

Micro-filling the Suburbs:

A Preliminary Examination of Using Micro Cottages as a Suburban Public Housing Strategy



BACKGROUND

Over the past decade, the United States has experienced a growing housing crisis. In Massachusetts, the crisis is particularly acute. The state has the third most expensive housing markets in the country. To afford a one-bedroom apartment in the state, one would need to either an hourly wage of \$27.41 or would need to work 91 hours per week at the state minimum wage. Just over one million workers – almost a third of the state’s workers – make under this renter’s wage. We are in dire need of creative interventions.

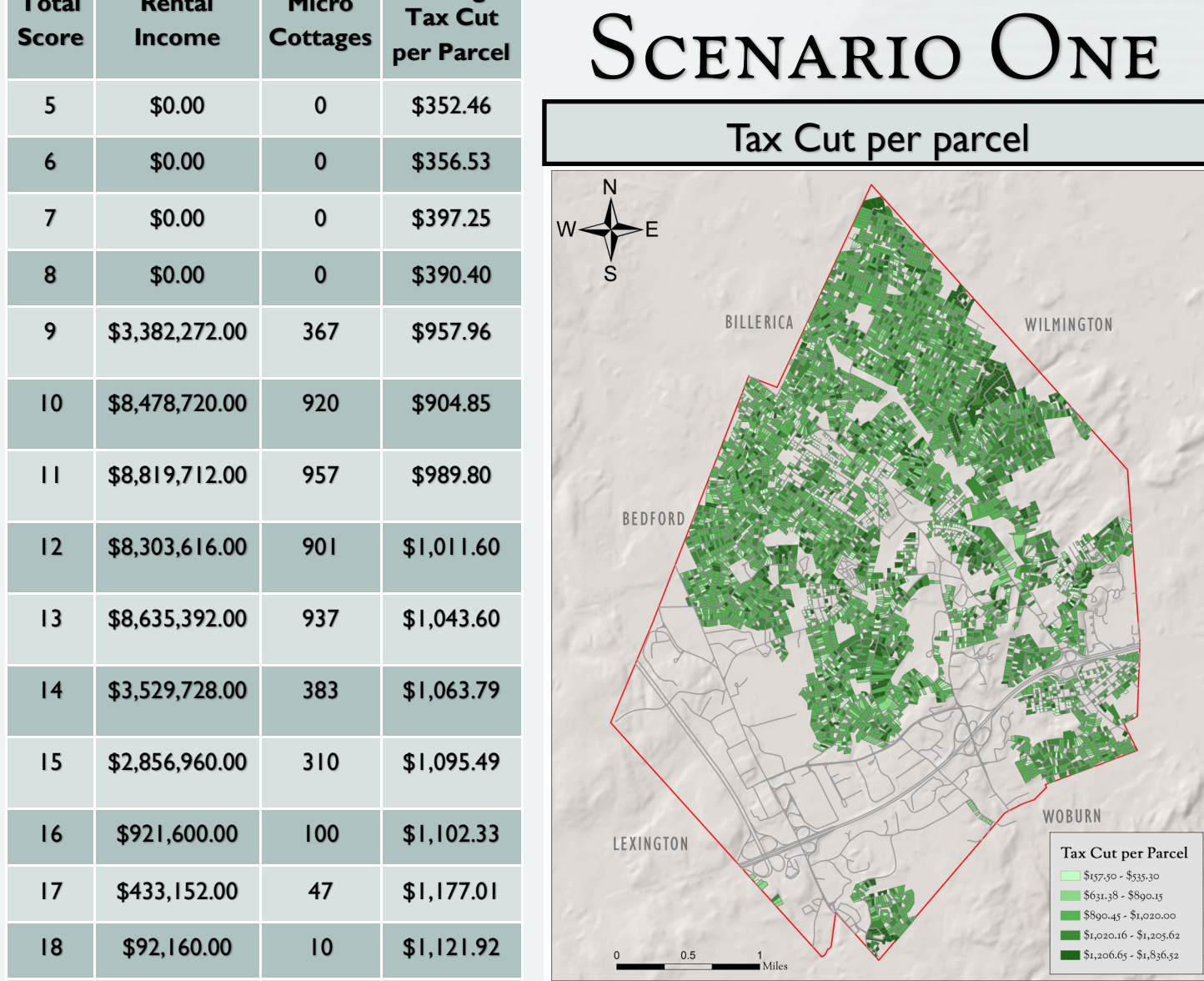
In this study, I examine the suitability of single family parcels for micro-infill—adding accessory units on existing lots— as an affordable public housing strategy for Burlington, MA by increasing the rental housing stock without altering the design of the town. I then calculate a Henry George inspired change to property taxes by deducting the relative value of the micro cottage to the original owner of the single-family parcel’s annual property tax burden as well as lowering the town’s property tax rate from \$10.48 to \$9.48 per thousand. Finally, I then calculate the potential monthly rental revenue to the town of the micro cottage and determine if annual rental income offsets the proposed tax change.

RESEARCH QUESTIONS

How much public housing can be added to existing single family lots in Burlington, MA through a strategy of micro-infill?

Can the town increase overall revenue by lowering property taxes and offering a property tax credit to the owners of single family parcels to the assessed value in exchange for the town managing the rental of the micro cottages and receiving payment for rent, priced at 30% of the median region income, \$769

Tax Cut per Parcel			
Total Score	Rental Income	Micro Cottages	Average Tax Cut per Parcel
5	\$0.00	0	\$352.46
6	\$0.00	0	\$356.53
7	\$0.00	0	\$397.25
8	\$0.00	0	\$390.40
9	\$3,382,272.00	367	\$957.96
10	\$8,478,720.00	920	\$904.85
11	\$8,819,712.00	957	\$989.80
12	\$8,303,616.00	901	\$1,011.60
13	\$8,635,392.00	937	\$1,043.60
14	\$3,529,728.00	383	\$1,063.79
15	\$2,856,960.00	310	\$1,095.49
16	\$921,600.00	100	\$1,102.33
17	\$433,152.00	47	\$1,177.01
18	\$92,160.00	10	\$1,121.92
19	\$46,080.00	5	\$1,312.44
20	\$18,432.00	2	\$1,138.35



Out of 5314 potentially suitable parcels, this analysis found 4939 parcels were suitable for micro-infill. This has the potential of adding between 4939 and 6895 housing units to the town’s housing stock. It will also drastically increase the public housing supply in the town, which at the moment is less than 500 units. At the same time, it lowers the tax burden for existing home owners. Both scenarios suggest that this strategy for public housing more than offsets the loss of property tax revenue - annual rental revenue is between 7 and 10 times the decrease in tax revenue. Though some of this revenue inevitably will be used for maintenance for the housing, there should be ample revenue left to invest in town infrastructure or other projects and services.

LIMITATIONS: Elevation and other environmental factors were not included in suitability calculations. Available Land Rating only measured total available land and did not determine if the area is contiguous. Land Cover percentages were calculated with a cell size of 1; areas per parcel may not be exact. Landcover Rating was manually determined. The property tax calculations did not include any existing credits or abatements

DATA
Land cover, parcel data, and hillshade from MassGIS
Coordinate System:
NAD 1983 2011 State Plane Massachusetts
Projection: Lambert Conformal Conic
Linear Unit: US Feet

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METHODS

MICRO LOT AREA RUBRIC:
Less than 5,000sq ft = 700(house) & 500 (yard)
5,000sqft - 9,999sqft = 900(house) & 500 (yard)
More than 10,000sqft = 1100(house)& 500 (yard)

PRIMARY DWELLING RATING:
Zoning bylaws allow accessory units on parcels with primary buildings over 1800sqft. Parcels over 1800sqft were scored 5; under were scored 1

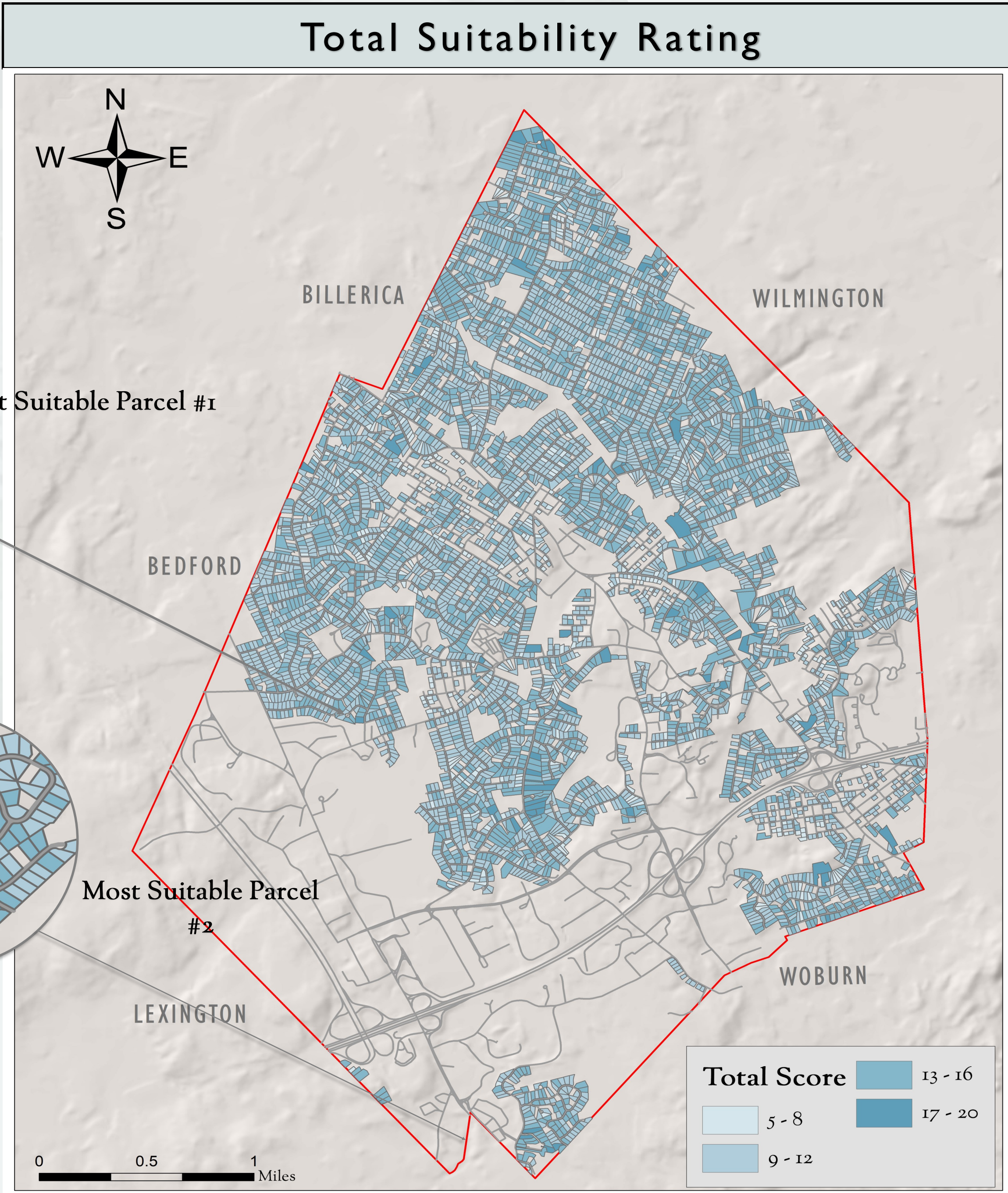
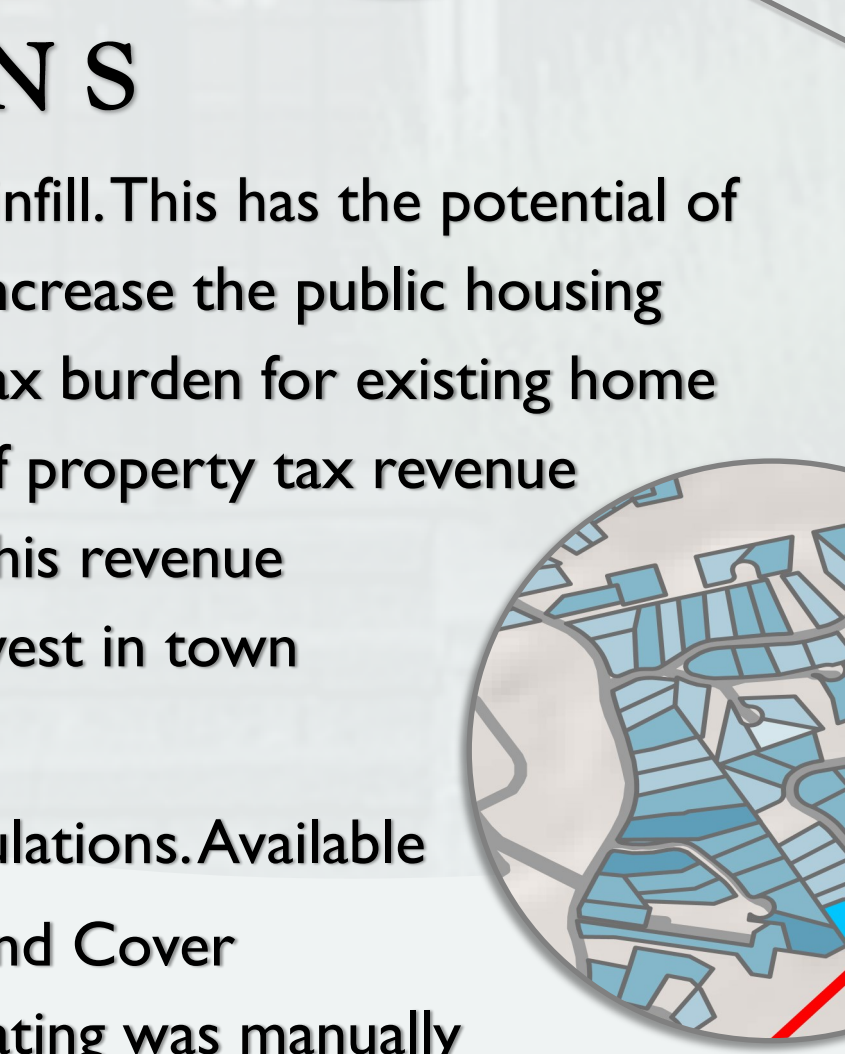
LOT SIZE RATING
10,000sqft—19,999sqft = 1 30,000sqft—39,999sqft = 3
20,000sqft—29,999sqft = 2 40,000sqft—49,999sqft = 4

LAND COVER RATING:
Landcover rating determined by tabulating the area of the Landcover Recoded area in each parcel. I rated parcels by percentages of each recoded land cover type. Parcels over 50% most suitable received a 5 while parcels more than 50% unsuitable and less than 20% most suitable received a 1. A 3 was given to parcels between 20 and 40% of each land cover. Scores of 2 and 4 were used to create distinction between parcels in the middle range.

SUITABILITY RATING CRITERIA:
Greater than 50,000sqft = 5

DRIVEWAY SIZE RATING
0%—1.99% = 1
2%—2.99% = 2
3%—3.99% = 3
4%—5.99% = 4
Greater than 6% = 5

Number of Parcels per Score			
13	937	5	22
14	383	6	12
15	310	7	158
16	100	8	183
17	47	9	367
18	10	10	920
19	5	11	957
20	2	12	901



Land Cover Types

Recoded Land Cover Types

Most Suitable Less Suitable Unsuitable

Open Developed Land Deciduous Forest Scrub

Bare Land Coniferous Forest Wetlands

Grassland Water Impervious

POTENTIAL SUITABLE PARCEL SELECTION

Potential parcels were selected by the following criteria:
1) Real Estate Type— Single Residential Lots (coded as 1)
2) Lot size—Greater than 10,000 square feet
3) Available land area—Greater than 1,000 feet

Potential Suitable Parcels

Available land area determined by creating a 25 foot inner buffer for each parcel to conform with town zoning by laws, a 10 foot buffer round building cover on each lot. The sum of the areas of the parcel buffers with the areas of the wetland and water buffers within each parcel were subtracted from the lot total.

SCENARIO TWO

Micro Cottages per parcel

Tax Cut per Parcel

Scenario Two adds 1-3 micro cottages based off the total score AND total lot size. The tax rate is calculated at 9.48% per \$1000 of land value.

Total Units added = 6895
Adjusted Property Tax Revenue \$20,749,556.65
Median Tax Cut = \$1,003.34
Total Rental Income \$63,544,320.00

Total Score Micro Cottages per parcel

5-8 0
9-12 1
13-16 2
17-19 3
20 2

Tax Cut per Parcel

Total Score Rental Income Micro-Cottages Average Tax Cut per Parcel

5 \$0.00 0 \$352.46
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