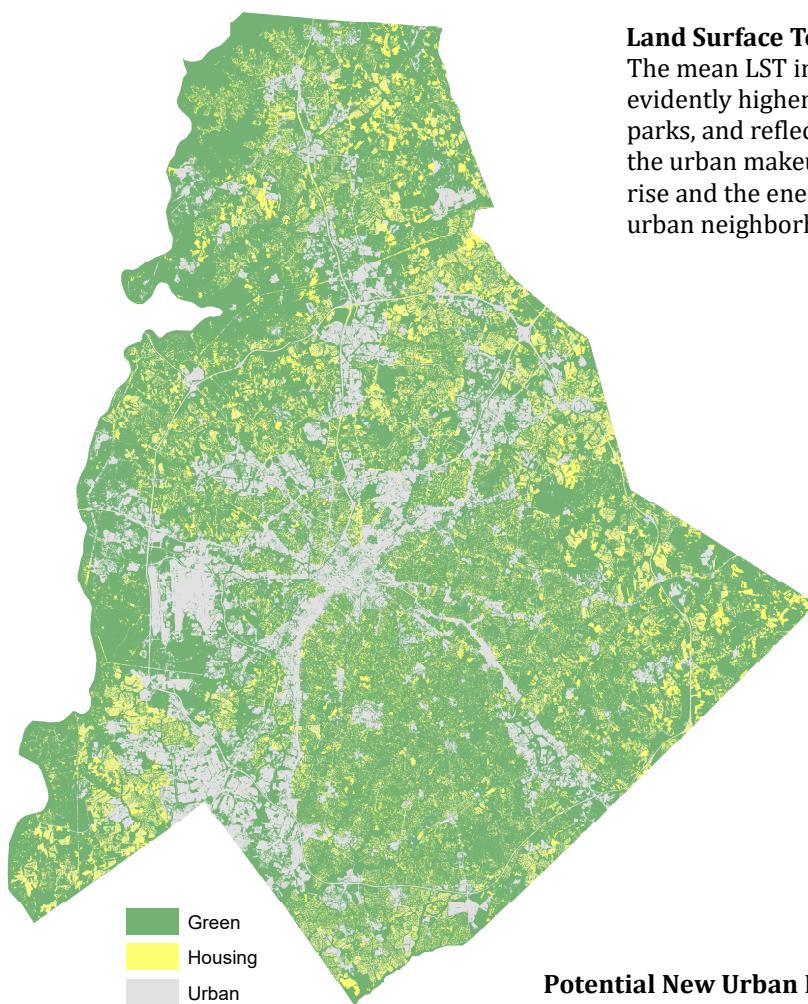


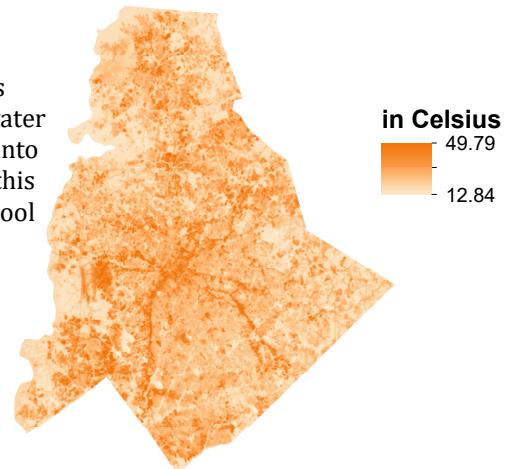
# Mecklenburg County (Charlotte City) - Investing in its energy future

Of the top 100 growing counties in the US, Mecklenburg county has consistently grown by more than 2% each year, leading to its population doubling in less than 30 years. This county of 1.1 million has the potential for continued growth owing to abundant nuclear power, lack of geographic climate risk barriers, and proximity to a large urban hub (Atlanta). However, 60% of the county's energy consumption is in the transportation and residential sector which need to be addressed with sustainable solutions as we step into energy's future.



## Land Surface Temperatures

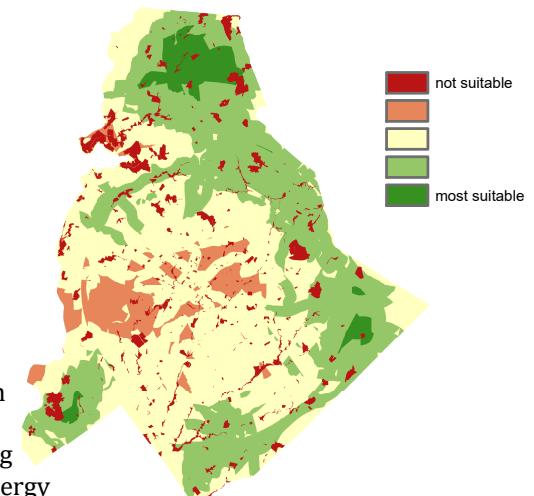
The mean LST in urban zones is evidently higher. Green belts, water parks, and reflectors threaded into the urban makeup can control this rise and the energy needed to cool urban neighborhoods.



Zone	Area_sq_miles	mean_LST	std_LST
Green	361	27.15	2.27
non-Green	184	30.28	2.58

## Potential New Urban Hubs

Urban congestion can be tackled with the construction of new urban hubs that decrease commuter miles leading to nearly 1.6 billion KWh of yearly energy savings that can instead power ~30% of the county's homes.



Zone	Area_sq_miles	DowntownDist	NewHubDist	CommuteMilesSaved
Housing	26	3,660,118	247,194	3,412,924

## Renewable Energy Generation

Even a conservative investment in solar (5% of rooftops) and wind power (1% of county) can generate a sizable 0.9 billion KWh each year that can ease the grid of an additional 17% of the county's home energy needs.

Zone	Area_sq_miles	solar_5pct_KWh_year	wind_1pct_KWh_year
non-Green	184	1,113,816	313,691,602
Green	361	<Null>	613,336,218

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Data Sources:

- Landsat & Sentinel (2019 images)
- US Census 2019 population & housing estimates
- NREL solar GHI & wind (10m) supply curves

Projection: WGS\_1984\_UTM\_Zone\_17N

A combination of energy savings and renewable power generation should set the county up for the future of energy demand in the electrification of manufacturing, transport, and heating.

