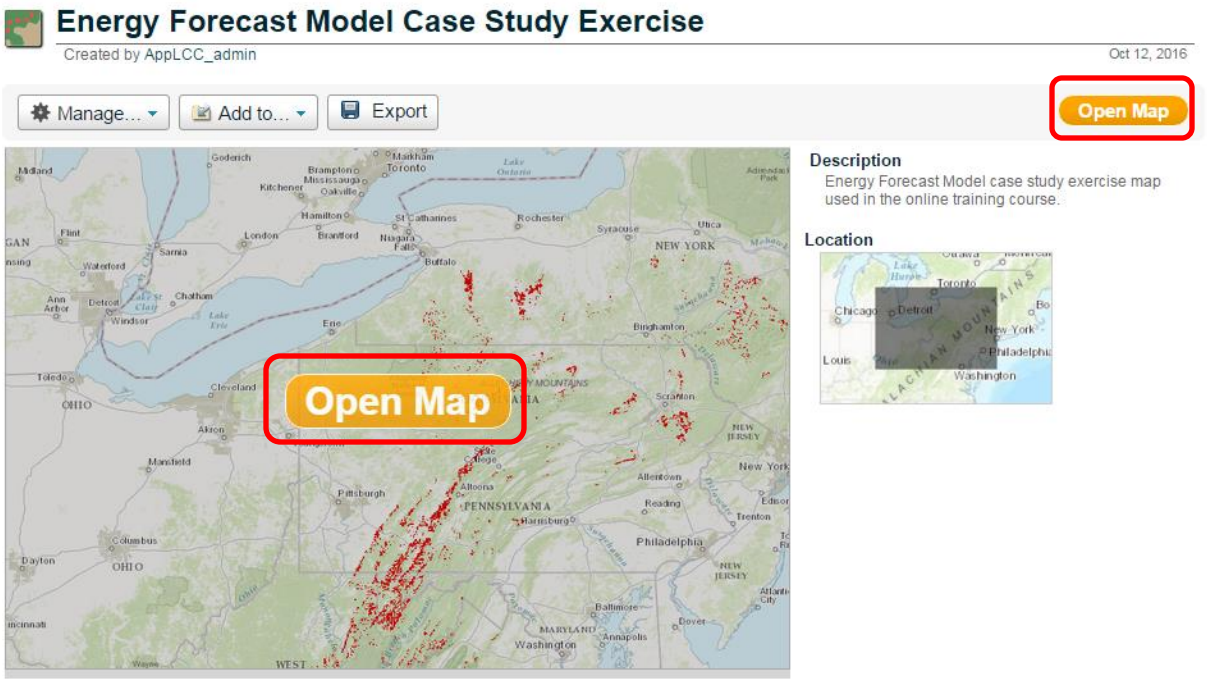
Identify areas in Pennsylvania which have a high probability of wind energy development that could potentially impact federally listed bat species if developed.

Data Layers:

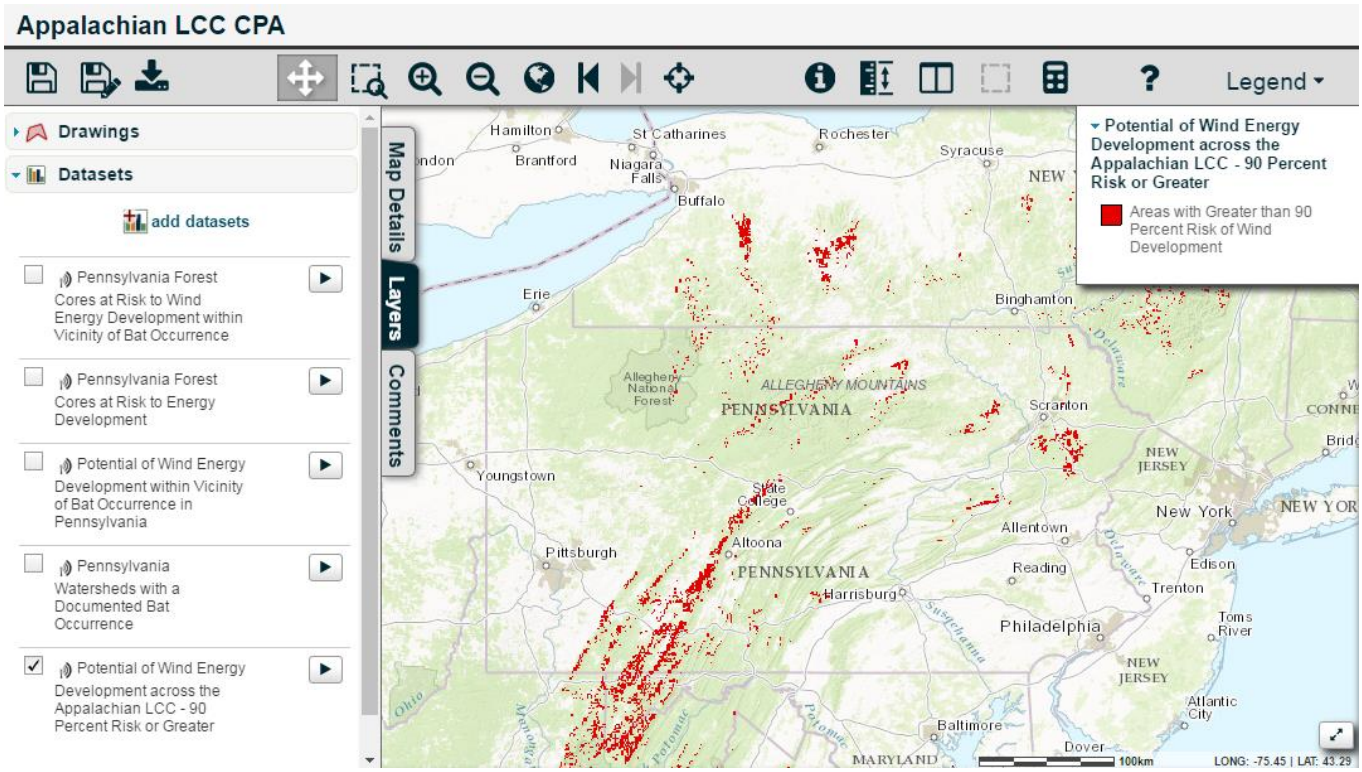
1. Potential of Wind Energy Development across the Appalachian LCC – 90 Percent Risk or Greater
2. Pennsylvania Watersheds with a Documented Bat Occurrence
3. Pennsylvania Forest Cores at Risk to Energy Development

Potential Solution:

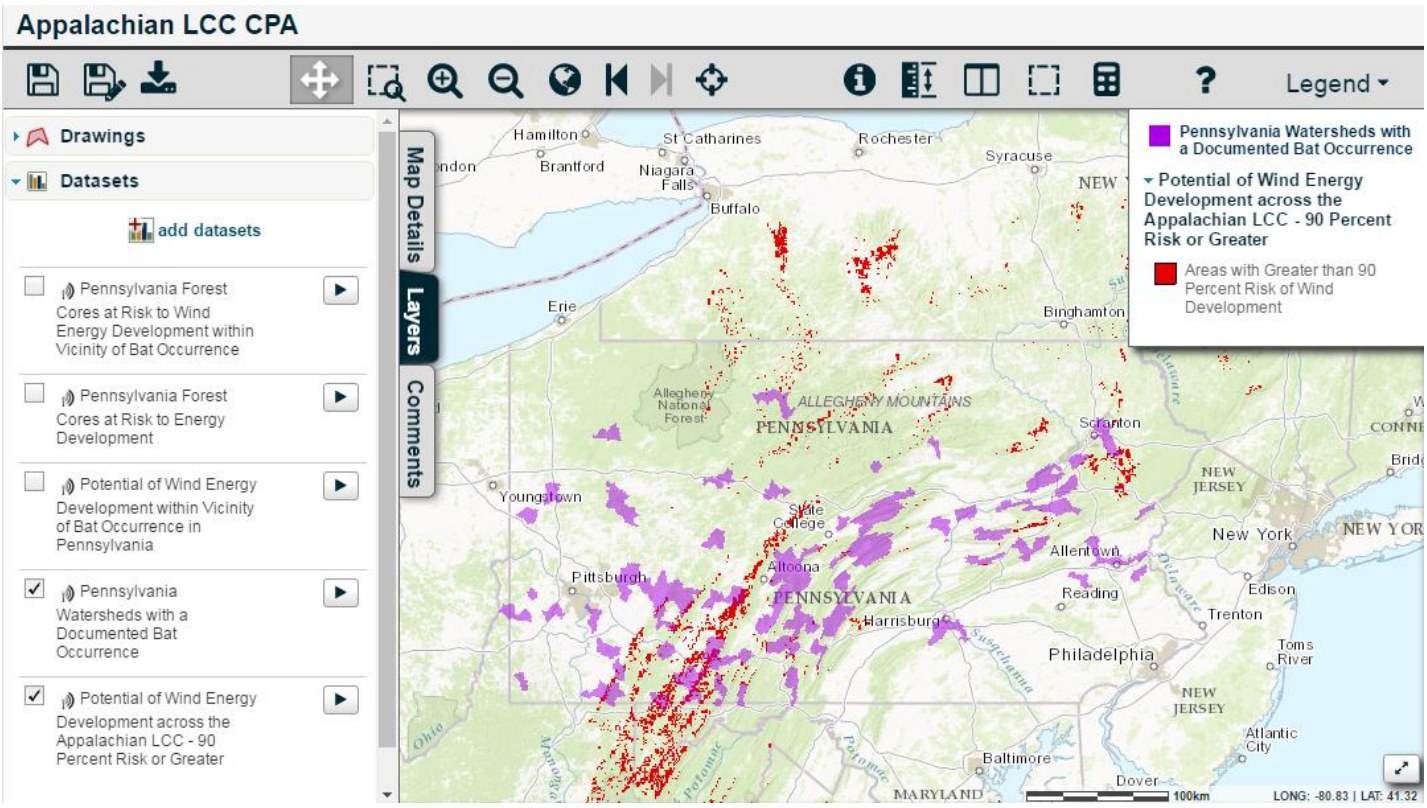
1. Access map at: https://applcc.databasin.org/maps/fef0e1ddc1954dfc984109acc0e1bf21. Hover over map image preview and select “Open Map” or click “Open Map” in the upper right hand corner.



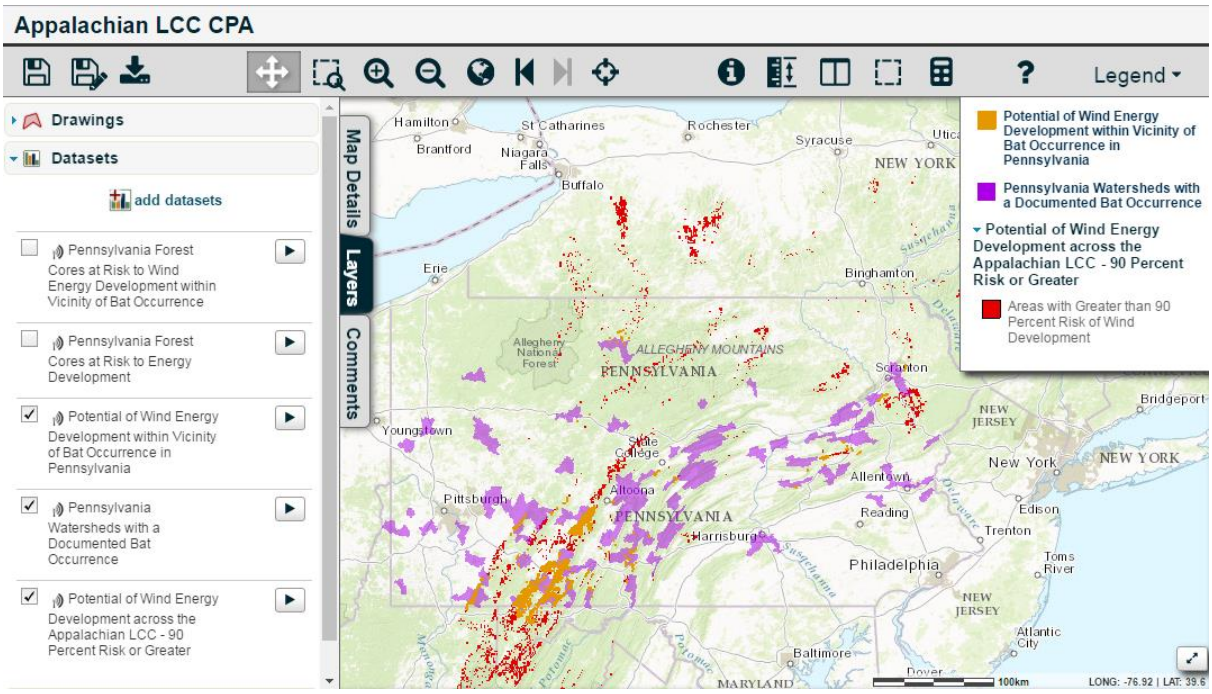
2. Click on the Layers tab to view the several layers that have already been added to the map. The “Potential of Wind Energy Development across the Appalachian LCC – 90 Percent Risk or Greater” layer should be displayed when opening the map. This layer depicts areas with a 90% or greater risk of wind energy development throughout the Appalachian Landscape Conservation Cooperative (LCC).



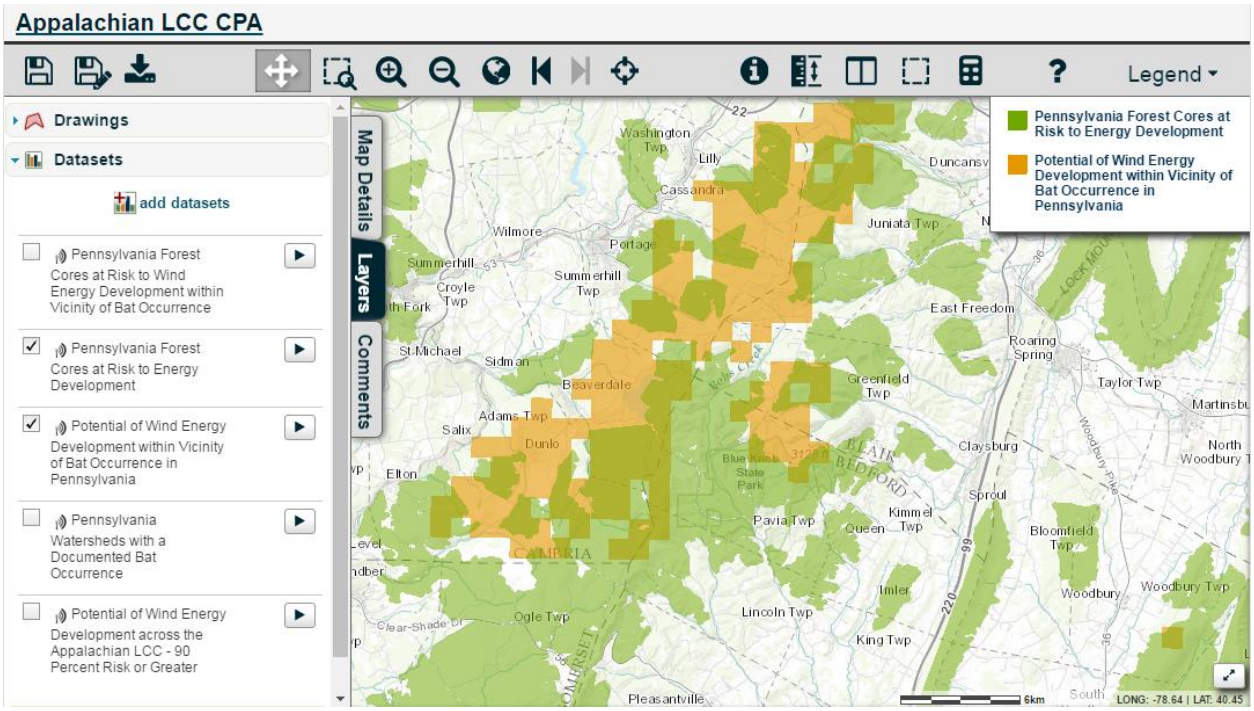
3. The next step in the analysis is to identify the areas at risk to wind energy development that are within a specified distance of a documented bat occurrence. Exact bat locations are considered sensitive and are therefore not being used in this exercise. As an alternative, a layer depicting bat occurrence generalized to the HUC-12 watershed scale was created. Click on the box beside the "Pennsylvania Watersheds with a Documented Bat Occurrence" layer to display the data (purple areas in following map).



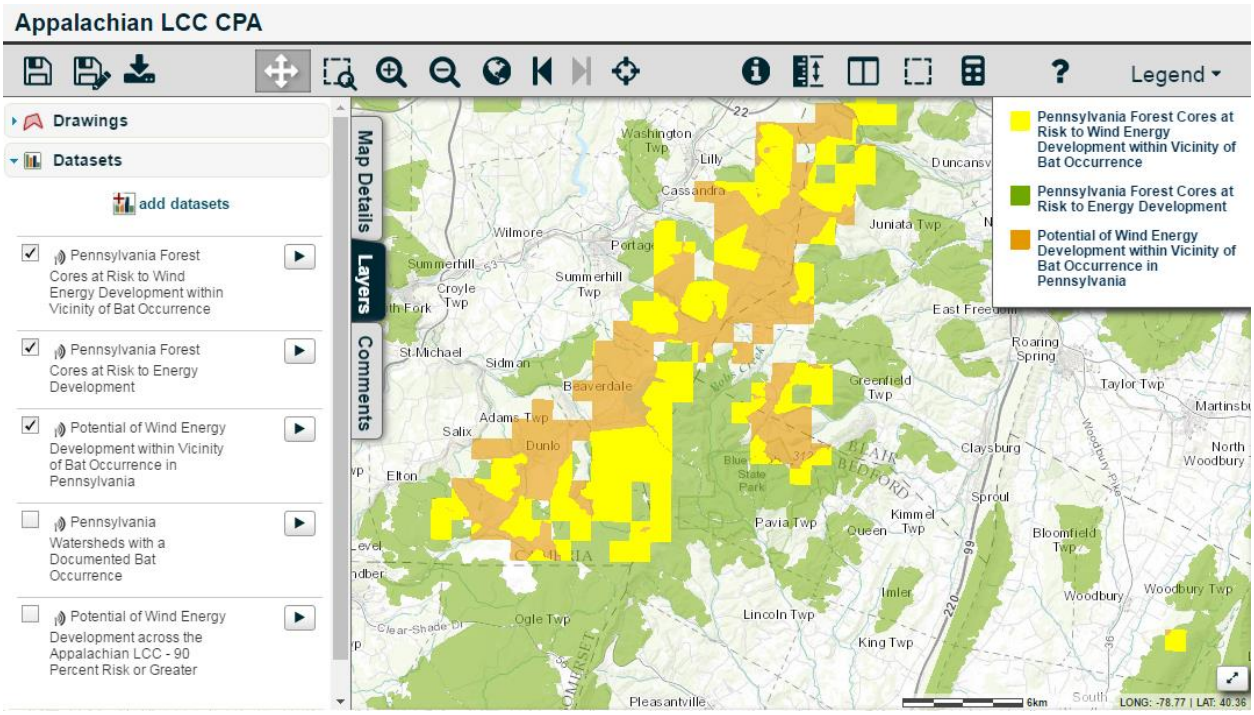
4. For this exercise, areas at risk to wind energy development that are within 5 miles of a watershed with a documented bat occurrence are considered a higher priority and needed to be identified. The analysis used to identify these areas was completed using ArcGIS Desktop and the resulting data layer has been added to the Data Basin map. Click on the box beside the "Potential of Wind Energy Development within Vicinity of Bat Occurrence in Pennsylvania" layer to display the areas that have a 90 percent or higher risk of wind development that are within five miles of watershed with a documented bat occurrence (areas displayed in orange in following map). If desired, other data layers can be toggled on/off to better visualize the data.



5. If a particular species or type of habitat is of interest to an organization, additional data layers can be added to incorporate these priorities. For example, northern-long eared bats utilize forested habitats for summer habitat and foraging. Maternity colonies also rely on forested areas. Threats to forested areas can have a significant impact on this bat species. As a result, forest cores at risk to wind energy development should be considered a priority when identifying areas at risk to wind energy development that may also be important to northern long-eared bats. The previously identified areas at risk to wind energy development that are also within 5 miles of a watershed with a documented bat occurrence can be overlaid on forest cores at risk to wind energy development to identify these areas.



6. The next step is to create a data layer of forested cores that have a 90 percent or greater risk of wind energy development that are also within 5 miles of a watershed with a documented bat occurrence. This analysis was completed in ArcGIS Desktop and the resulting data layer, “Pennsylvania Forest Cores at Risk to Wind Energy Development within Vicinity of Bat Occurrence”, has been added the Data Basin map. The areas in yellow represent the areas with a 90 percent or higher probability of wind energy development that are also within 5 miles of a HUC 12 watershed with a documented bat occurrence. The identified forested areas would be considered a higher priority for protection. This prioritization can also be used in discussions with industry when discussing avoidance of these high priority areas and identifying alternative areas.



Conclusion:

This exercise demonstrated one way users could perform an analysis to identify areas at a high risk of wind energy development that may also be important to bats species. The areas identified by the example may be considered a high priority for habitat protection if they are not already protected or these areas could be used to discuss alternative wind energy development locations. Industry could use these areas when planning future development projects and attempt to avoid them if possible. Even if these areas were originally identified for a proposed development, the analysis could be used to discuss potential alternatives that avoid the areas. Industry could alter their plans so that they are still in a desirable location for wind energy development, but not in an area that was adjacent to documented bat occurrences and hibernacula.

Additional Considerations:

Considering the distance to hibernacula and maternity colonies is important when analyzing the potential impacts of wind energy development on northern-long-eared bat. The five miles used in the exercise took into consideration the impacts associated with construction of wind energy facilities only. However, operational impacts associated with wind energy may require you to consider a larger area of impact. For the highest quality hibernacula, it is recommended that areas within 20 miles be considered. For lower quality hibernacula, a distance of 10 miles is recommended.

This exercise used a limited number of data layers to provide an example of how data from the Energy Forecast Model can be used in conjunction with other data layers to identify and prioritize areas at risk to wind energy development. There are numerous additional data layers which could also be used. Based on organization priorities, different layers may be incorporated using a similar approach. In

addition, a similar analysis could also be performed on the shale gas and coal energy forecast models which are available.