

# Energy Currents

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GIS for Energy

## Renewable Energy Siting: Wind Energy and Ethanol Production in Kansas

By Andy Bury, Tetra Tech EC, GIS Discipline Lead

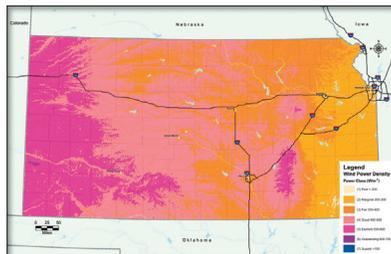


Figure 1. Measurement of wind power density is shown by degree of intensity.

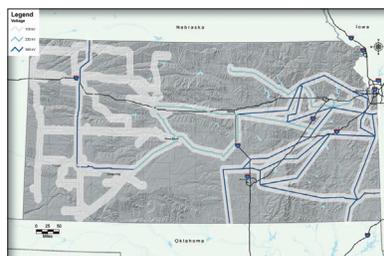


Figure 2. Buffer areas are placed along existing transmission line data.

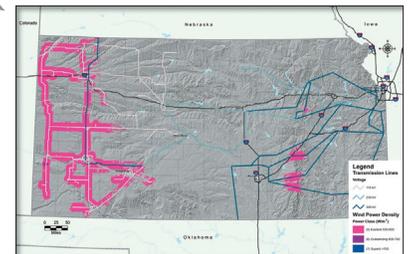


Figure 3. Wind power density is related to existing transmission corridors.

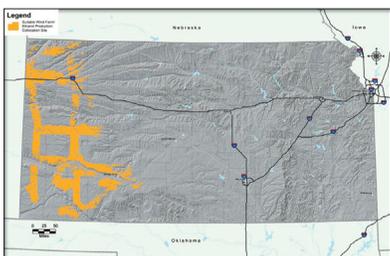


Figure 7. Suitable wind farm and ethanol production colocation sites are shown.

Using ESRI's ArcGIS Server in conjunction with a wind analysis of its own development, Tetra Tech is identifying colocation opportunities for wind turbines and ethanol-producing corn crops. Tetra Tech is a leading international provider of consulting, engineering, and technical services.

Tetra Tech has identified locations in Kansas for wind turbines and corn crops—enough fuel sources to power 15.5 million homes and 2.5 million cars per year.

ESRI's GIS solutions provide planners with spatial depictions of potential wind energy sites, from constructability factors to a site's proximity to existing transmission lines and substations. Using high-resolution Landsat data, Tetra Tech's GIS technology then identifies areas suitable for corn production, visually intersecting both sets of information to reveal tracts of land appropriate for the colocation of wind power and ethanol-producing corn crops.

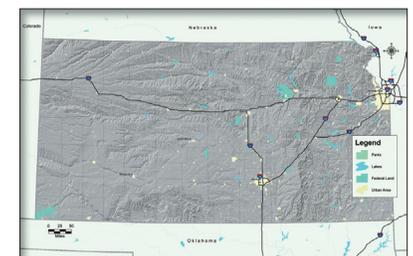


Figure 4. Data layers of urban areas, lakes, and parks are added to show energy siting constraints.

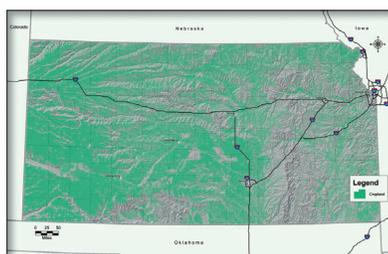


Figure 6. Landsat data shows best areas for ethanol-producing corn crops.

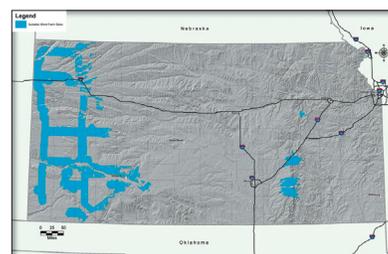


Figure 5. The locations for best wind farms are calculated using factors of line location, wind density, and constraints.



## ESRI

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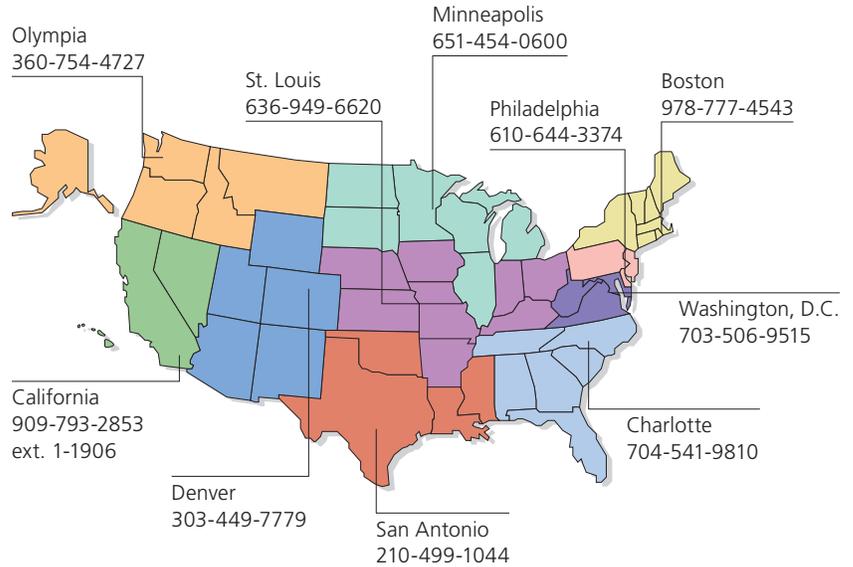
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