

DECISION-SUPPORT FOR CONSERVATION IN THE TEHACHAPIS AND SOUTHERN SIERRA (4A)

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The Tehachapi Mountains and southern Sierra Nevada are valued as a biodiversity hotspot, a bird and bat migration corridor, and as a landscape critical to the linkage and functioning of four distinct ecoregions—the Mojave Desert, Sierra Nevada, South Coast, and Central Valley. Decision-makers are evaluating proposals for wind energy and other development on a project-by-project basis without a regional perspective. Using a study area of 4.8 million acres centered on the high wind resource area of the south Sierra and Tehachapis, CBI synthesized available data to evaluate landscape-scale conservation values across the region. Our goal was to identify where new wind and other development projects could be most compatible with landscape-scale conservation values, prioritize areas for conservation, and provide a regional dataset to support cumulative impact analyses. CBI integrated >50 datasets into a hierarchical logic model and customized modeling software to assess relative conservation values by section (1 sq. mile), based on intactness, connectivity, biodiversity, and disturbance. To address the paucity of bird and bat data, we used surrogates, such riparian and other wetland communities where birds and bats are likely to congregate, and specially designated areas, such as Important Bird Areas. Model results are presented as (a) ecological value and (b) biological potential and level of disturbance. Results indicate that 72% of the study area is Very High and High Biological Potential with Very Low and Low Levels of Disturbance, 24% is Very High and High Biological Potential with Moderate Levels of Disturbance and 4% is Very High and High Biological Potential with Very High and High Levels of Disturbance. The data sets and analytical results can inform macro-siting of wind energy and other forms of development, conservation reserve design, and land management planning. To facilitate project review and make datasets and project results transparent and publically available, CBI developed new spatially explicit decision-support tools accessible via Data Basin (www.databasin.org), a free web-based platform for sharing spatial data and customizing spatial analyses and maps.

Key words: decision-support, wind energy, Tehachapi Mountains, landscape connectivity, logic model