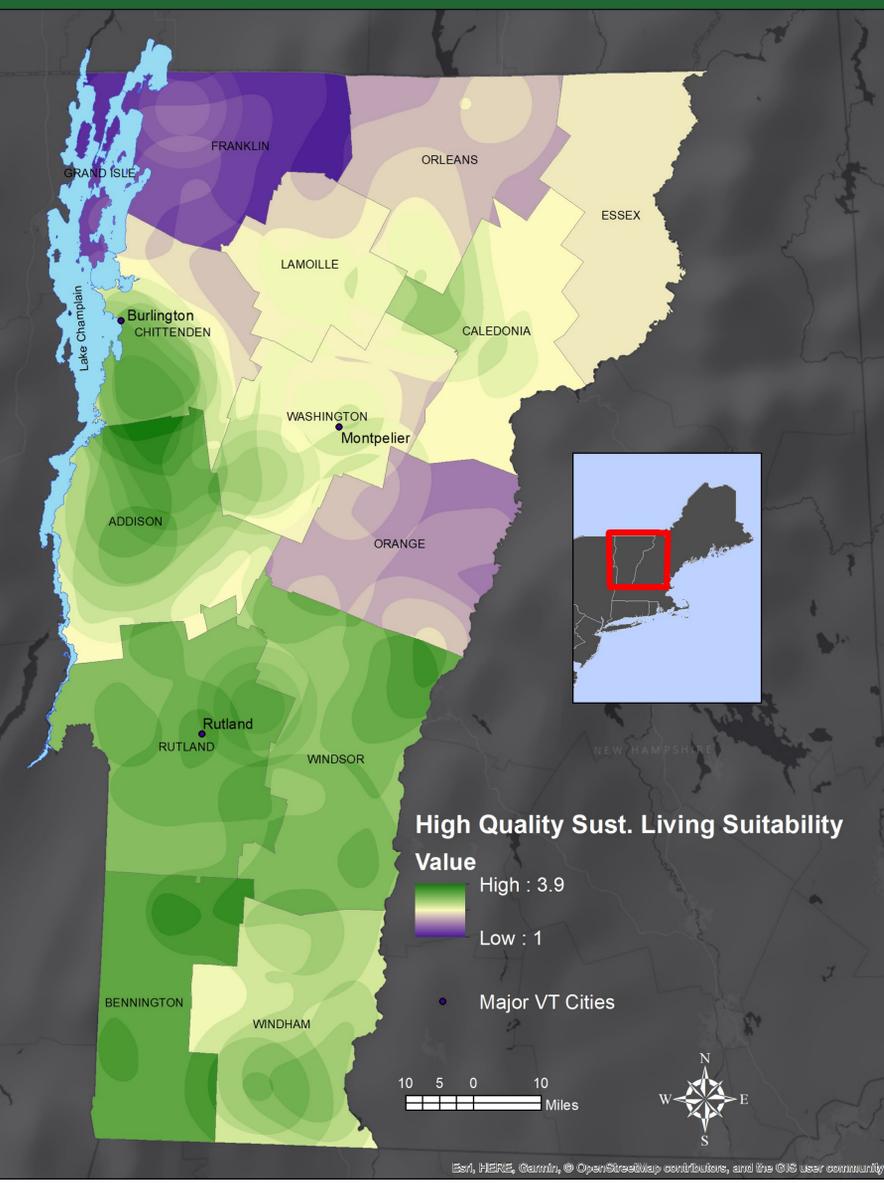


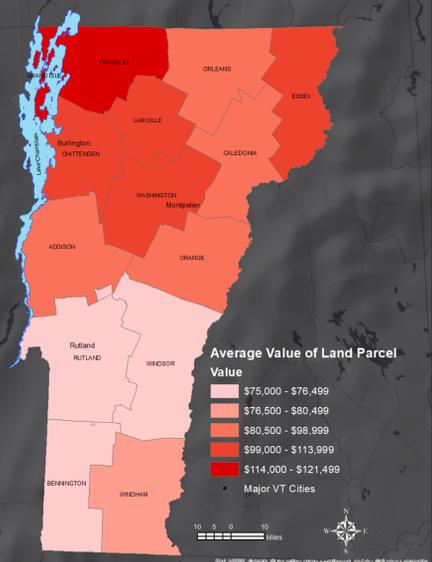
THE COST OF LIVING GREEN

Suitability Index of High Quality Sustainable Living In Vermont

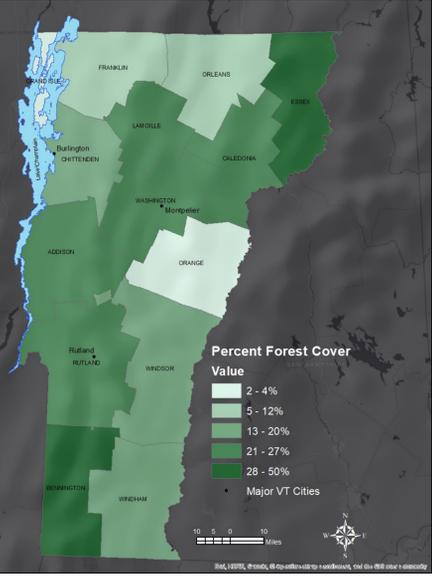
High Quality Sustainable Living Suitability



Average Land Parcel Value



County % Covered in Forest



Introduction

We are currently seeing upward trends in the Vermont housing market. Current median homes sell for \$205,000, and this value is up 8% since 2016 (Burlington Free Press, 2017). With nearly 8,000 homes purchased in Vermont every year, it is important for purchasers, homeowners, realtors and local governments alike to understand the priorities that drive the Vermont housing market. Calvin Coolidge, the 30th US President and a birthright Vermonter once said, 'I love Vermont because of her hills and valleys, her scenery and invigorating climate, but most of all because of her indomitable people. They are a race of pioneers who have almost beggared themselves to serve others.' (Slate, 2018). 90 years later, the 'indomitable people' of Vermont continue to be 'pioneers' in the protection of their adored state. As the US state ranked 2nd in reinvestment towards renewable energy, VT renewable infrastructure is growing. Vermont's renewable energy standard demands 75% renewable energy by 2032 with goals for 90% renewable by 2050 (Burlington Free Press, 2018).

Famous for its outdoor recreation, fall foliage, and "Green Mountain State" nickname, VT and its residents place a high priority on the natural land around them. Furthermore, their dedication towards sustainability suggests additional trends in housing markets and quality of life ideals. This high quality and sustainable living suitability analysis aim to detect which cost-efficient areas of VT best fit these environmental quality and sustainable living priorities.

Methodology

Using Raster Calculator, a 5-pt weighted index was created to analyze suitability for high quality sustainable living conditions in Vermont counties. Three criteria were analyzed: (1) property purchasing cost & value potential, (2) accessibility to wilderness preserve areas, and (3) community dedication towards sustainability.

(1) Average land parcel value per county was calculated and symbolized into five pricing tiers (\$\$\$\$ = 1, \$ = 5). This polygon shapefile was converted to raster and reclassified. (2) The percentage of each county's area covered in wilderness was calculated and then converted to raster for reclassification (highest % = 5, lowest % = 1). Lastly, (3) solar panel, wind turbine, and hydroelectric point sites were estimated using kernel densities and reclassified (highest density = 5, lowest density = 1).

While forest proximity and sustainable community are ideals, buyers are ultimately limited by their budgets. Average Land Value per County was weighted the highest (35%). In representation of a community that refers to their home as "the Green Mountain State" the weight of recreation, viewing pleasure, privacy, tranquility, and the quality of soil, water, and air was weighted 2nd highest (25%). The point data on renewable infrastructure sites was abundant for solar and wind farms, weighted equally (15% & 15%), but the abundance and spread of hydroelectric sites were less and therefore weighted to a lesser degree (10%). The final weighted equation was as follows:

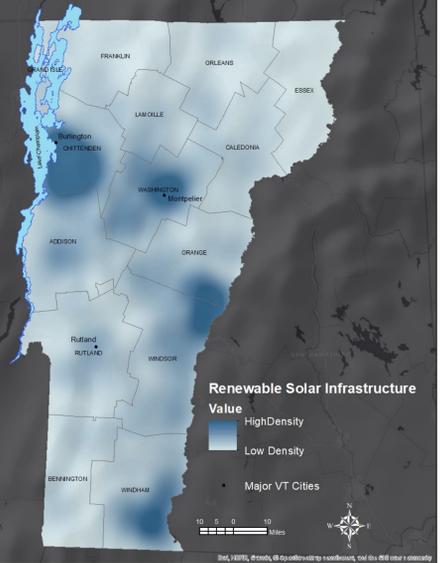
$$100\% = (\text{Avg. Parcel Value} \times 0.35) + (\text{Forest \%} \times 0.25) + (\text{Solar Density} \times 0.15) + (\text{Wind Density} \times 0.15) + (\text{Hydro Density} \times 0.15)$$

Results

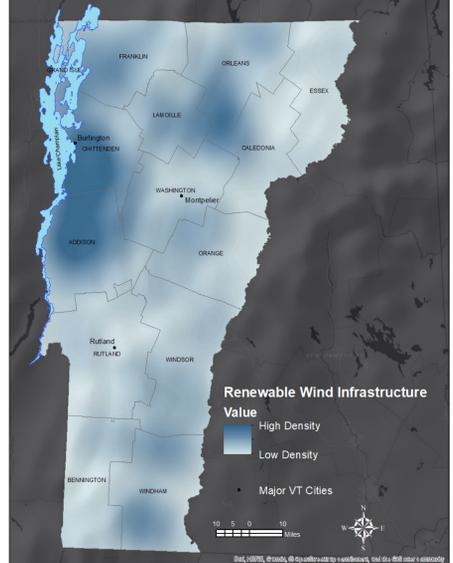
The highest mean suitability score came from Bennington, Vermont (score = 3.47, standard deviation = 0.10). The contributing sub-maps reveal that Bennington is both the least expensive as well as the most densely covered by wilderness preserve area. The coloration of the final index shows that the darkest shades of green represent scores higher than a three on the suitability analysis. Although Bennington is ranked #1, Rutland, Windsor, and Addison County all scored above 3.0 as well, and therefore, could be considered highly suitable.

County	Mean	STD
BENNINGTON	3.47	0.10
RUTLAND	3.29	0.12
WINDSOR	3.22	0.14
ADDISON	3.06	0.38
WINDHAM	2.89	0.19
CHITTENDEN	2.75	0.46
WASHINGTON	2.58	0.19
CALEDONIA	2.57	0.18
LAMOILLE	2.43	0.14
ESSEX	2.35	0.00
ORLEANS	2.18	0.18
ORANGE	1.94	0.15
FRANKLIN	1.31	0.18
GRAND ISLE	1.27	0.15

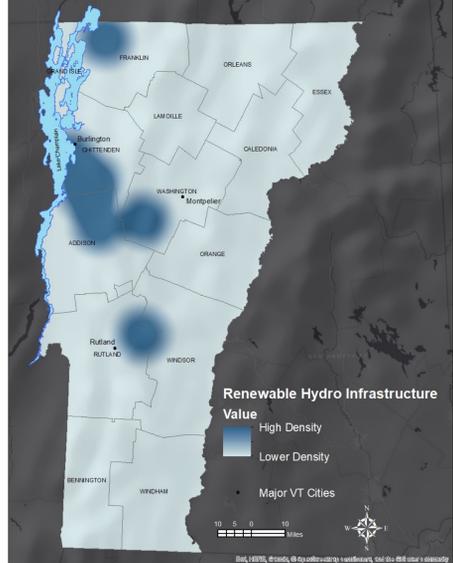
Solar



Wind



Hydroelectric



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Conclusion

The final suitability analysis concluded that Bennington, VT has the highest quality sustainable living. The county has the highest percentage of wilderness preserve area, the least expensive property, and moderate dedication to renewable energy infrastructure. These results, should be publicized and marketed by Bennington as well as by Rutland, Windsor, and Addison Counties to further promote sustainable and quality development. Additionally, this analysis can be utilized by homeowners, realtors, moving companies, and moving families. Although this analysis portrays varied ideals for Vermonters, future works could enhance this suitability index with the addition of education quality, population, and job availability.

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