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Sent: Monday, May 28, 2007 9:34 AM
To: 'Burger, Joanna'; 'Jim Estep'; 'Joanna at Home'; julie_yee@usgs.gov; 'Susan Orloff'
Cc: 'Rivera, Sandra, CDA'; 'Gina Bartlett'
Subject: flights through turbnine strings

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SRC,

I calculated the frequency of observed flights through wind turbine strings during the NREL behavior study so that we can further assess our sample size needs for the end-of-row pylon study. Based on 1,961 30-minute sessions among 28 plots with between 10 and 67 turbines per plot, our crew observed 0.8056 raptor flights through turbine strings per 100 turbines per session. The standard error was 0.0773. The average number of turbines per turbine string among these plots was 8, so you can expect to see 0.0645 raptor flights through the average turbine sting per half hour, or on average you can wait 7.75 hours before you see a raptor fly through a particular turbine string. Of course, if you are watching about 5 turbine strings at the same time, you ought to see a string crossing once every 90 minutes or so.

The rarity of these flights through the turbine string might be astonishing to some, until you sit out there waiting to see it happen. The above result comports with my experience out there. This is probably also why observations of turbine strikes are extremely rare.

However, we would be recording more data than simply flights through the turbine string. After all we have learned in the field, I think we could track bird flights onto topographic maps of the sort we are using in the East Bay Regional Parks District study. We could record observations of birds flying by the turbine string, as well as through it, and we can record exactly where the bird approaches closest to the string. I predict we could record data at a higher frequency than indicated by the calculation above. Nevertheless, I don't think we will collect sufficient observation data with a sample size of a few treated turbine strings; I think our sample size would need to be considerably larger.

Shawn