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# Memo

**To:** Connecticut Green Bank Board of Directors  
**From:** Kerry O'Neil, Director of Residential Programs; Kim Stevenson, Associate Director of Multifamily Programs  
**CC:** Bryan Garcia, President and CEO; Bert Hunter, EVP and CIO; Mackey Dykes, VP and COO; Brian Farnen, General Counsel and CLO  
**Date:** December 12, 2014  
**Re:** Market Analysis of Residential Solar Deployment and Housing Characteristics of CT's Low Income Sector

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## Introduction

The purpose of this memo is to respond to the Connecticut Green Bank (Green Bank) Board of Director's August 2014 request for staff to detail solar deployment in Connecticut's low-income communities and discuss strategies to achieve greater adoption in this sector. This memo will address:

- The level of current residential solar deployment and market penetration in the low income segment
- Overview of customer segmentation market research for the solar customer
- Defining characteristics of Connecticut's low income housing market

## Approach to Analysis

Green Bank staff worked with Connecticut Center for Economic Analysis at UCONN, <http://ceea.uconn.edu>, to perform analysis on current solar deployment and the low income housing market. For solar deployment, *all* residential solar deployment to date was included (e.g. projects from the Connecticut Clean Energy Fund (CCEF), going back to 2004, were included). Analysis was done across the state at the census tract level, where census tracts were grouped by Area Median Income (AMI):

- 60% of median income or below
  - Chosen since 60% of AMI or lower correlates quite closely to 150% of the federal poverty rate or lower, a cutoff used by many low income advocates
  - Annual average household median income of less than \$45,826
- 60% - 80% of median income

- Chosen since 80% of AMI or lower is used as the cutoff for eligibility of programs such as CEEF’s Home Energy Solutions-Income Eligible program, the Cozy Home Loan, and others
- Annual average household median income of \$45,826 to \$61,102
- 80% of median income or higher
  - Since the focus of the analysis is on low income residents, Green Bank and UCONN decided to group all others into this 3<sup>rd</sup> category
  - Annual average household median income of \$61,102 or above

For the solar deployment analysis, the data was visualized in two ways at the census tract level: by number of projects and by kW installed. An additional visualization was done showing the concentration of residents at 150% poverty level for projects only.

### Residential Solar Deployment in the Low Income Sector

Residential solar is predominantly deployed in moderate and higher income communities in Connecticut, as expected. Higher relative penetration rates are also seen in communities with strong Solarize campaigns. The Green Bank is making some inroads into lower income communities, but there is significant room for improvement. For example, as the Table 1 shows, current penetration of kW installed per capita in:

- Census tracts at < 60% of area median income (AMI) is 1/10<sup>th</sup> that of tracts at >80% AMI
- Census tracts at 60% to 80% of AMI is 1/4<sup>th</sup> that of tracts at >80% AMI

**Table 1. Statewide Solar Deployment Summary by Income of Census Tract**

Income Level	# of Census Tracts	Population	# of Projects	Projects per Capita	kW Installed	kW Installed per Capita
<60% AMI	179	651,267	257	.00039	1,422	.00218
60-80% AMI	113	518,459	473	.00091	2,950	.00569
>80% AMI	532	2,395,353	6,756	.00282	48,284	.02016
Total	824	3,565,079	7,486	.00210	52,656	.01477

However, the data also confirms that concentrated and targeted marketing and outreach campaigns can lead to higher than average solar penetration in low income communities. To date, six Solarize campaigns have been run in distressed communities: Bridgeport, Enfield,

Montville, Torrington, West Haven and Windham. When looking at the kW per capita in these communities compared to the statewide averages in Table 1 there is:

- 27% higher penetration in <60% AMI census tracts
- 21% higher penetration in 80%-60% AMI census tracts
- Across all census tracts in these 6 communities, the penetration was at 95% of the statewide penetration rate, *almost* at parity

**The data clearly demonstrates that the challenge in front of us is significant – and we need to be strategic, patient, and diligent, and commit to investing the time and resources, if we hope to make a meaningful impact.**

Despite the low overall penetration rates for low income, we were surprised and pleased to see such a broad dispersion of projects deployed geographically as Figure 1 shows, including in lower income census tracts, despite the fact that lower income households are very hard to reach and to date the Green Bank has not done a lot to target these households, except for a handful of Solarize campaigns in distressed communities. This speaks to the broad appeal of solar across income spectrums – especially as a tool to reduce/control energy costs.

Figure 2 shows the same project data but with census tracts coded at the % of the federal poverty level, again demonstrating some coverage of lower income communities and the potential appeal of solar for lower income populations. This map shows us in darker colors where low-income residents are concentrated – a better tool for us when thinking about targeting outreach.

Overall, 83% of census tracts have done at least 1 solar project and 70% have done at least 3 projects (see Table 2)

**Table 2. Project Coverage in Census Tract Groupings**

	Percentage of Coverage, by Num of Projects, of CT's Census Tracts			
	Entire State			
	Total <sup>^</sup>	>80%	80%-60%	60% (and below)*
Total num of census tracts in CT:	824	532	113	179
Num of census tracts with at least one project:	693	508	95	90
Percent of total:	84%	95%	84%	50%
Num of census tracts with at least three projects:	587	488	65	34
Percent of total:	71%	92%	58%	19%

\*60% of median income is roughly equivalent to 150% of poverty level.

<sup>^</sup>In the maps there are 824 census tracts, which excludes 9 'special tracts' such as Yale campus, UConn, etc.

To date the Green Bank and its predecessor organization has invested \$103.5 million in residential solar incentives. Solar installed in low income census tracts represents about 8% of the total installed to date, for an estimated investment of \$8.6 million in solar incentives in low income tracts (see Table 3). Additionally, 2 C-PACE affordable multifamily solar projects have been financed for \$400,000.

**Table 3. Level of Solar Investment (2004-2014)**

Income Level	% of kW Installed	Total Incentive Amount	Total System Cost
<80% AMI	8.3%	\$ 8,589,306	\$ 26,986,779
>80% AMI	91.7%	\$ 94,859,571	\$ 298,039,719
Total	108%	\$ 103,448,877	\$ 325,026,498

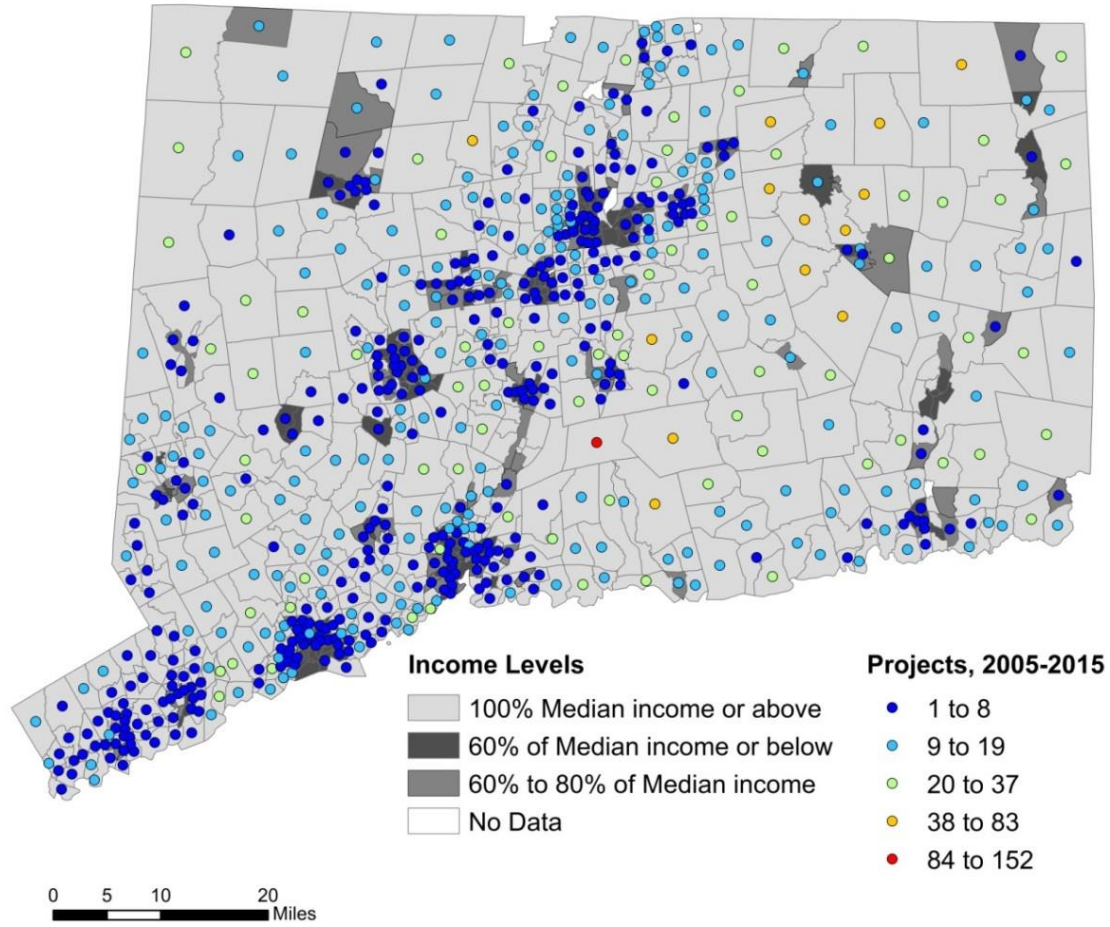
*Estimate, based on incentives through 12/15/2014 and the pro rata share of total kW Installed in low income census tracts*

See Appendix 1 for the UCONN team’s memo on their insights on the solar deployment analysis, including a detailed table of data in Appendix C of their mem. Some additional maps for our three largest cities and their surrounding regions is also provided.

**Figure 1**

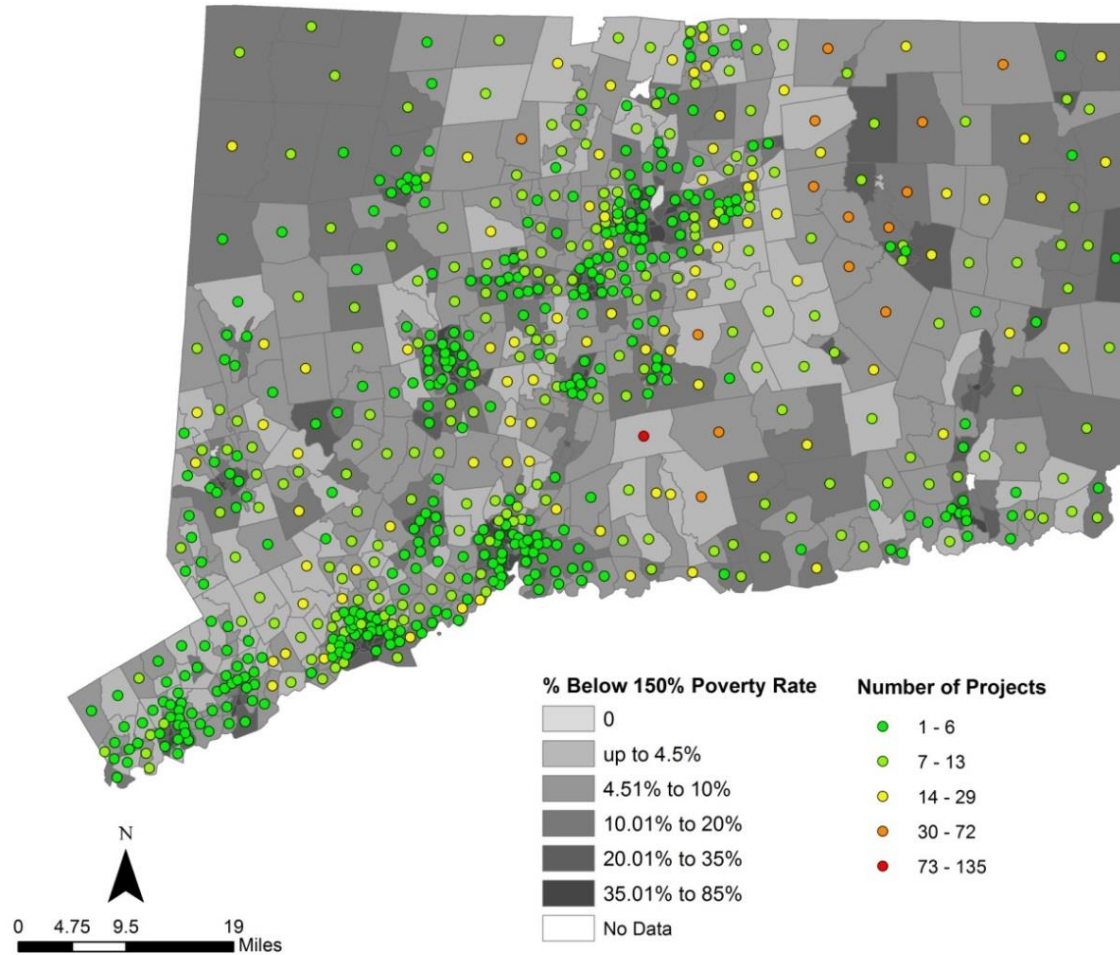


**Income Levels and Number of Projects, 2005-2015**



**Figure 2**

Share of Pop. Below 150% Poverty Level and Number of Projects, RPV Programs



## Overview of Solar Customer Segmentation Research

Green Bank staff worked with our agency, Match Drive, to do a Nielsen customer market segmentation analysis of the current solar customer in CT. This segmentation analysis has revealed that going solar resonates with a wide range of income groups and customer profiles, including a customer segment unique to CT that skews older and lower in income. The identification of this specific customer segment is encouraging, as it will support targeted messaging and outreach to a subset of the low income market.

Our current customer base can be broken into 2 primary segments:

- **“Solar Homes”** – the mainstream solar customer in CT - affluent married couples, likely to have children in the home.
- **“Prudent Yankees”** – segment unique to CT, very different from Solar Homes – a smaller segment, likely not have a college degree, and older including retirees.

Nielsen identified an additional segment based on their national profile of solar customers. This profile represents customers that are going solar elsewhere, but don’t seem to be going solar here in CT and is a new opportunity for state:

- **“Solar Prospects”** – represents an opportunity to test messaging & targeting. The “Solar Prospects” are middle-aged with an average income, likely to not have children in the home. They are also a higher percent Hispanic than the national average.

Table 4 summarizes the key characteristics of these three customer segments.

**Table 4. Summary of Solar Customer Segments**

Segment	% of Current Customers	Avg. Household Income	Avg. Age	College Education	% w/ Children in Home	% Employed Full Time	Potential CT Households
Solar Homes	70%	\$148K	44	52% college+	54%	66%	483K
Prudent Yankees	10%	\$48K	52	16% college+	48%	38%	83K
Solar Prospects	<10%	\$79K	50	32% college+	27%	49%	250K

Visualizations of where customers in each segment live are provided in Appendix 2.

## Defining Characteristics of CT’s Low-Income Housing Market

Low income housing, defined as units with residents at 80% of area median income or below, represents about 507,000 units or 34% of CT’s total housing units (see the Low Income Housing Stock Summary table in Appendix 3 for details). Properties with low income residents run the gamut from single family owner occupied homes, to small and large investor owned buildings. Our visualization analysis (Figure 3) shows a clear correlation between lower incomes and high concentrations of renters living in older buildings – predominantly in the core cities as well and scattered across the northeastern and northwestern quiet corners of the State.<sup>1</sup>

It is interesting to note the older housing is along the coast and river valleys, reflecting CT’s industrial history. Older houses in the northwest likely relate to historic mansions for wealthy vacationers from Boston and New York City.

Connecticut’s low income housing market generally falls into the following categories:

- Owner occupied housing (1 to 4 units)
- Naturally occurring affordable rental housing (investor owned small and large properties)
- State funded/subsidized affordable housing (public and privately owned)
- Federally funded/subsidized (HUD) properties

As Table 5 shows, the majority (nearly 70%) of CT’s low income residents live in owner-occupied single family homes and small, investor owned multifamily rentals (2 to 19 units). Over half live in single family homes and 2-4 unit rentals. Most of these units fall within the “naturally occurring affordable” category, meaning they don’t receive public subsidies. Collectively, this is the hardest of the hard to reach markets.

**Table 5. Concentration of Housing Types for Low Income Households**

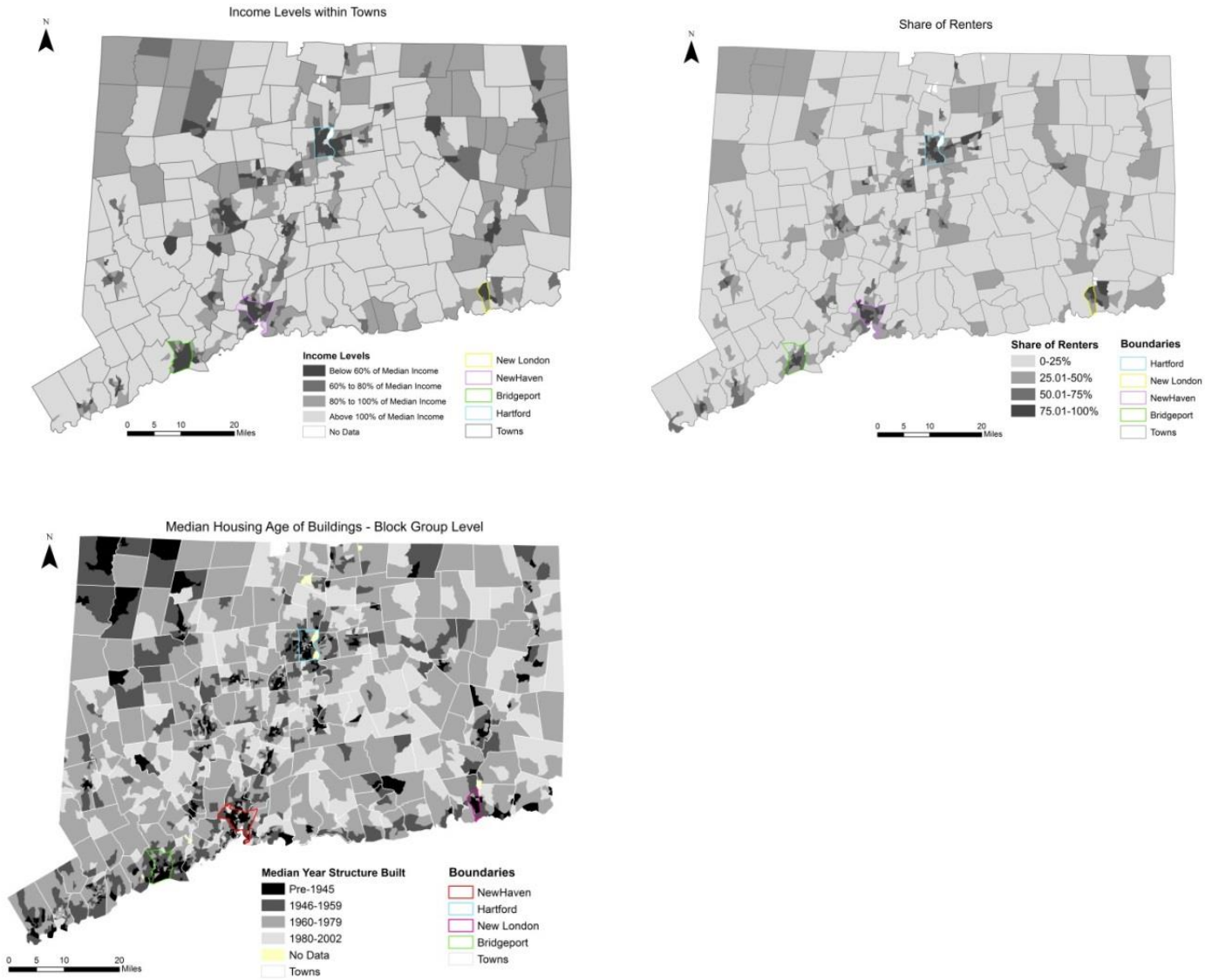
Type of Housing	# of Low Income Households	% of Low Income Households
Single Family Owner-Occupied (SF OO) Homes	151,493	30%
2-4 Unit Rentals	130,684	26%
5-19 Unit Rentals	67,092	13%
<i>Total SF OO + 2-19 Unit Rentals</i>	<i>349,269</i>	<i>69%</i>

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<sup>1</sup> Partnership for Strong Communities also has some excellent state and community housing profiles: <http://pschousing.org/news/2013-municipal-housing-data-profiles-now-available>



**Figure 3. Income Level, Share of Renters, Median Housing Age**



Many of these small properties are concentrated in the urban core, but are also disbursed throughout suburban and rural communities (particularly elderly, owner occupied single family homes). They are characterized by significant **deferred maintenance needs** and **health and safety issues** (leaks, mold, lead, asbestos, etc.). Many investor-owned properties are operating on thin margins or at a loss; consequently owners have **limited capacity to take on additional debt** or other financial obligations. Further, many tenants in this sector pay their own utilities and have high utility cost burdens, often **making hard choices** between food, medicine and heat.<sup>2</sup> This utility payment structure also creates a disincentive for owners to invest in energy upgrades – the classic **split incentive issue**.

In general, larger properties (50 units and above) as well as State and HUD financed/subsidized properties are in better condition than the smaller, privately owned, non-subsidized properties<sup>3</sup>. This is due to stronger property management and maintenance budgets enabled by economies of scale, as well as building and other code requirements mandated by DOH, CHFA and HUD. This group typically has management and ownership structures better positioned to take advantage of CGB programs and are, therefore, a more immediate opportunity for solar and other energy upgrades. Further, many properties in this sector are master metered (meaning owners pay utilities), particularly for heat and hot water. For master metered properties, owners have a strong incentive to make energy upgrades that will result in utility and maintenance cost savings and solar can be a particularly attractive investment option.

However, across the board, housing in CT suffers from years of **deferred maintenance** as well as lack of public investment under prior administrations, now changing under Governor Malloy. Many owners in this market are **less sophisticated and much more stretched** (than the commercial and industrial market). Consequently, developing projects to a point where they are ready for financing is a huge challenge and requires significant technical support to owners. This sector will require substantial public investment and grant funding to build out the necessary supporting infrastructure.

Furthermore, given the brutal utility cost burden on low-income residents, it is also critical that Green Bank-funded programs lower total energy/operating costs and tenant utility costs with high levels of confidence (e.g. guarantees). While the opportunity to achieve deeper penetration of solar deployment in the low income sector is most certainly important, care must be taken to develop solutions that support the holistic improvement of the building stock. **Comprehensive financing solutions that address deferred maintenance, health and safety, and energy improvements, including solar, all at the same time will be most beneficial.**

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<sup>2</sup> The average low income household in CT owes about \$2360 more in annual energy bills than it can afford to pay – see <http://www.operationfuel.org/wp-content/uploads/Connecticut-2012-HEAG-Final.pdf>.

<sup>3</sup> Just over 50% of CT's low-income multifamily housing is naturally occurring affordable; just under 50% is subsidized affordable – CGB analysis.

See Appendix 3 for detailed maps highlighting the age of the housing stock, income levels within towns, and share of rentals.

## Appendix 1

Memo from UCONN team to Green Bank staff and additional solar deployment maps.

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### SEM Nia LLC MEMORANDUM

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**TO:** Mackey Dykes  
**FROM:** Bill Waite & Marcello Graziano  
**SUBJECT:** Mapping project thoughts and recommendations  
**DATE:** October 31, 2014  
**CC:** Lucy Charpentier, Kim Stevenson, Kerry E. O'Neill

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The purpose of this memo is twofold: (1) summarize the work done to-date on the “CT Green Bank Mapping Project”; and (2) present additional information and recommendations regarding subsequent analysis.

#### Summary of Work Completed:

Thus far, Semnia has produced a series of maps illustrating various demographic characteristics of Connecticut and the adoption of solar power generation capabilities. Additionally, Semnia has provided analysis and commentary regarding the aforementioned maps. The following list is not comprehensive, but rather a summary of what we believe are the key take-aways from Semnia’s analysis.

- 1) Adoption rates are quite high across the state – see Appendix A – but do drop off markedly as income levels decline (particularly below 60% of median income, which is approximately equivalent to 150% of the poverty level).
  - a. The decrease in penetration rates is to be expected (due simply to economic and financial constraints; aka, financial barriers-to-adoption).
  - b. The map in Appendix B provides another way in which data can be visualized/analyzed to identify areas that warrant special attention. The key to effectively utilizing identification strategies such as the one shown is determining where to set the different ‘break-points’ (such as 60% of median income, etc.). With even three variables in the mix, there are simply too many combinations and permutations to analyze each possible scenario.
- 2) The adoption of solar does tend to vary with the age of housing units across the state. As is the case in point 1, above, this is very much understandable. However, this finding does raise questions regarding causality; specifically: Why do individuals who live in older houses tend to not adopt as readily? There are several possible answers to this question, including structural concerns, the preferences of individuals who choose to live in older homes, etc. One potential explanation is that zoning/building regulations make installing solar systems difficult; that is, there is a regulatory barrier-to-entry. If this is the case, additional analysis seems warranted regarding how CT might mitigate this issue,

as well as the trade-offs between adoption of solar technologies and preservation of historical aesthetics.

- 3) While the issue was not analyzed in depth, it seems that CT Green Bank's outreach initiatives have been successful, with regard to higher adoption rates in areas where there was a targeted program as compared to those in which no such effort existed. The ability of CT Green Bank to effectively impact adoption is certainly positive, and suggests that the expansion of support for its programs would materially impact the adoption of solar across the state.

#### Additional Information:

Copies of the data tables not previously made available will accompany this memo in electronic form. The accompanying tables provide additional information regarding the breakdown of multifamily and owner- vs. renter-occupied residential properties. Select summary statistics regarding this data is presented in Appendix C.

#### Recommendations:

The following are recommendations for future action on the part of CT Green Bank (and, indirectly, municipalities and governing agencies across the state). As is the case with the key take-aways on Page 1 of this memo, the following is not an exhaustive list. Rather, these are the topics on which Semnia believes CT Green Bank should focus some of its efforts (above and beyond continuing to run the successful programs/initiatives it already has underway).

- 1) Regarding data: Support ongoing efforts to aggregate and integrate housing parcels data state-wide, and encourage Councils of Governments (COGs) that have not already begun such initiatives to do so. In CT, this data is kept at the town-level (within the Assessor's Office). There are some groups that are aggregating regional data – such as the South Central Regional Council of Governments, RiverCOG, etc. – but, in general, the data is still inconsistent, not available, etc. The issue with using Census data is that while it good/appropriate for studies/comparison at the aggregate level (comparisons between states, for instance), the information really isn't all that great for micro-analysis. Having integrated housing parcels data would allow for a much more rigorous, accurate analysis, and facilitate efforts to create targeted programs.
- 2) More in-depth study and analysis of:
  - a. Split incentives (to target renters);<sup>4</sup>
  - b. Regulatory barriers to adoption regarding multi-tenant properties, specifically metering/sub-metering;<sup>5</sup>
  - c. Consumer behavior.<sup>6</sup>

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<sup>4</sup> See: Gillingham, Kenneth; Harding, Matthew; Rapson, David. Split Incentives in Residential Energy Consumption, *The Energy Journal*; 2012; 33, 2.

<sup>5</sup> See: 2) Sara C. Bronin, Building-Related Renewable Energy and the Case of 360 State Street, *Vanderbilt Law Review*, Vol. 65, No. 6, 2012.

<sup>6</sup> See: <http://www.washingtonpost.com/blogs/wonkblog/wp/2014/10/23/study-solar-energy-isnt-just-for-rich-liberals-any-more/>

## Appendix A

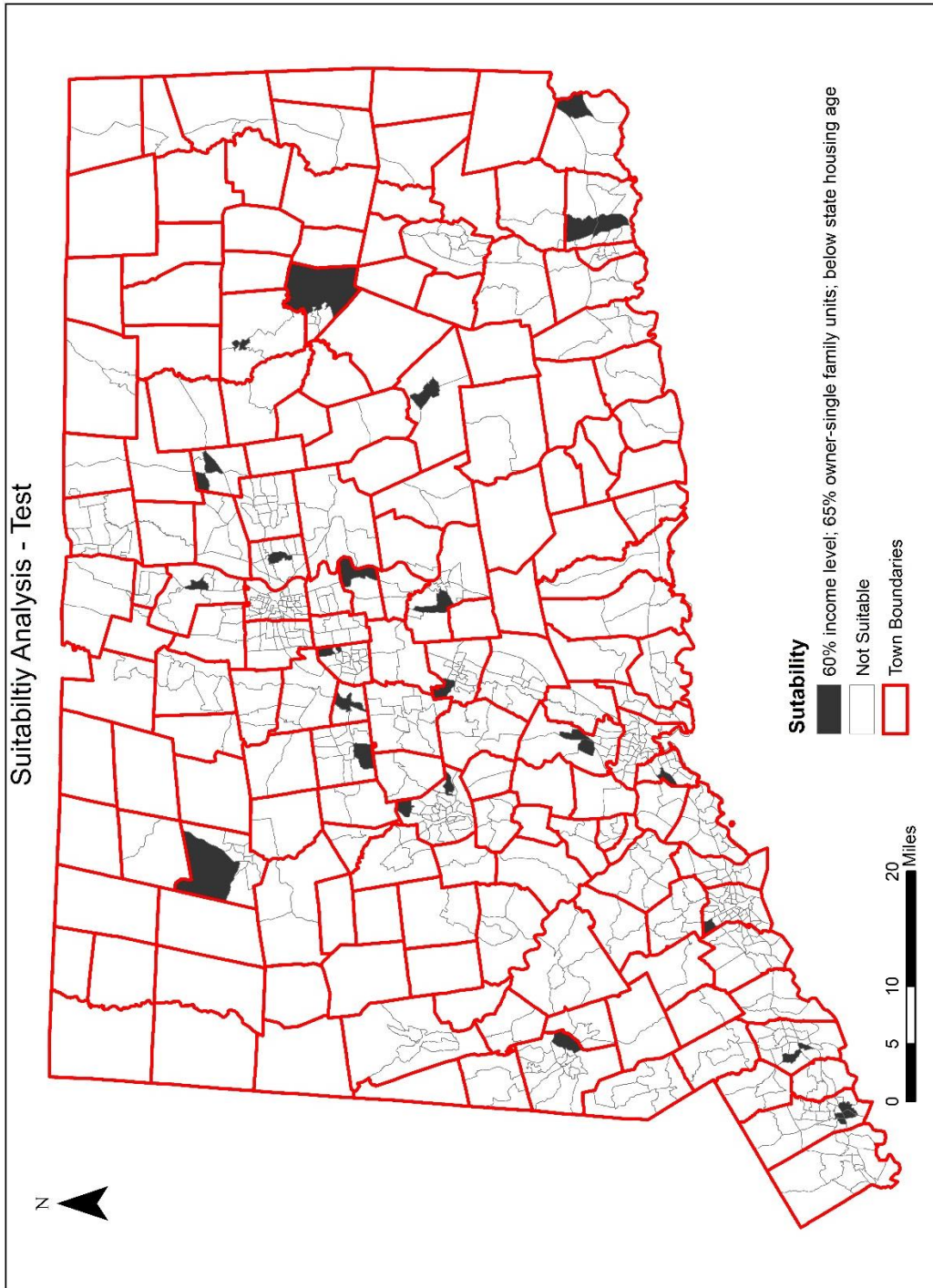
**Percentage of Coverage, by Num of Projects, of CT's Census Tracts**

	Entire State			
	<u>Total</u> <sup>^</sup>	<u>&gt;80%</u>	<u>80%-60%</u>	<u>60% (and below)</u> <sup>*</sup>
Total num of census tracts in CT:	824	532	113	179
Num of census tracts with at least one project:	693	508	95	90
Percent of total:	84%	95%	84%	50%
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Percent of total:	71%	92%	58%	19%

\*60% of median income is roughly equivalent to 150% of poverty level.

<sup>^</sup>In the maps there are 824 census tracts, which excludes 9 'special tracts' such as Yale campus, UConn, etc.

Appendix B



# Appendix C

Housing Characteristics Data, Segmented by Percent of Median Income											
Entire State						Solarize Cities/Towns (Bridgeport, Enfield, Montville, Torrington, West Haven, Windham)					
median household annual income** =	\$76,377	>\$61,102	<\$61,102 and >\$45,826	<\$45,826	Totals	>80% Median	>\$61,102	<\$61,102 and >\$45,826	80%-60% Median	<60% Median	Totals
	>80% Median	80%-60% Median	<60% Median			Number	Ratio of %	Number	Ratio of %	Number	Ratio of %
Number of Tracts	532	113	179	824	46	8.65%	1.16	21	18.58%	45	25.14%
Number of Projects	6,756	473	257	7,486	780	11.55%	1.08	116	24.52%	79	30.74%
Total Population	2,395,353	518,459	651,267	3,565,079	198,941	8.31%	0.92	106,140	20.47%	162,911	25.01%
Total Housing Units	978,118	220,657	286,613	1,485,388	79,761	8.15%	0.79	44,678	20.25%	76,391	26.65%
Total kW	48,284	2,950	1,422	52,656	5,354	11.09%	0.51	733	24.86%	451	31.72%
Total kWh	53,572,123	3,251,784	1,570,765	58,394,672	6,007,161	11.21%	1.12	804,634	24.74%	508,210	32.35%
Average Total % Owner Occupied^	81.9%	54.8%	30.6%		80.95%	0.9%	1.33	63.82%	1.16	34.77%	1.14
1 Unit	76.03%	43.43%	19.42%		76.24%	1.00	1.08	52.46%	1.21	20.97%	1.08
2 Units	1.45%	4.24%	5.07%		1.55%	1.07	0.92	3.92%	0.92	6.44%	1.27
3-4 Units	0.86%	1.75%	2.74%		0.88%	0.88	0.79	1.39%	0.79	2.89%	1.05
5-9 Units	1.22%	1.77%	1.08%		0.62%	0.51	0.97	1.71%	0.97	1.72%	1.59
10-19 Units	0.72%	1.33%	0.66%		0.41%	0.57	1.12	1.48%	1.12	0.90%	1.36
20-49 Units	0.50%	0.82%	0.59%		0.47%	0.93	0.58	0.48%	0.58	0.75%	1.26
50 of More Units	0.57%	0.75%	0.65%		0.21%	0.36	1.33	1.00%	1.33	0.97%	1.50
Average Total % Renter Occupied^	18.1%	45.2%	69.4%		19.0%	1.05	0.80	36.2%	0.80	65.2%	0.94
1 Unit	5.94%	7.32%	7.20%		6.46%	1.09	0.95	6.96%	0.95	8.64%	1.20
2 Units	2.73%	8.95%	11.22%		2.92%	1.07	0.88	7.89%	0.88	12.65%	1.13
3-4 Units	2.86%	10.74%	19.22%		3.60%	1.26	0.66	7.05%	0.66	17.98%	0.94
5-9 Units	1.81%	5.24%	10.02%		1.91%	1.06	0.63	3.32%	0.63	7.21%	0.72
10-19 Units	1.34%	3.66%	6.53%		1.45%	1.08	0.75	2.74%	0.75	6.08%	0.93
20-49 Units	1.34%	4.07%	6.14%		1.23%	0.92	0.81	3.29%	0.81	5.78%	0.94
50 of More Units	1.92%	5.04%	8.89%		1.20%	0.61	0.92	4.63%	0.92	6.80%	0.76
kWh per capita	0.02016	0.00569	0.00218	0.01477	0.02691	1.34	1.21	0.00691	1.21	0.00277	1.27
kWh per capita	22.365	6.272	2.412	16.380	30.196	1.35	1.21	7.581	1.21	3.120	1.29
Projects per House	0.00691	0.00214	0.00090	0.00504	0.00978	1.42	1.21	0.00260	1.21	0.00103	1.15
Projects per House Owned*	801,079	120,999	87,758	0.00504	64,569			28,514		26,558	
Projects per House Rented*	177,039	99,658	198,855		15,192			16,164		49,833	

**NOTES:**

^Total averages calculated independently of break-outs; rounding error means that the sum of the broken-out numbers is slightly lower than the total averages.

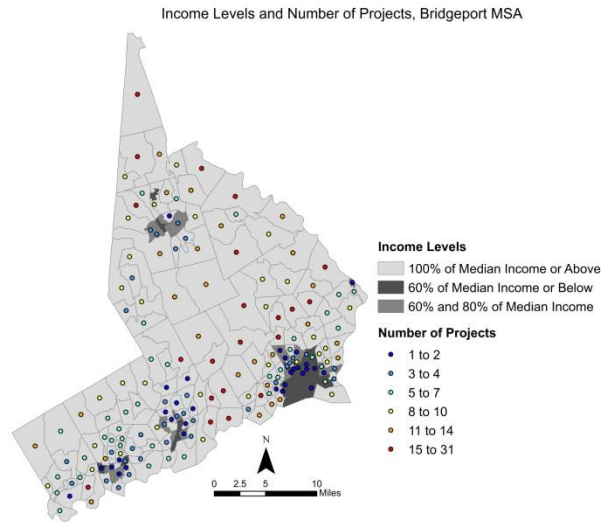
\*Estimate based on Average Percent of House Owned/Rented multiplied by Total Housing Units.

\*\*Median annual household income for the state is \$67,098, which is from the 2013 American Community Survey 1-Year Estimates; the median numbers used in this analysis are from the ACS 2008-2012 5-Year Average, with Data at Tract Level (the most recent figures available for every geography (tract and/or group level) in the state).

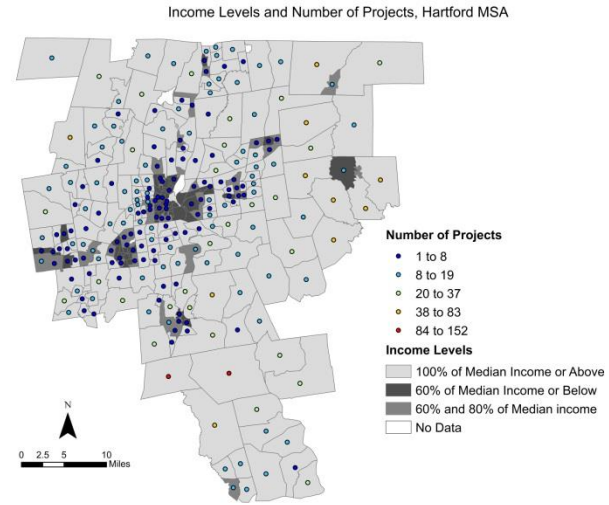


MSA Maps - Going down a level of detail in our 3 largest cities, this also shows that we have solar installs in many of our lower income census tracts

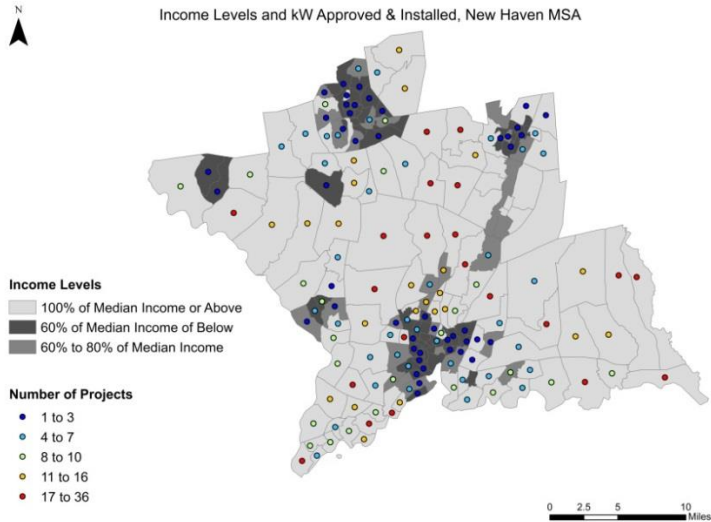
Bridgeport MSA



Hartford MSA



New Haven MSA (map mislabeled, it should read “Income Levels and Number of Projects, New Haven MSA”)



## Appendix 2 – Customer Segmentation Maps

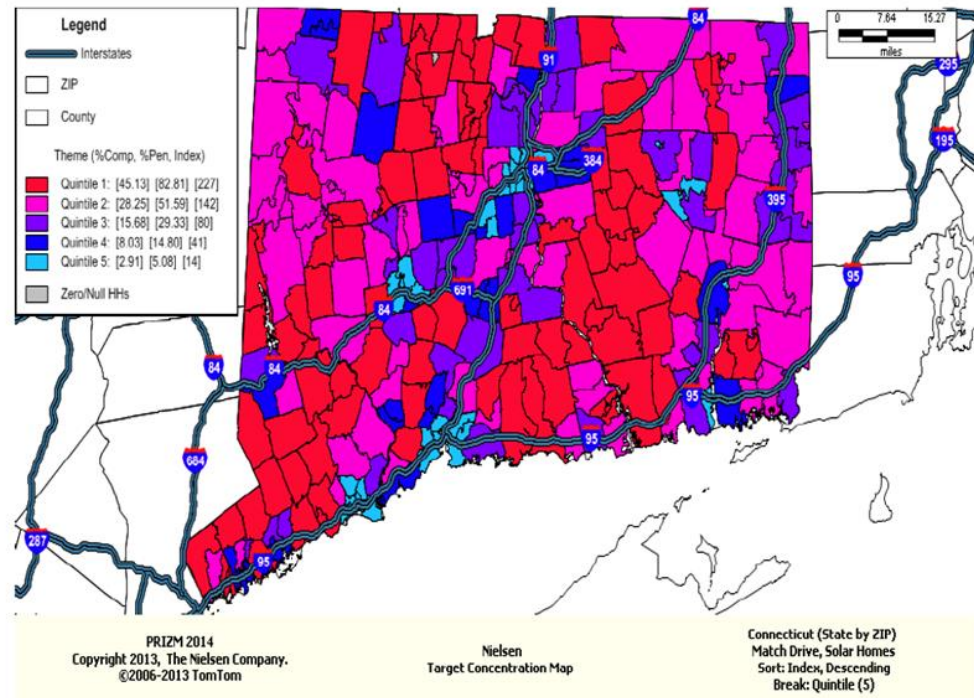
### Solar Homes - 482,972 households

The “Solar Homes” are affluent married couples, likely to have children in the home.

#### Top Indexing Towns in CT      Highest % Composition Towns in CT

1. Stamford
2. Easton
3. Weston
4. West Simsbury
5. New Canaan
6. Marlborough
7. Cos Cob
8. South  
Glastonbury
9. Wilton
10. West Granby

1. Westport
2. Fairfield
3. Cheshire
4. Ridgefield
5. New Canaan
6. Darien
7. Guilford
8. Durham
9. Wilton
10. Madison

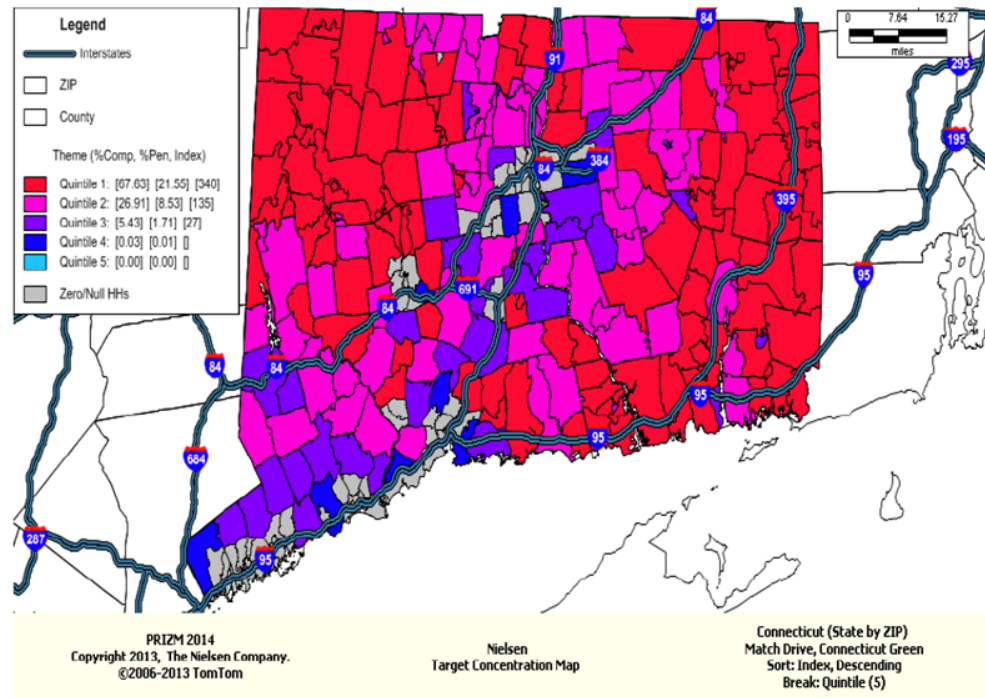


## Prudent Yankees - 82,857 households

The “Prudent Yankees” are lower income, older, and likely to not have a college degree.

### Top Indexing Towns Highest % in CT Composition Towns in CT

- |                  |                  |
|------------------|------------------|
| 1. Falls Village | 1. Southbury     |
| 2. Montville     | 2. Torrington    |
| 3. Dayville      | 3. North Haven   |
| 4. East Berlin   | 4. Mystic        |
| 5. Moosup        | 5. Winsted       |
| 6. Westbrook     | 6. South Windsor |
| 7. Uncasville    | 7. Old Saybrook  |
| 8. South Windham | 8. Guilford      |
| 9. Old Saybrook  | 9. Jewett City   |
| 10. Plymouth     | 10. Uncasville   |



## Solar Prospects – 250,904 households

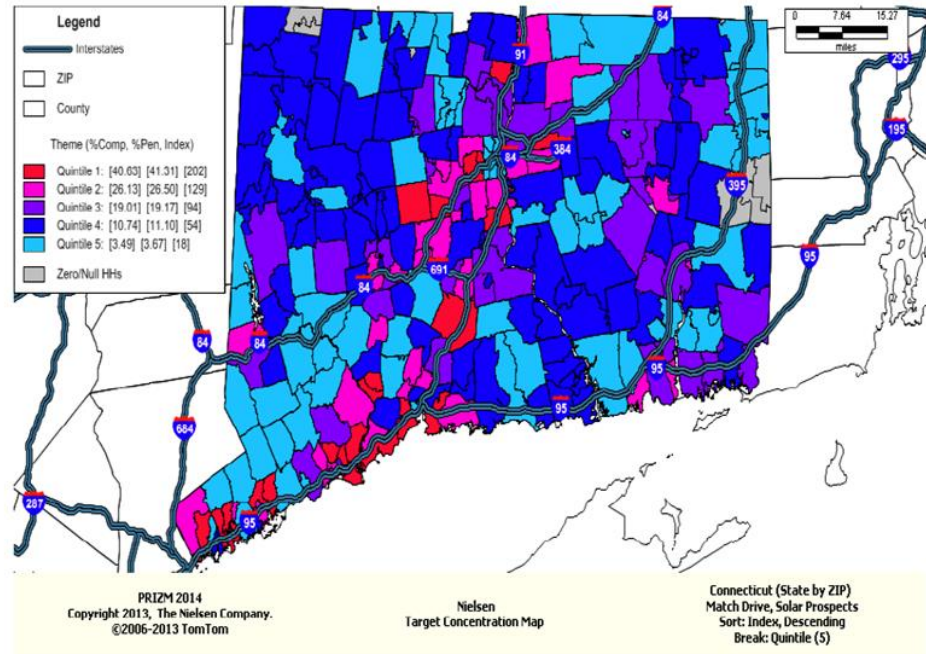
The “Solar Prospects” are middle-aged with an average income, likely to not have children in the home. They are also a higher percent Hispanic than the national average.

### Top Indexing CT Towns

1. Stamford (06906)
2. Milford (06460)
3. Stamford (06901)
4. Windsor Locks (06096)
5. Bridgeport (06606)
6. Norwalk (06851)
7. West Hartford (06107)
8. Greenwich (06830)
9. Hartford (06103)
10. East Haven (06512)

### Highest % Composition Towns in CT

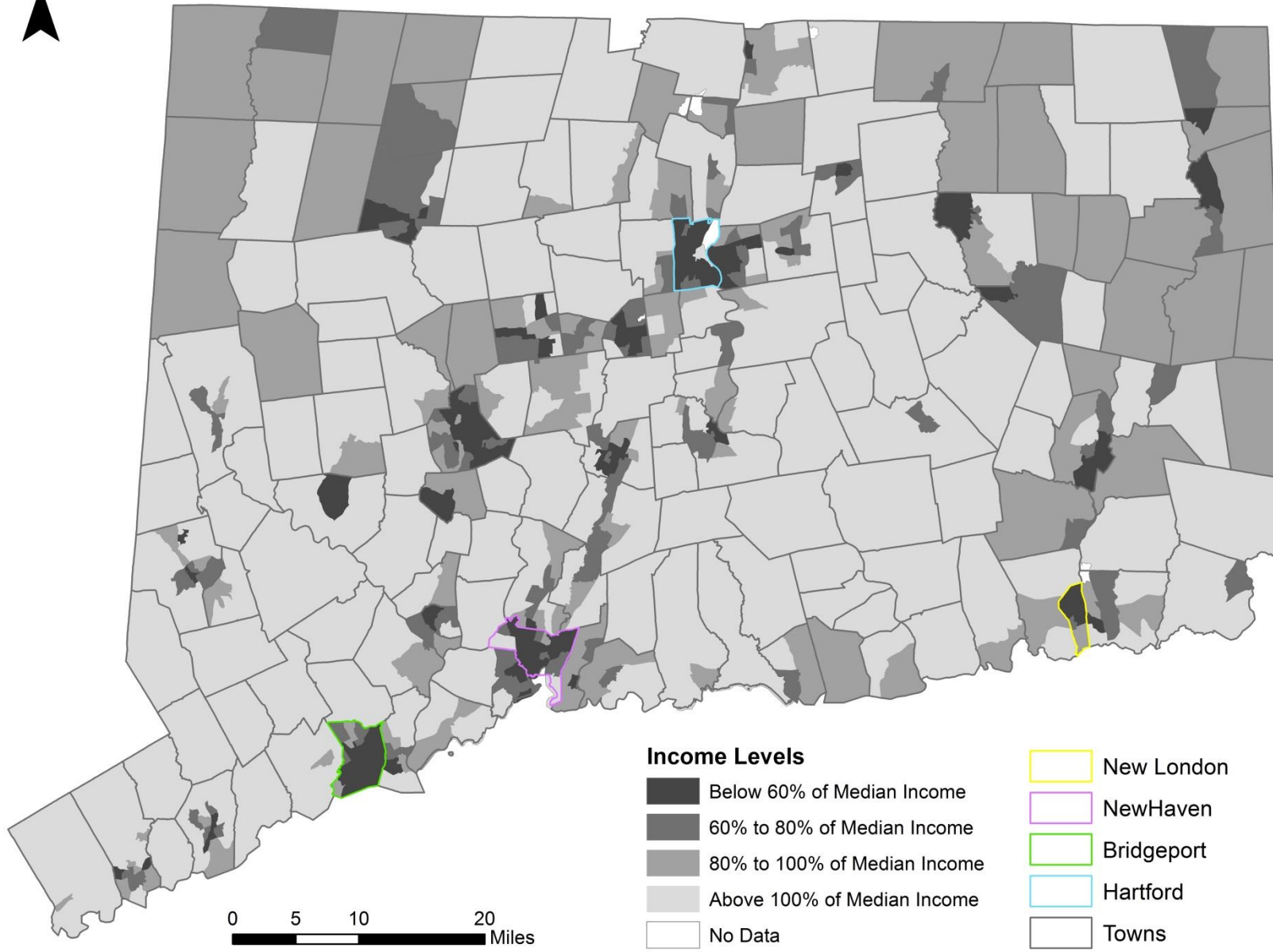
1. Milford (06460)
2. Bridgeport (0660)
3. Stamford (06902)
4. Bristol (06010)
5. West Haven (06516)
6. East Haven (0651)
7. Norwalk (06851)
8. Greenwich (0683)
9. Stratford (06614)
10. Manchester (06042)



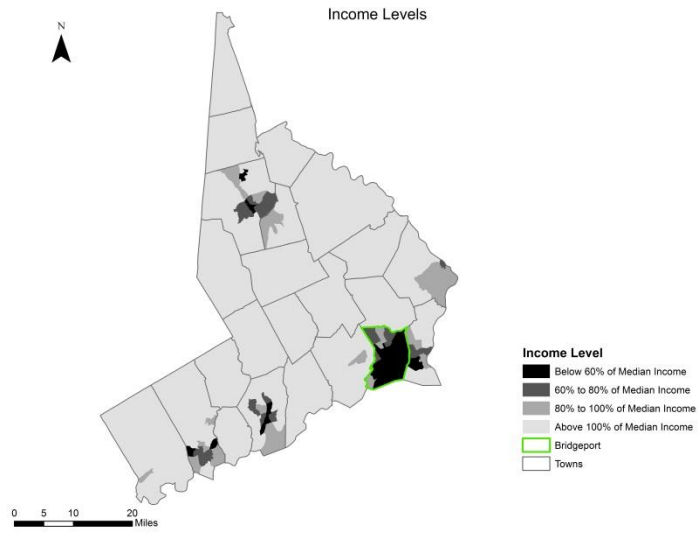
## Appendix 3 – Low Income Housing Market Analysis and Maps

<b>Low Income Housing Stock Summary - Look at &lt;80% Totals</b>						
	<u>&lt;60%</u>	<u>&lt;60% # HHs</u>	<u>80%-60%</u>	<u>80%-60% # HHs</u>	<u>&lt;80%</u>	<u>&lt;80% # HHs</u>
Total Population	18%	651,267	15%	518,459	33%	1,169,726
Total Housing Units	19%	286,613	15%	220,657	34%	507,270
<i>In this table, %'s represent % of state totals</i>						
	<u>&lt;60%</u>	<u>&lt;60% # HHs</u>	<u>80%-60%</u>	<u>80%-60% # HHs</u>	<u>&lt;80%</u>	<u>&lt;80% # HHs</u>
% OO	31%	87,758	55%	120,999	41%	208,758
Single Family	19%	55,660	43%	95,833	30%	151,493
2-4 Units	8%	22,384	6%	13,226	7%	35,610
5-19 Units	2%	4,996	3%	6,832	2%	11,828
20+ Units	1%	3,550	2%	3,477	1%	7,027
% Rental	69%	198,855	45%	99,658	59%	298,512
Single Family	7%	20,647	7%	16,149	7%	36,796
2-4 Units	30%	87,231	20%	43,453	26%	130,684
5-19 Units	17%	47,451	9%	19,641	13%	67,092
20+ Units	15%	43,080	9%	20,096	12%	63,176
<i>In this table, %'s represent % of category totals</i>						
<b>Top Housing Categories by Units</b>						
1	30%	Rental 2-4	43%	OO SF	30%	OO SF
2	19%	OO SF	20%	Rental 2-4	26%	Rental 2-4
3	17%	Rental 5-19	9%	Rental 20+	13%	Rental 5-19
4	15%	Rental 20+	9%	Rental 5-19	12%	Rental 20+
<i>In this table, %'s represent % of category totals</i>						
	<u>&lt;60%</u>	<u>&lt;60% # HHs</u>	<u>80%-60%</u>	<u>80%-60% # HHs</u>	<u>&lt;80%</u>	<u>&lt;80% # HHs</u>
# of OO SF + Rental 2-4 units:	50%	142,891	63%	139,286	56%	282,177
# of OO SF + Rental 2-20 units:	66%	190,343	72%	158,927	69%	349,269
<i>In this table, %'s represent % of category totals</i>						

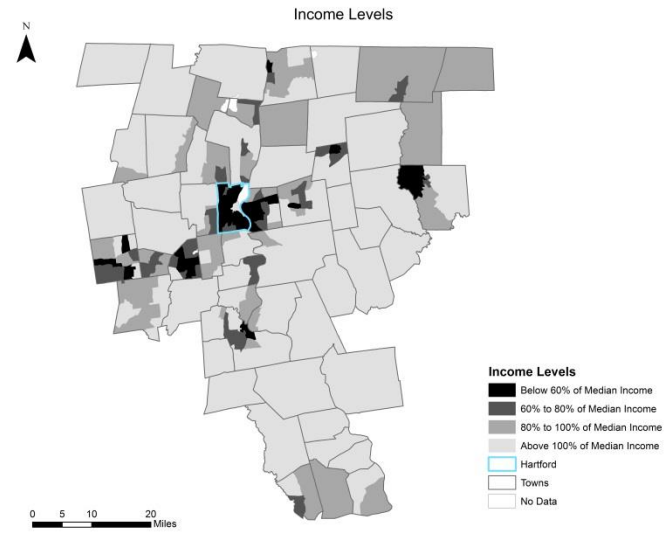
# Income Levels within Towns



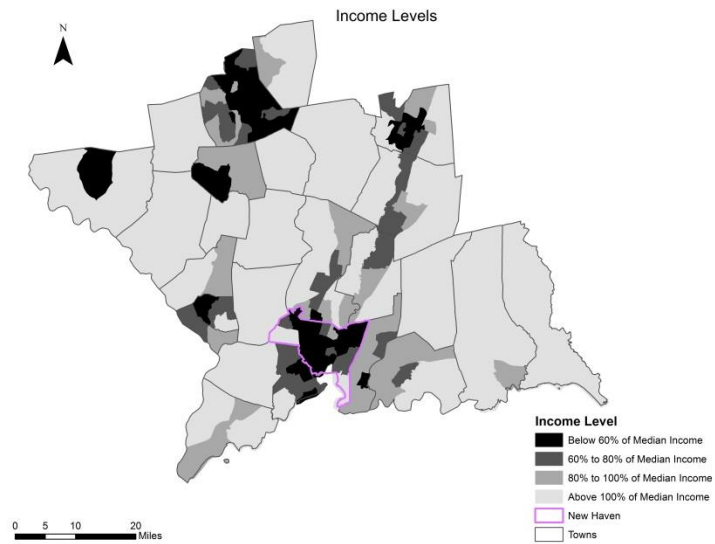
## Bridgeport MSA



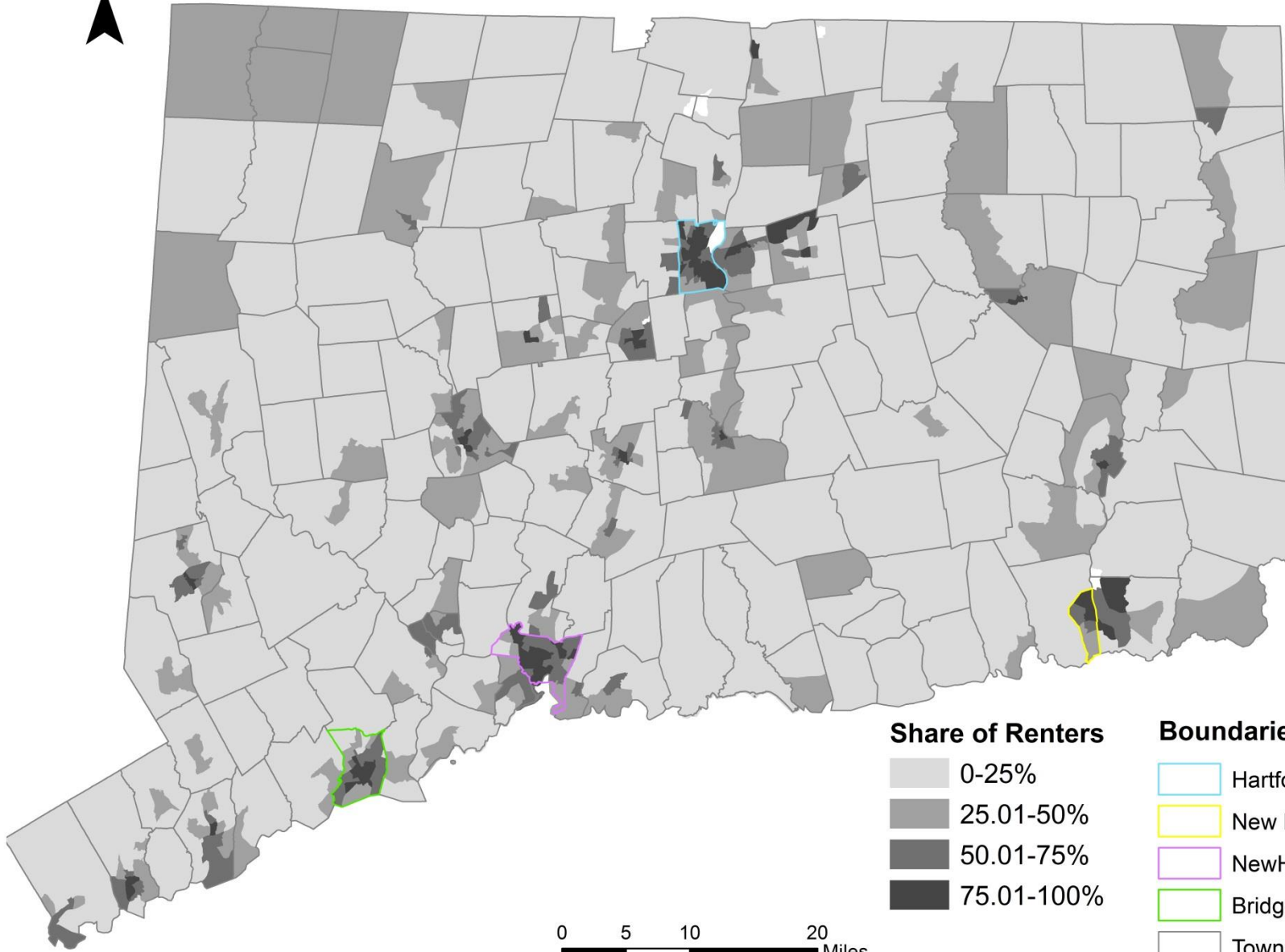
## Hartford MSA



## New Haven MSA



# Share of Renters



## Share of Renters

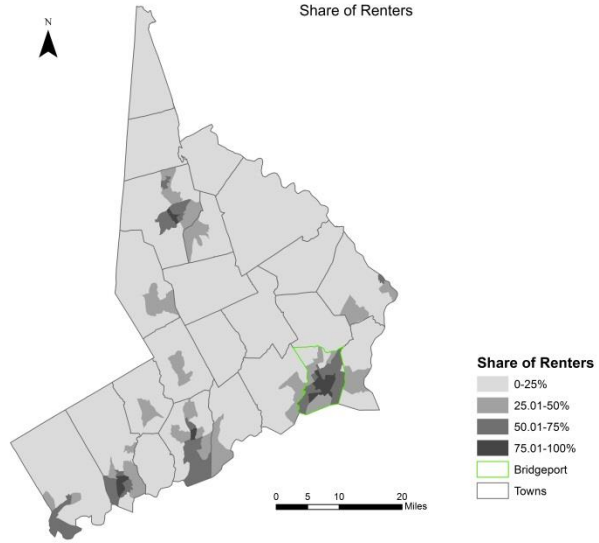
- 0-25%
- 25.01-50%
- 50.01-75%
- 75.01-100%

## Boundaries

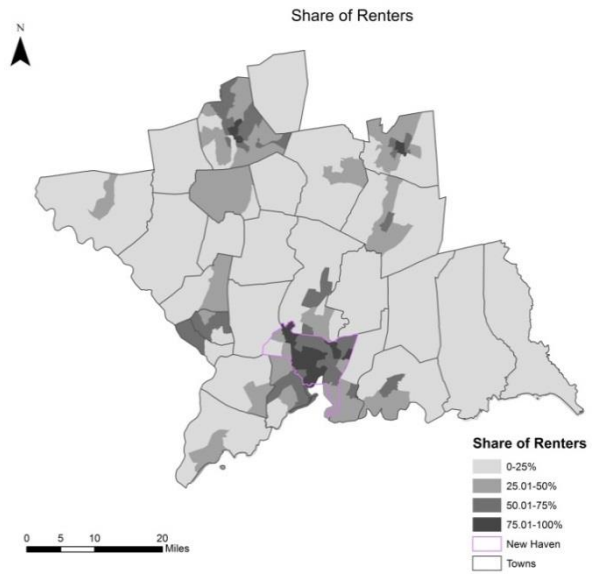
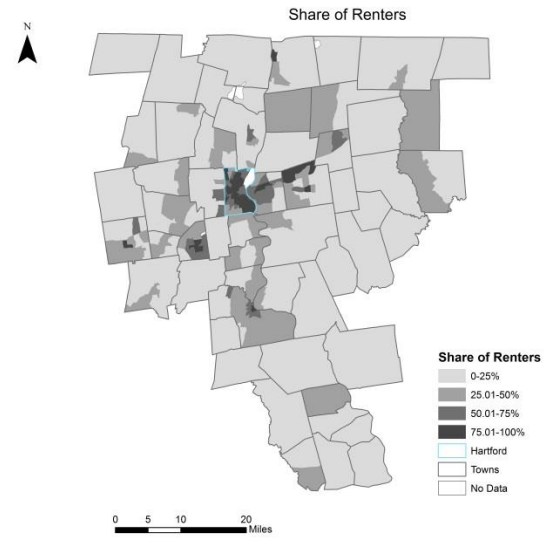
- Hartford
- New London
- NewHaven
- Bridgeport
- Towns



## Bridgeport MSA

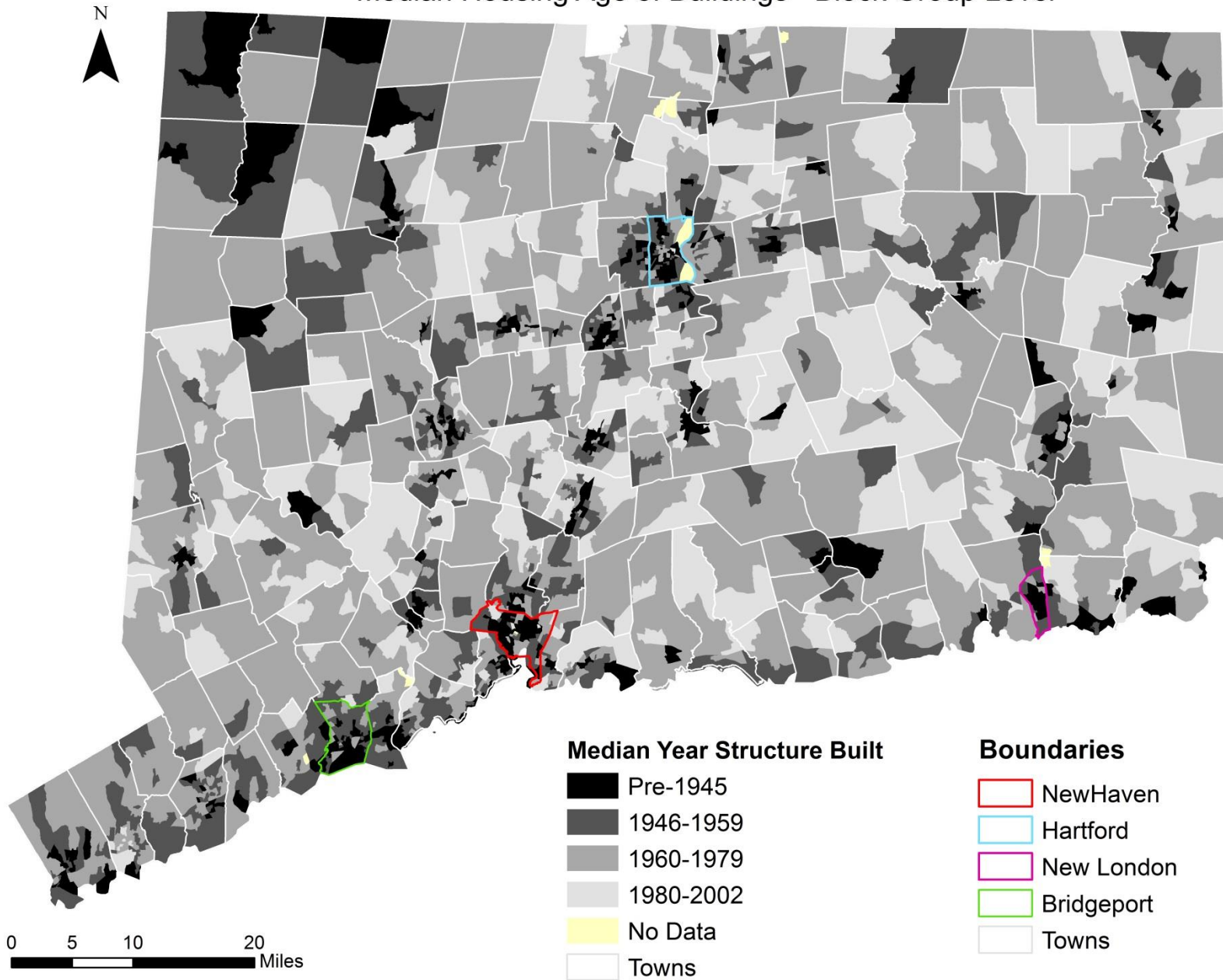


## Hartford MSA



## New Haven MSA

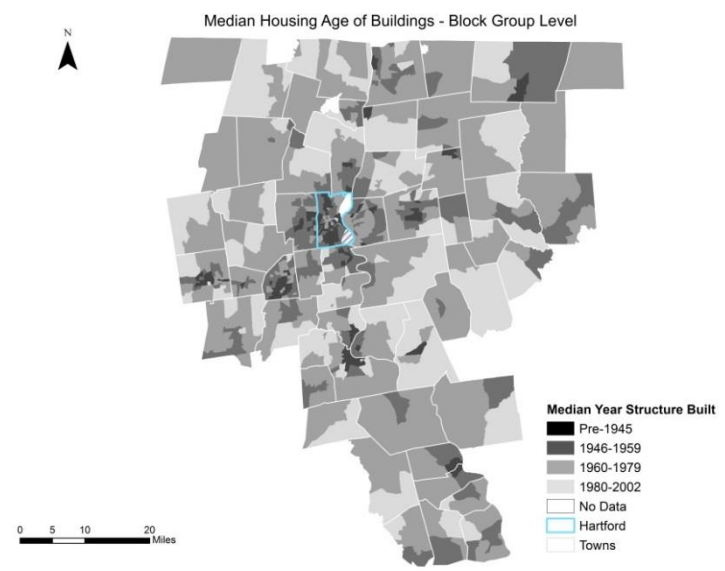
# Median Housing Age of Buildings - Block Group Level



## Bridgeport MSA



## Hartford MSA



## New Haven MSA

