



NEMSN COMMUNITY & SUSTAINABLE PROFILES

NEMSN Baseline Assessment 2017

Abstract

Identifying New England Municipal Network community characteristics and sustainable initiative implementation

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University of New Hampshire Sustainability Institute 2017

Introduction

The focus of this research is to provide the University of New Hampshire Sustainability Institute with information pertaining to community characteristics, sustainable initiative implementation and common themes pertaining to resources and barriers in New England Municipal Sustainable Network communities. In addition, the findings of this research will enhance NEMSN members' ability to easily find colleagues working on related issues and initiatives with intentions of facilitating more sharing of best practices. The benefits of this research for the network as a whole is to identify collaboration opportunities, create background material to use in fundraising efforts, and begin the initial development of a platform for shared information amongst network members, UNHSI and outside stakeholders.

Research Methods

The steps to developing the Community and Sustainable profiles consisted of a literary review of published community master and climate action plans, and quantitative and qualitative analysis of NEMSN member interviews, questionnaires and surveys.

NEMSN Community and Sustainable Profiles:

- Community Census Data
- Interview & Questionnaire Responses
- Sustainability Profile: Highlighting Top Priorities & Strategies
- Sustainability Initiatives Implementation Matrix

Community and Sustainable Profiles were developed for 17 NEMSN communities:

- Massachusetts: Amherst, Boston, Cambridge, Dedham, Greenfield, Medford, Northampton, Somerville
- New Hampshire: Keene, Lebanon, Portsmouth
- Rhode Island: Cranston, Providence
- Maine: Bath, Portland
- Connecticut: Groton
- Vermont: Burlington

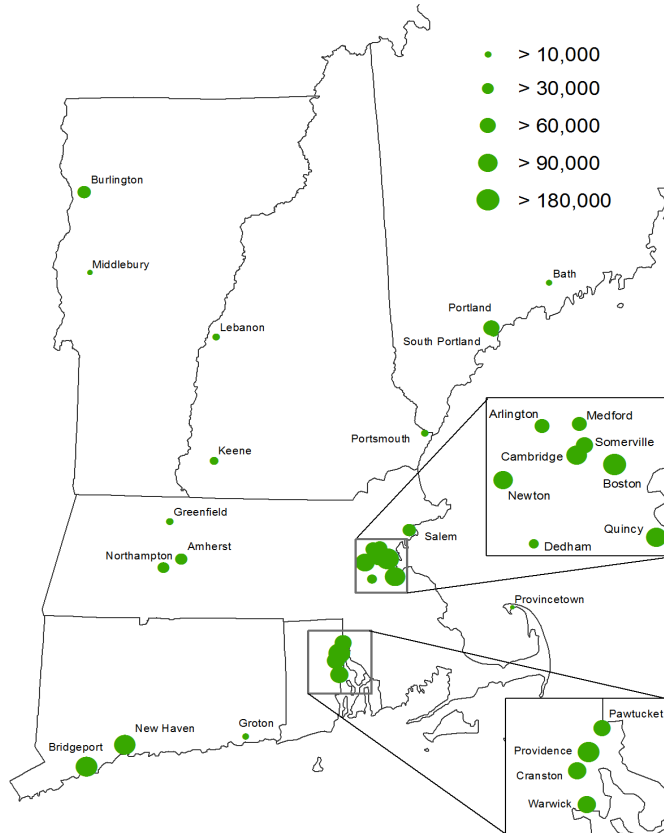
These communities were selected for this research due to attendance at either December 2016, or May 2017, NEMSN meetings. Or participation in research procedures including interviews & questionnaire or responding to the *Program Implementation Survey 2017*.

To complete the research an analytical report of data aggregated from individual members examines the *Targets/Goals, Published Plans* and *Metrics/Reporting* for the 10 Sustainable Categories, the status of sustainability initiatives in NEMSN communities and common themes found in NEMSN sustainability practices.

Community Characteristics

This research concentrated on developing an identity for NEMSN communities in order to create an aggregated understanding for the network, using census data published by The U.S. Census Bureau. Data pertaining to Area, Population, Population Density, Total Households, Median Age, Median Household Income and Poverty Rate were included in the Community Profiles. An important finding identified from this aspect of the research is that the communities in NEMSN are a diversified group with a varying range of community characteristics. The purpose of gathering census information is to identify community characteristics that can be used to relate and develop partnerships amongst NEMSN communities that contain similar demographics. Developing inter-member connectivity through community characteristics is the initial step in creating a platform that will be pivotal for selecting consultants, locating necessary resources and sharing solutions to overcome barriers when designing strategies for implementing initiatives.

NEMSN Communities Map: Location & Population 2017



NEMSN Communities 2017:

Provincetown, MA
 Middlebury, VT
 Bath, ME*
 Groton, CT*
 Lebanon, NH*
 Greenfield, MA*
 Portsmouth, NH*
 Keene, NH*
 Dedham, MA*
 South Portland, ME
 Northampton, MA*
 Amherst, MA*
 Salem, MA
 Burlington, VT*
 Arlington, MA
 Medford, MA*
 Portland, ME*
 Pawtucket, RI
 Somerville, MA*
 Cranston, RI*
 Warwick, RI
 Newton, MA
 Quincy, MA
 Cambridge, MA
 New Haven, CT
 Bridgeport, CT
 Providence, RI*
 Boston, MA*

*correction: Groton, CT population: 40,136

Image Source: Cameron Wake University of Sustainability Institute July 14, 2017.

Data Source: U.S. Census Bureau: Census Reporter 2017².

*participated in research

Reference Chart 2.1: NEMSN Census Data

Sustainable Categories

*See Category Definitions: Reference Chart 2.1

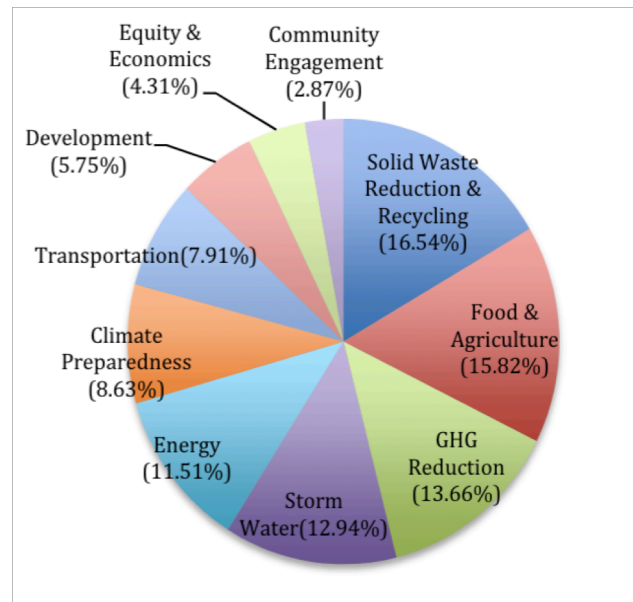
Sustainable Categories	Targets/Goals	Published Plan	Metrics/Reporting
Solid Waste Reduction & Recycling	8	7	8
Food & Agriculture	8	7	7
Transportation	2	6	3
Storm Water	8	4	6
Energy	8	5	3
Development	4	3	1
GHG Reduction	3	8	8
Climate Preparedness	5	3	4
Equity & Economics		4	2
Community Engagement	2	1	1
Totals	48	48	43

Source: University of New Hampshire Sustainability Institute: Program Implementation Survey, July 14, 2017.

The graph labelled, *Sustainable Categories 1.1* represents percentages of the aggregated amount of *Targets/Goals*, *Published Plans*, and *Metrics/Reporting*. The purpose is to identify categories that are the most pertinent in NEMSN communities based on results from the, *Program Implementation Survey 2017*. Data collected from the survey identifies that of the 10 communities that responded to the survey, 8(80%) have *Targets/Goals* in *Solid Waste Reduction & Recycling*, *Food & Agriculture*, *Storm Water* and *Energy*. Categories with the least amount of *Targets/Goals* included; *GHG Reduction* 3(30%), *Transportation* and *Community Engagement* 2(20%) and *Equity & Economics* (0).

Survey results show that of the 48 *Targets/Goals*, 25(52.08%), included both *Published Plans* and *Metrics/Reporting*. 9(18.75%), of the *Targets/Goals* included only *Published Plans*. 6(12.5%), of the *Targets/Goals* included only *Metrics/Reporting*. 6(12.5%), of the *Targets/Goals* included neither *Published Plans* or *Metrics/Reporting*. Results showed that there were 11(22.91%), *Published Plans* without *Targets/Goals*. 5(45.45%) *Published Plans*, included only *Metrics/Reporting* and 6(54.54%) *Published Plans*, included neither *Targets/Goals* or *Metrics/Reporting*. Of the 43 *Metrics/Reporting* 6(13.95%), included neither *Targets/Goals* or *Published Plans*. With only 52.08%, of the initiative programs including *Targets/Goals*, *Published Plans* and *Metrics/Reporting*. It is important that NEMSN communities develop strategies to create initiative implementation programs that contain all three aspects.

Figure 1.1 Sustainable Categories



Data Source: Program Implementation Survey 2017

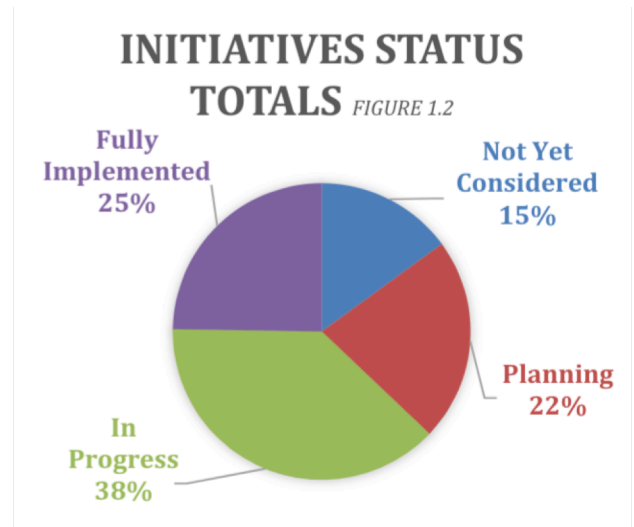
The chart above represents percentages of the combined amount of *Targets/Goals*, *Published Plans*, and *Metrics/Reporting* for each category.

Initiatives Implementation Status

Sustainable Initiatives	Not Yet Considered	Planning	In Progress	Fully Implemented
Curbside Composting	7	2	1	
Zero Waste Policy	5	3	2	
Community Gardens			1	8
Urban Agriculture & Local Food Programs	3	2	4	1
Complete Streets		2	5	3
Bike Share/ Rail Trail			6	3
Green Storm Water Infrastructure Upgrades	1	3	7	1
Commercial/Municipal Building Upgrades		1	6	2
Municipal Energy Aggregation	4	3	1	3
Municipal Solar Installations		3	4	1
Community Solar Installations	3	5	2	
LED Conversions: Streetlight		1	3	6
LED Conversion: Municipal Buildings		3	6	2
Mixed-Use Development		2	6	4
Urban Infill	1	1	6	4
Sustainable Housing for Low-Income Families	3	1	2	3
Aiding Local Business With Sustainable Programs	2	5	2	
Updated Website with Events/Reports		3	3	3
OTHER			1	
Online Solar Map & Solar Market Place				1
Comprehensive Net Zero Action Plan for Buildings				1
EV Strategy			1	
High Performance School Construction Project		1		
Energy Purchasing-Real Time Pricing		1		
Landfill Methane to Energy		1		
Municipal Open Space Conservation Program			1	
Multi-use off road trails			1	
Climate Change Vulnerability Assessment			1	
Energy Reporting			1	
Disclosure Ordinance			1	
Water Trail				1
School Composting & Recycling				1
Totals	29	43	74	48

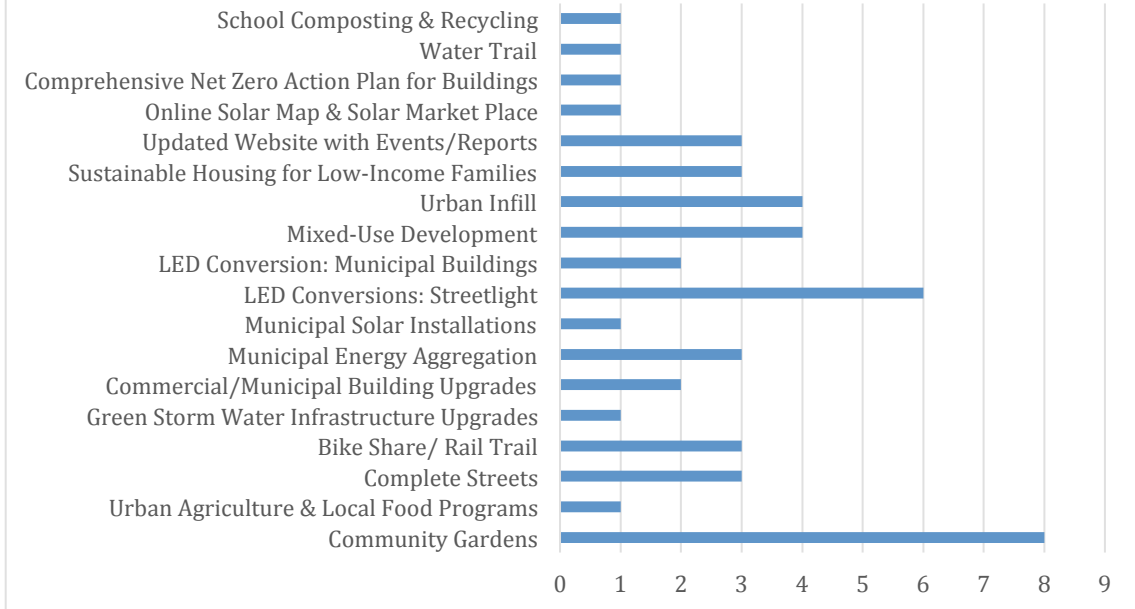
Source: University of New Hampshire Sustainability Institute: Program Implementation Survey, July 14, 2017.

The *Program Implementation Survey 2017*, listed 19 initiatives that were chosen due to inclusion in the *USDN Spring Survey 2016*¹, or were frequently adopted by NEMSN communities. Additional initiatives were added by survey respondents to create a complete list of 32 initiatives. The data identified that of the 149 initiatives recorded, the implementation status with the largest amount of initiatives was *In Progress* with 74(38.14%) initiatives. The implementation status with the least amount of recorded initiatives was *Not Yet Considered* with 29(19.46%) initiatives. Of the initiatives listed 63%, are either *In Progress* or *Fully Implemented*. This identifies that NEMSN communities are having success developing programs but need to continue to pursue programs such as, *Curbside Composting*, *Zero Waste Policy* and *Municipal Energy Aggregation*.



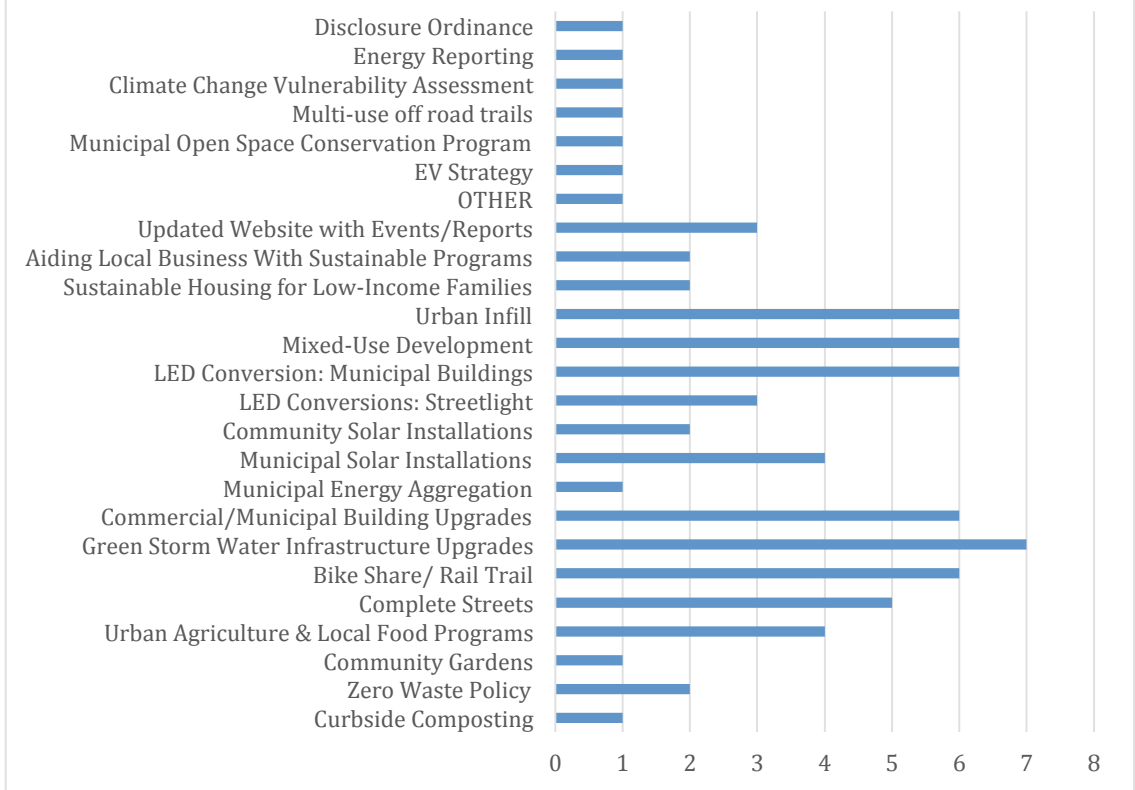
Data Source: Program Implementation Survey 2017

Fully Implemented Initiatives figure 1.6

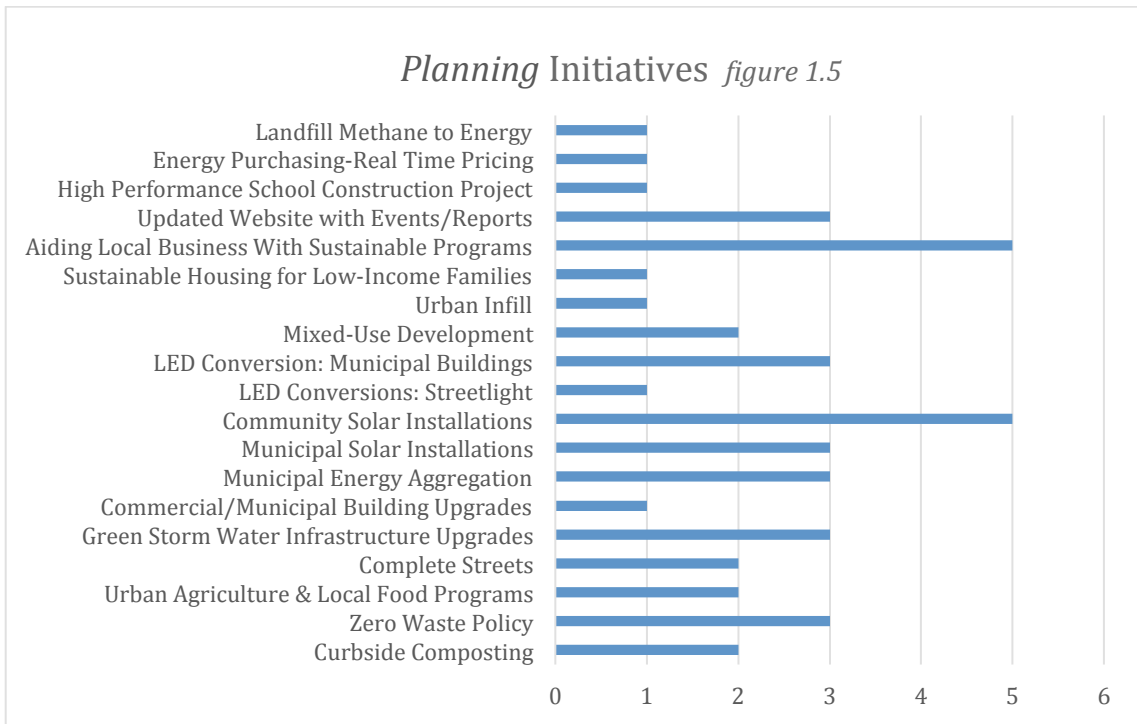


Source: University of New Hampshire Sustainability Institute: Program Implementation Survey, July 14, 2017

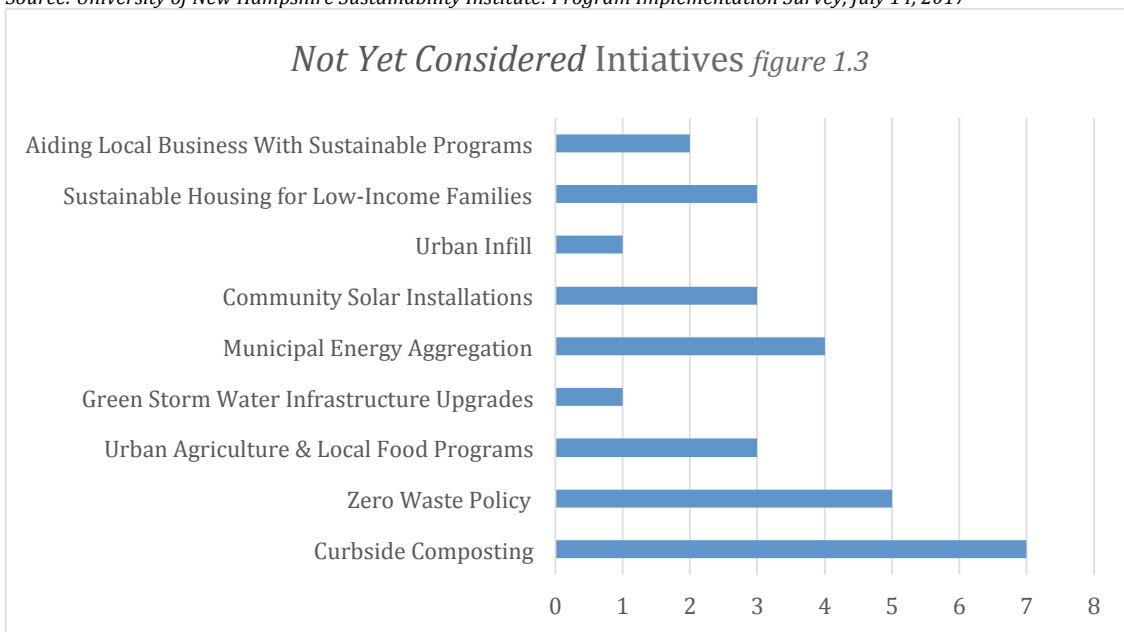
In Progress Initiatives figure 1.4



Source: University of New Hampshire Sustainability Institute: Program Implementation Survey, July 14, 2017



Source: University of New Hampshire Sustainability Institute: Program Implementation Survey, July 14, 2017



Source: University of New Hampshire Sustainability Institute: Program Implementation Survey, July 14, 2017

Survey results identified that the initiatives with the most responses with the implementation status of *Not Yet Considered*, included *Curbside Composting* 7(70%), and *Zero Waste Policy* 5(50%). Initiatives with the most responses with the implementation status of *Planning*, included *Aiding Local Business with Sustainable Initiatives* and *Community Solar Installations* both with 5(50%). Initiatives with the most responses with the implementation status of *In Progress*, included *Green Water Storm Infrastructure Upgrades* 7(70%). *In Progress* also included, *Bike Share/Rail*

Trail, Commercial/Municipal Building Upgrades, LED Conversions: Municipal Buildings, Mixed-Use Development, and Urban Infill each with 6(60%). Initiatives with the most responses with the implementation status of *Fully Implemented*, includes *Community Gardens* 8(80%), and *LED Conversions: Streetlights* 6(60%). *Community Gardens*, is the most implemented initiatives because it is reported to be one of the most obtainable initiatives that is well supported by the community. *LED Conversions; Streetlights*, is the second most implemented initiative due to energy efficiency and cost savings.

Themes & Recommendations

Throughout this research several themes were developed. First, 52% of *Target/Goals* established by NEMSN communities including both *Published Plans* and *Metrics/Reporting*. Identifying a need for a strategy that can assist communities with finding the proper

consultants to develop complete programs that consist of strategies and metrics for track progress. Second, in communities that have

"It is difficult to find the right people for the projects, it would be helpful if there was a way through the network where towns can easily identify consultants." Mark Goodwin-Lebanon, NH.

established metrics there have been issues with organizing the data to identify areas for improvement and to report progress to the community. To accommodate this issue towns that have established successful strategies of organizing data such as Boston, MA and Providence, RI should partner and collaborate with communities that are struggling to do so. Third, for many of the communities there is a disconnect between the municipality and the residents on what, "sustainability" entails. Developing a common language in a NEMSN Framework would create a stronger understanding for, "sustainability" that will connect the municipalities and the community. Fourth, in regards to initiative implementation, in order for an initiative to be adopted by the town there must be a sound economic incentive, meaning that the proposed initiative must be the most cost-effective option. This signifies that much of the progress in implementation is based on economic incentives instead of communities striving to become more sustainable. The final issue that was most prevalent was that many communities struggle to remain up to date on postings, updates, events, progress tracking and educating the community on sustainability. Because this is an issue experienced throughout the network, it is important that there is a stronger focus on creating a strategy for improving community outreach.

Conclusion:

The findings suggest that there is a need for NEMSN members to agree upon a platform that will assist in improving network connectivity, provide updated information to stakeholders (NEMSN members, UNHSI, member communities, outside partners), and develop solutions for issues that have been presented in this research. There is also a need for NEMSN to agree upon a framework that will create a common language and set forth collective goals and strategies. This study will provide valuable information for NEMSN and UNHSI to identify problem areas pertaining to initiative implementation. The Community and Sustainable Profiles

will continue to be a template that can be updated by communities as they continue to progress in the implementation stages. In conclusion, the information presented through this research will provide UNHSI with valuable findings that will serve as a baseline for future research with NEMSN communities.

Reference Chart 2.1: NEMSN Census Data

Community	Area (sq. miles)	Population	Population Density	Housing	Median Age	Median Household Income	Poverty Rate
Bridgeport, CT	16.1	147,619	9,192.60	49,811	34.1	\$42,420	20.60%
Providence, RI	18.4	179,204	9,739.30	60,644	29.9	\$39,015	28.20%
Arlington, MA	5.1	44,128	8,575.20	18,643	42.3	\$51,579	5%
Middlebury, VT	13.9	6,885	494.90	2,107	23	\$49,414	12.80%
Portsmouth, NH	15.6	21,426	1,370.40	10,262	41.2	\$71,392	6.60%
Amherst, MA	27.6	39,482	1,430.20	8,938	21.5	\$48,059	34.70%
Greenfield, MA	21.4	17,514	817.40	7,731	43.7	\$49,612	14.20%
Bath, ME	9.1	8,349	915.60	3,869	37.8	\$38,407	24.10%
Warwick, RI	35	81,698	2,331.60	33,701	42.6	\$74,570	4.80%
Salem, MA	8.3	42,499	5,132.80	18,029	36.5	\$60,690	14.40%
Northampton, MA	34.2	28,602	835.20	11,484	38.8	\$59,274	17.10%
Lebanon, NH	40.3	13,535	335.70	6,391	39.6	\$53,004	12.30%
Burlington, VT	10.3	42,570	4,130.40	16,153	26.8	\$44,671	24.80%
Medford, MA	8.1	57,136	7,052.80	22,129	36.2	\$76,445	10.80%
Keene, NH	37.2	23,403	628.30	9,319	33.5	\$52,636	17%
Dedham, MA	10.2	25,224	2,461.60	9,579	42.4	\$83,438	4.80%
Provincetown, MA	1.8	2,744	1,535.20	1,608	57	\$40,160	12.40%
Portland, ME	21.5	66,872	3,103.80	30,427	40.3	\$52,139	15.50%
Groton, CT	3.1	40,136	1,293.00	16,283	34	\$60,157	8.60%
Cranston, RI	28.3	81,077	2,860.80	29,917	39.9	\$61,963	10.30%
Cambridge, MA	6.4	110,402	17,277.90	45,569	31.5	\$89,847	12.80%
South Portland, ME	12	25,304	2,101.10	10,524	40.1	\$54,598	13.80%
Pawtucket, RI	8.7	71,583	8,245.10	29,451	39.2	\$43,886	16.70%
Newton, MA	17.8	88,809	4,978.80	29,902	42.3	\$126,649	4.30%
Somerville, MA	4.1	80,334	19,488.70	31,837	31	\$86,012	11%
Boston, MA	48.4	669,469	13,841.80	261,492	31.8	\$58,263	20.50%
Quincy, MA	16.6	93,629	5,650.80	38,674	41	\$66,415	12.80%
New Haven, CT	18.7	130,310	6,972.10	48,690	29.9	\$36,641	31.50%

Data Source: U.S. Census Bureau: Census Reporter 2017.

Reference Chart 2.2: Category Definitions

Solid Waste Reduction & Recycling: Programs and policies that are aimed at reducing solid waste through composting, recycling or reuse.

Food & Agriculture: Programs and policies that are aimed at improving the quality of healthy and sustainable food provided in the community, as well as providing support for local farmers and food providers.

Transportation: Programs and policies that are aimed at reducing emissions and improving efficiency in all aspects of the transportation sector.

Storm Water: Programs and policies that are aimed at improving and maintaining water quality, as well as the management of storm water.

Energy: Programs and policies that are aimed at the use or implementation of renewable energy and renewable energy systems, as well as increasing energy efficiency in all sectors of the community.

Development: Programs and policies that are aimed at improving the sustainable use of land and building development (e.g. urban infill).

Greenhouse Gas Reduction: Programs and policies that are aimed at decreasing the amount of greenhouse gas that is emitted in all sectors of the community.

Climate Preparedness: Programs and policies that are aimed at assessing community vulnerability and improving community adaptation in response to climate change.

Equity & Economics: Programs and policies that are aimed at creating equal opportunity for low-income members of the community to participate in sustainable initiatives, as well as developing a community economy that is focused on sustainability.

Community Engagement: Programs and policies that are aimed at educating and involving the community in sustainable initiatives, as well as the development of community-based groups that are focus around sustainability.

Sources:

1. *"July 2016 Urban Sustainability Innovation Report", 2017 USDN.*
<https://www.usdn.org/public/page/96/July-2016-Archive>
2. *"Census Reporter", U.S. Census Bureau 2017.*
<https://censusreporter.org/>