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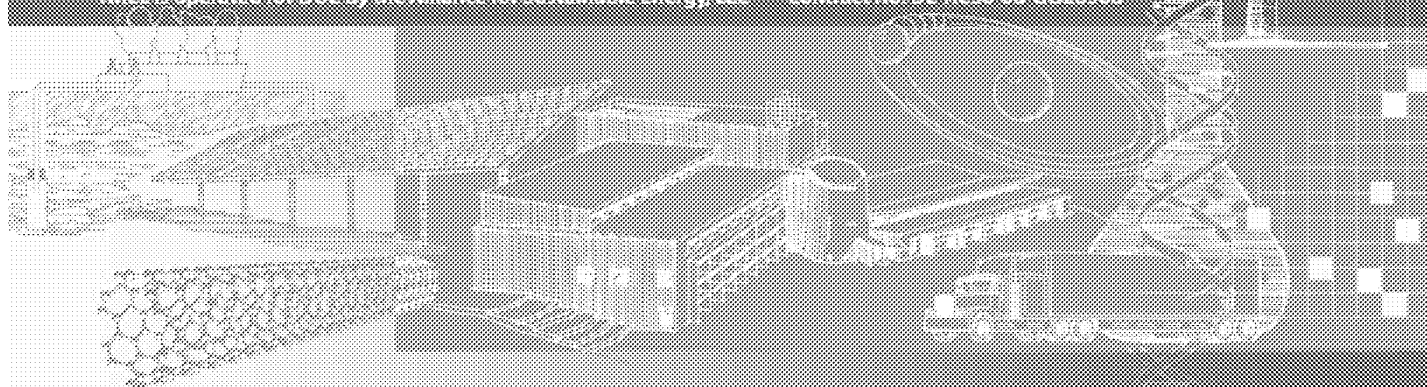
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Land-Use Requirements of Modern Wind Power Plants in the United States

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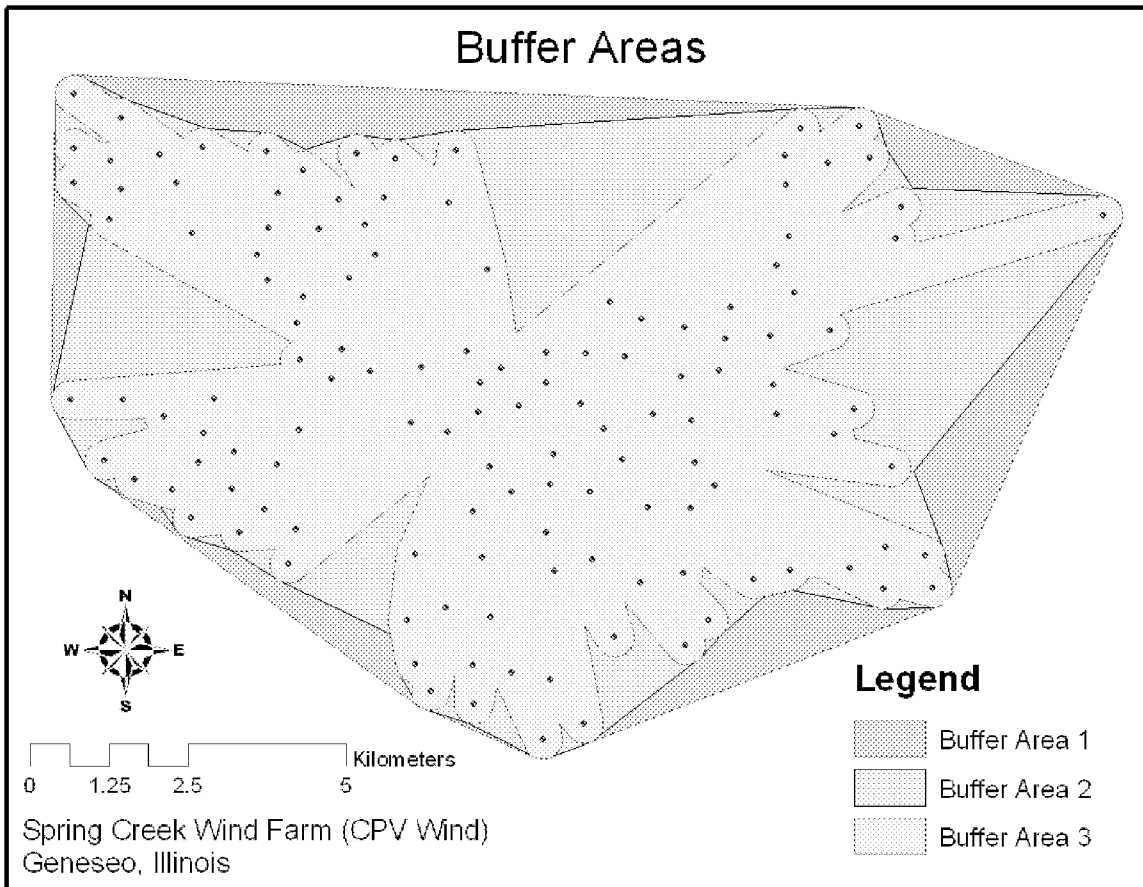


Figure 11. Possible methodologies for assigning uniform land metrics to total area of wind power plants

6 Conclusions

Although there is no uniformly accepted single metric of land use for wind power plants, two primary indices of land use do exist – the infrastructure/direct impact area (or land temporarily or permanently disturbed by wind power plant development) and the total area (or overall area of the power plant as a whole).

Based on the collected data, direct impact is mostly caused by road development, as opposed to the turbine pads and electrical support equipment. For 93 projects representing about 14 GW of proposed or installed capacity, the average permanent direct impact value reported was 0.3 ± 0.3 hectares/MW of capacity. Fewer projects (52 representing 9 GW of capacity) provide temporary direct impact data, with an overall average of 0.7 ± 0.6 hectares/MW of capacity. This implies a total direct impact area (both temporary and permanently disturbed land) of about 1 ± 0.7 hectare/MW, but with a wide variation in this area.

We also found reported total-area data for 161 projects representing about 25 GW of proposed or installed capacity. Excluding several outliers, the average value for the total project area was about 34 ± 22 hectares/MW, equal to a capacity density of 3.0 ± 1.7