My colleagues and I have researched the issue of bird collisions with communication towers since 2003. Through our studies we have addressed what we determined to be the most important variables influencing the numbers of avian collisions. We have collected hundreds of days of data at more than 30 towers in Michigan and New Jersey. Based on our research, summarized below and attached to these comments, we have accumulated enough data to make recommendations that will significantly reduce avian collisions with all towers by as much as 70%. I encourage the FCC to consider these data and conclusions and make a positive impact on avian conservation.

Estimates suggest that each year millions of birds, predominantly neotropical migrating songbirds, collide with communication towers. We determined the relative collision risks that different nighttime Federal Aviation Administration (FAA) communication tower obstruction lighting systems pose to night migrating birds by comparing fatalities at towers with: white strobe lights only**;** red strobe-like lights only**;** red flashing incandescent lights only**;** and red strobe-like lights combined with non-flashing, steady burning red lights. Avian fatality data used to compare these tower light systems were collected simultaneously in Michigan on 20 consecutive days during early morning hours during peak songbird migration at 24 towers in May and September 2005 (total 40 days). Twenty-one towers were 116-146 m Above Ground Level (AGL) and 3 were $\geq$305 m AGL. During the two 20-day sample periods a mean of 3.7 birds were found under 116-146 m AGL towers equipped with only red or white flashing obstruction lights, whereas towers with non-flashing/steady burning lights in addition to the flashing lights were responsible for 13.0 fatalities per season. Kruskal-Wallis test, Analysis of Variance, student t-test, and multiple comparisons procedures determined that towers lit at night with only flashing lights were involved in significantly fewer avian fatalities than towers lit with systems that included the FAA "status quo" lighting system (i.e., a combination of red, flashing lights and red, non-flashing lights). There were no significant differences in fatality rates among towers lit with red strobes, white strobes, and red incandescent flashing lights. Results from related studies at the same towers in May and September 2004 and September 2003 provide ancillary support for these findings. Our results suggest that avian fatalities can be reduced, perhaps by 50-71%, at guyed communication towers by removing non-flashing/steady-burning red lights. Our lighting change proposal can be accomplished at minimal cost on existing towers and such changes on new or existing towers greatly reduce the cost of tower operation. Removing non-flashing lights from towers is one of the most effective and economically feasible means of achieving a significant reduction in avian fatalities at existing communication towers.

Similarly we considered the relationship between tower height, the presence of guy wires, and avian collisions. Twenty-one of the towers were between 116 and 146 m Above Ground Level (AGL) and 3 towers were >305 m AGL. During the 5 20-day sample periods we found a mean of 8.2 dead birds per guyed communication towers 116-146 m AGL, and a mean of 0.5 birds under unguyed towers of the same height. During 4 20-day sample periods we detected a mean of 34.7 birds per guyed towers >305 m AGL. Using both parametric and nonparametric tests (Mann-Whitney U-test, Kruskal-Wallis

test, and Tukey's Honestly Significant Difference multiple comparison procedure) we determined that unguyed towers 116-146 m AGL experienced significantly fewer fatalities than towers of the same height that were guyed. We registered approximately 54 - 86% fewer fatalities at guyed towers 116-146 m as opposed to guyed towers >305 m. We found nearly 16 times more fatalities at guyed towers 116-146 m AGL as opposed to unguyed towers of the same height. Tall, guyed towers were responsible for about 70 times as many birds fatalities as the 116-146 m unguyed towers and nearly 5 times as many as guyed towers 116-146 m. These data provide managers and regulators with the first quantitative data for establishing best practices to minimize collision fatalities of migrating and other birds at federally licensed communication towers.