

Quantifying Spatiotemporal Patterns of Past and Future Urbanization Trends in El Paso, Texas and Their Impact on Electricity Consumption

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Abstract : El Paso, Texas is a southwest border city that has experienced continuous growth within the last 15-years. Understanding the urban growth trends and patterns using data from the National Land Cover Database (NLCD) and landscape metrics, provides a quantitative description of growth. Past urban growth provided a basis to predict 2031 future land-use for El Paso using the CA-Markov model. As a consequence of growth, an increase in demand of resources follows. Using panel data analysis, an understanding of the relation between landscape metrics and electricity consumption is further analyzed. The studies' findings indicate that past growth focused within three districts within the City of El Paso. The landscape metrics suggest as the city has grown, fragmentation has decreased. Alternatively, the landscape metrics for the projected 2031 land-use indicates possible fragmentation within one of these districts. Panel data suggests electricity consumption and mean patch area landscape metric are positively correlated. The study provides local decision makers to make informed decisions for policies and urban planning to ensure a future sustainable community.

Keywords : landscape metrics, CA-Markov, El Paso, Texas, panel data

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