Welcome Home to Savings

Xenergy

Better Buildings Case Competition

March 14, 2014

U.S. DEPARTMENT OF ENERGY

The Opportunity

100MW Renewable Generation Capacity by 2020

A HUD program to provide local, clean energy and create resilient communities

The Challenge

Capital Stack

Replicability

Prioritization

Incentive Gap

Stakeholder Engagement

Accelerated Deployment of Renewables

BOSTON MEDICAL
EMERGENCY

LIBRARY

C. L. TENNEY MEMORIAL FIRE HEADQUARTERS

Community

EMERGENCY
LIBRARY

LIBRARY
EMERGENCY

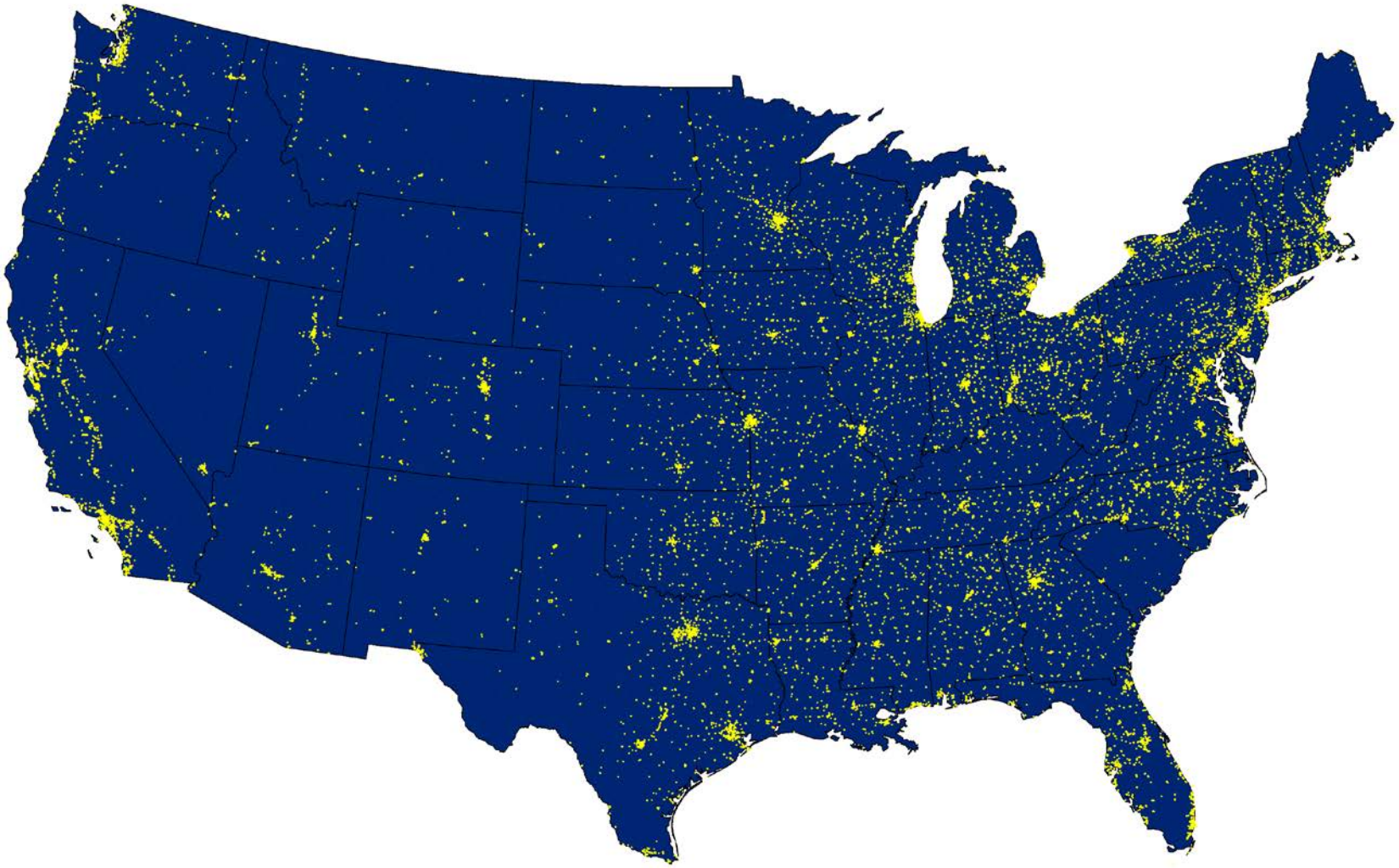
- Community Building
- Minimize Transaction Costs
- Provide Replicable Solution

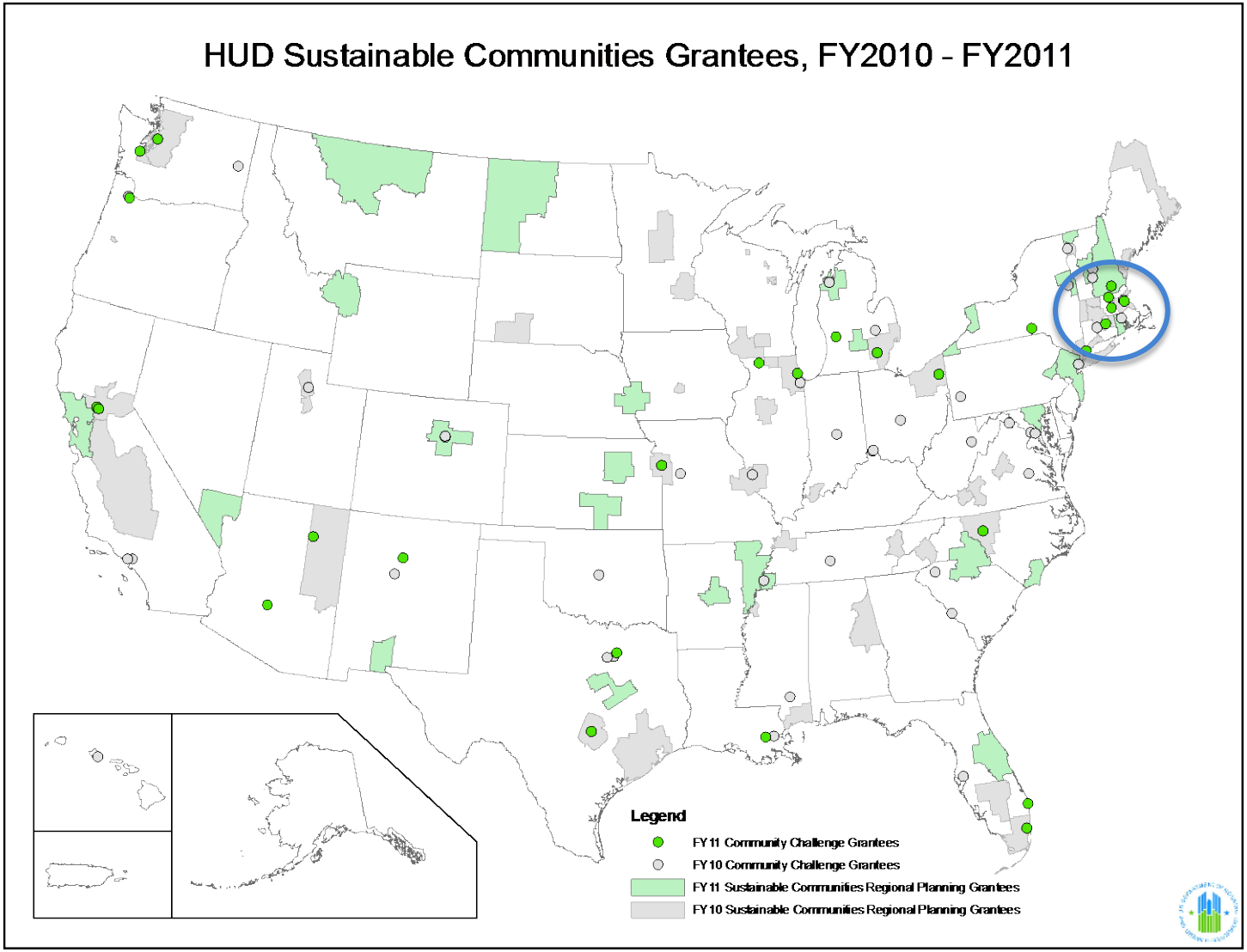
- Community Building
- Minimize Transaction Costs
- Provide Replicable Solution

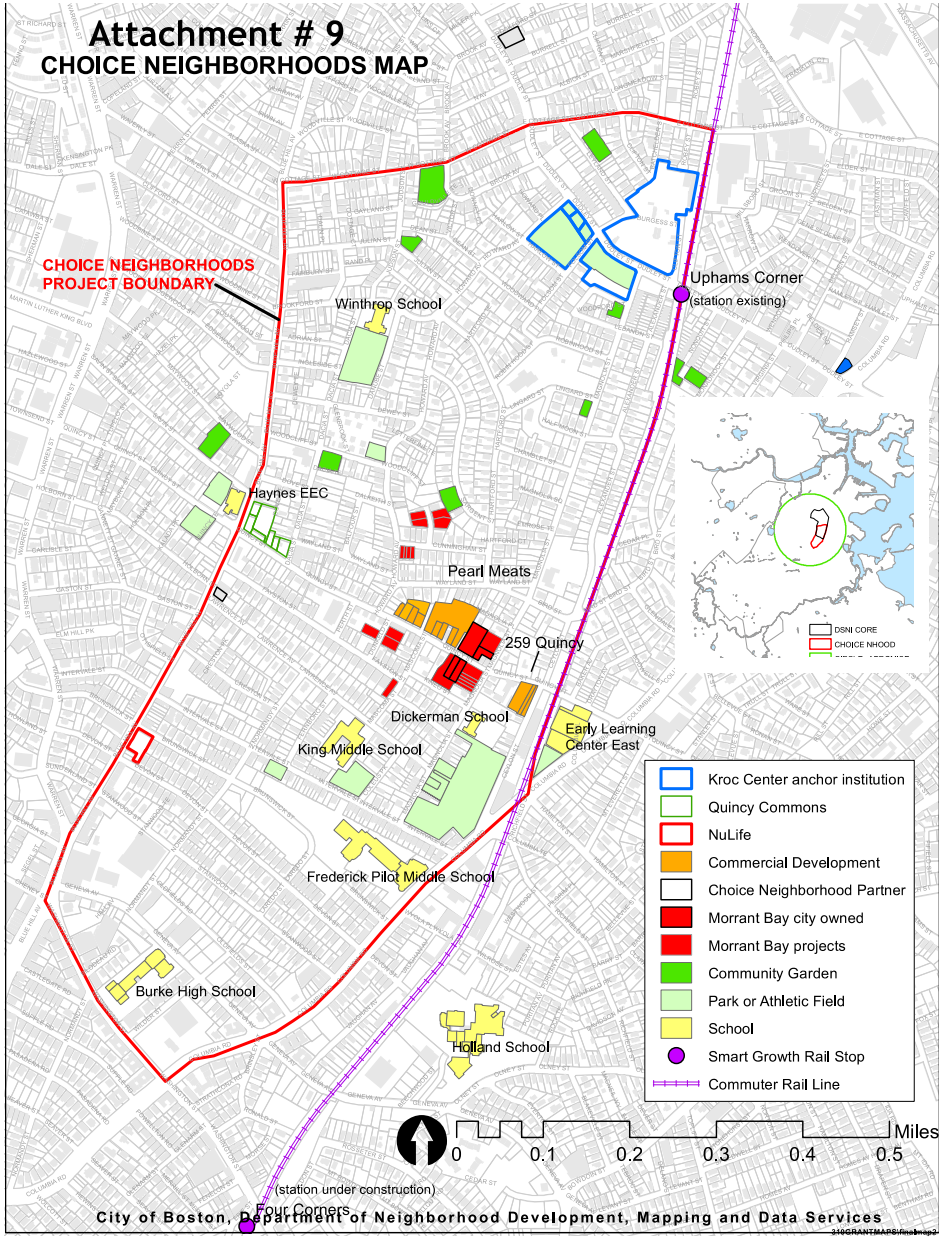
- Remove Capital Stack Barrier
- Avoid the Incentive Gap
- Keep Community Money Local

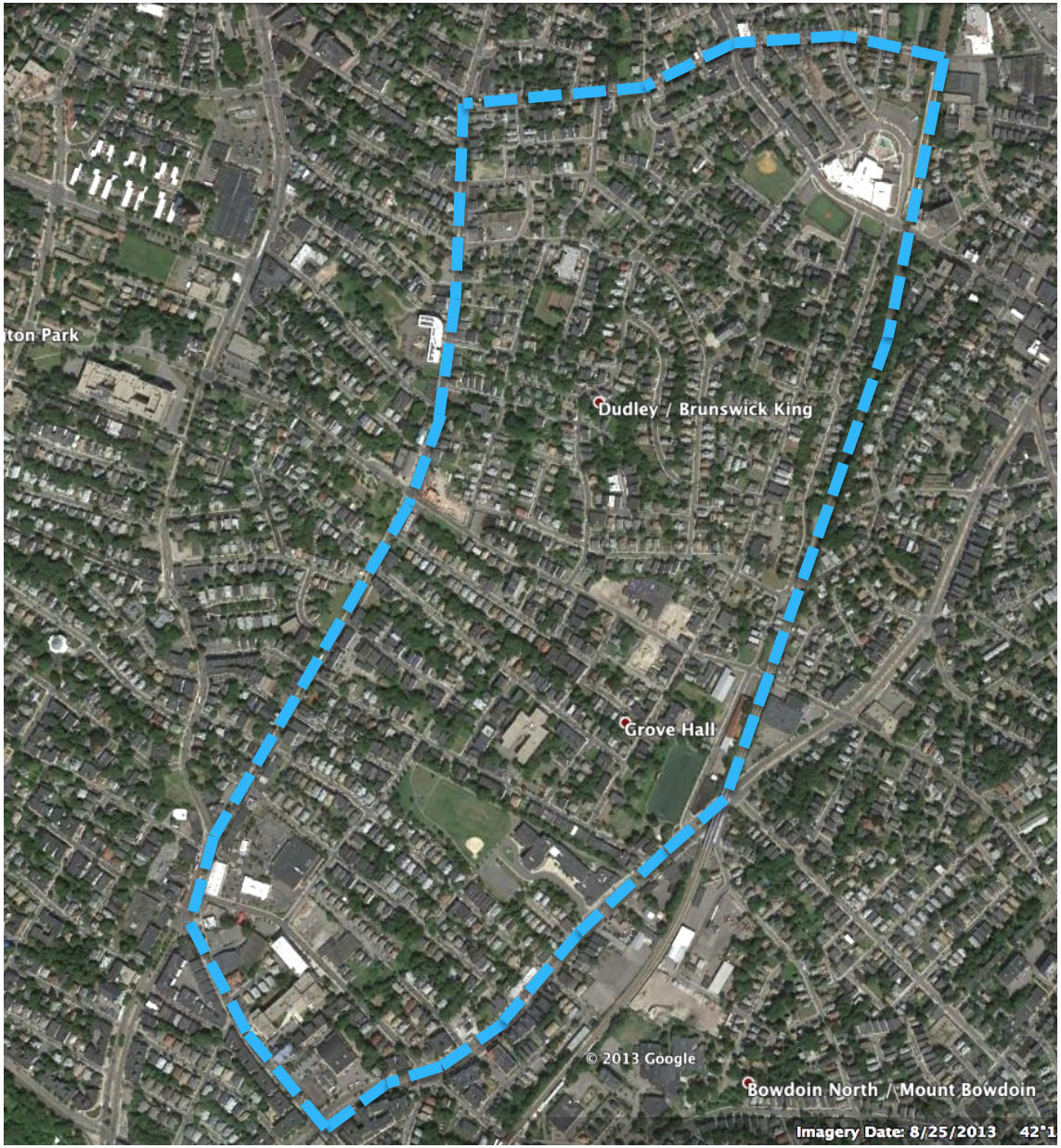
S H E D

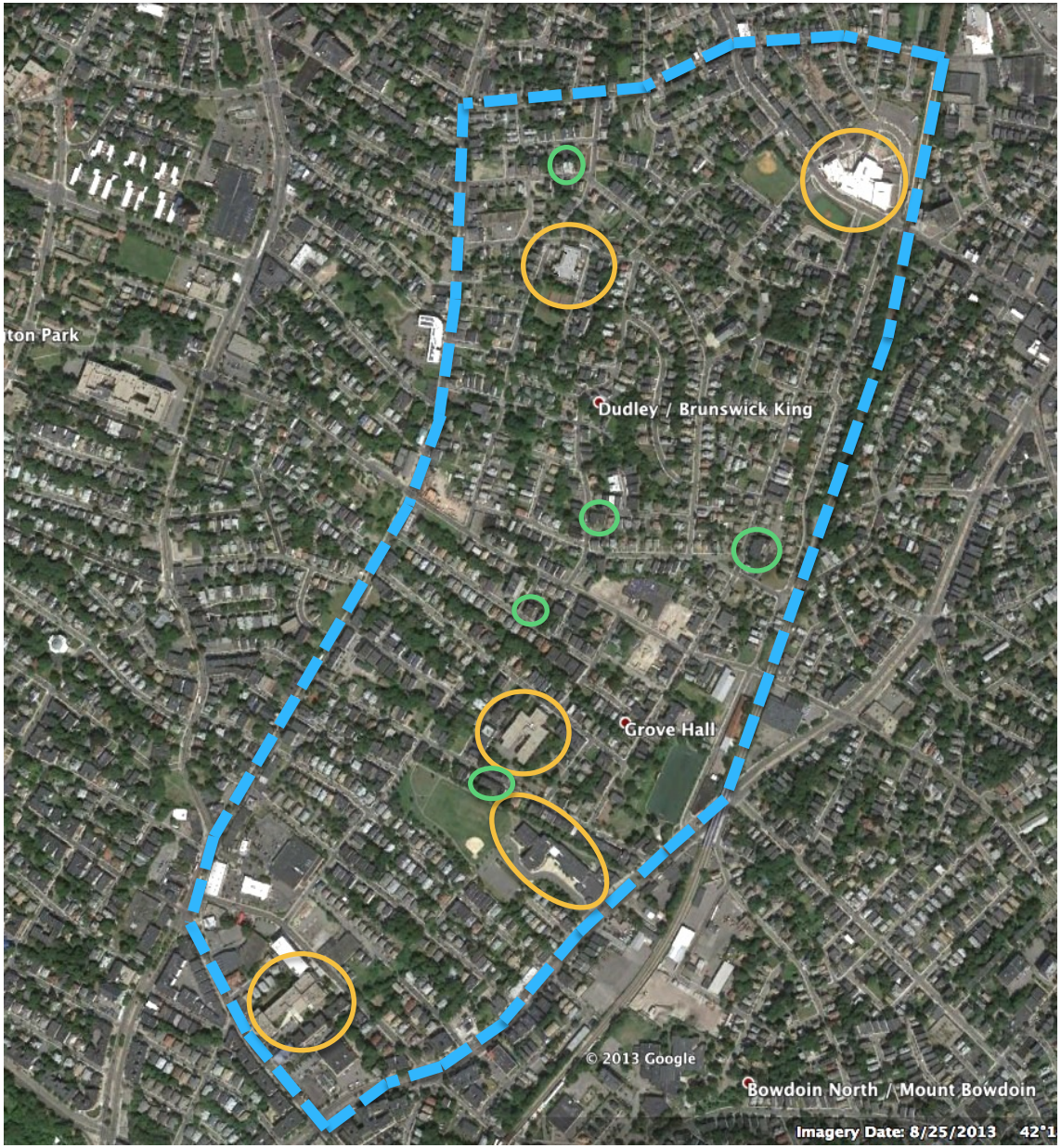
Specialized HUD Energy District




HUD Sustainable Communities Grantees, FY2010 - FY2011
Legend
FY 11 Community Challenge Grantees
FY 10 Community Challenge Grantees
FY 11 Sustainable Communities Regional Planning Grantees
FY 10 Sustainable Communities Regional Planning Grantees


Attachment # 9
CHOICE NEIGHBORHOODS MAP
CHOICE NEIGHBORHOODS PROJECT BOUNDARY
Winthrop School
Uphams Corner
(station existing)
Haynes EEC
Pearl Meats
259 Quincy
Dickerman School
King Middle School
Early Learning Center East
Frederick Pilot Middle School
Burke High School
Holland School
(station under construction)
Four Corners
DSNI CORE
CHOICE NHOOD
Kroc Center anchor institution
Quincy Commons
NuLife
Commercial Development
Choice Neighborhood Partner
Morrant Bay city owned
Morrant Bay projects
Community Garden
Park or Athletic Field
School
Smart Growth Rail Stop
Commuter Rail Line
0
0.1
0.2
0.3
0.4
0.5
Miles
City of Boston, Department of Neighborhood Development, Mapping and Data Services


ton Park
Dudley / Brunswick King
Grove Hall
© 2013 Google
Bowdoin North / Mount Bowdoin
Imagery Date: 8/25/2013 42°1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© 2013 Google
Bowdoin North / Mount Bowdoin
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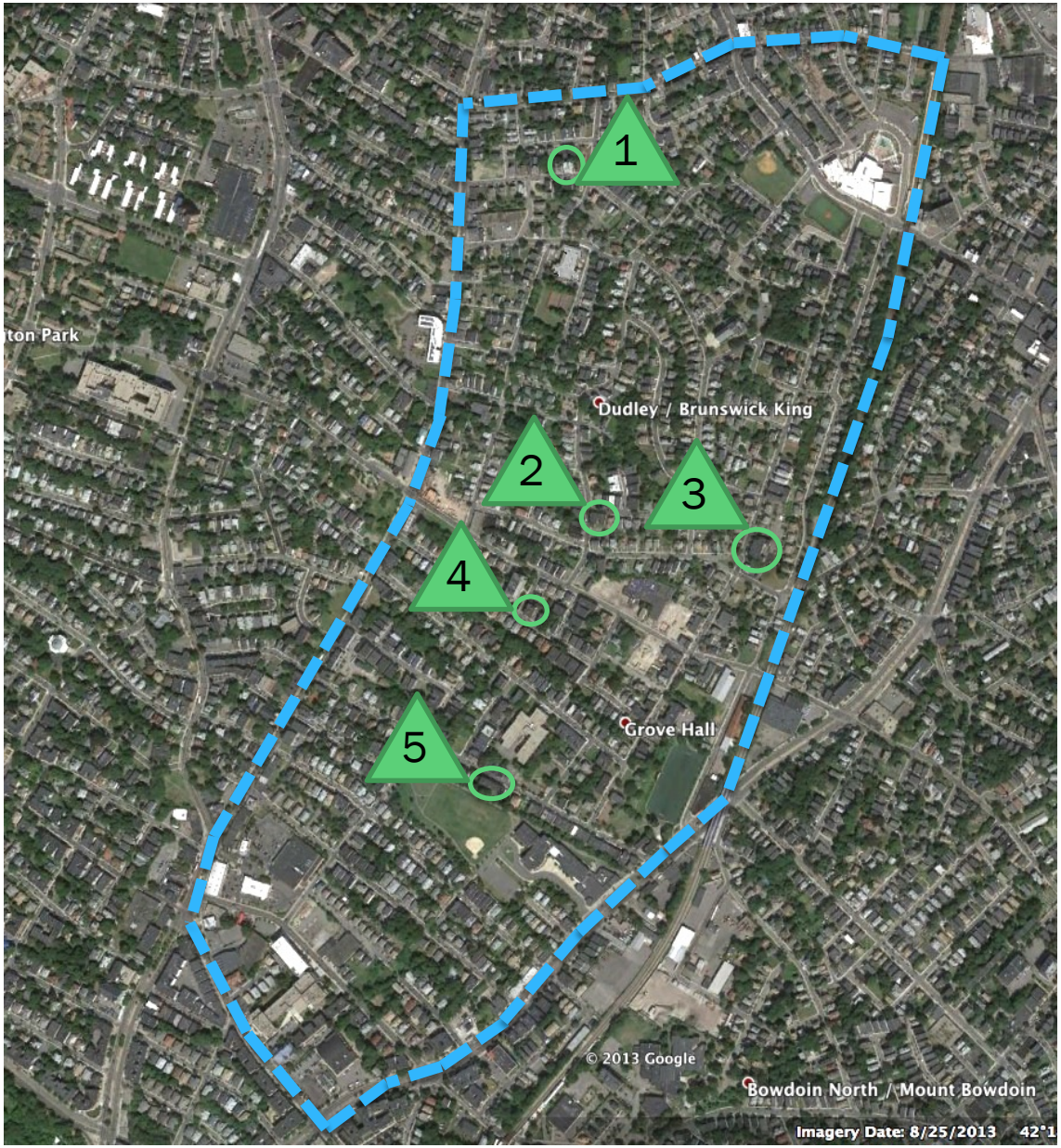

Privately Owned HUD Buildings		
#	Name	Roof Area (ft^2)
1	42 Julian St.	2,000
2	34 Cunningham St.	3,500
3	150 Magnolia St.	7,000
4	95 Perth St.	2,000
5	97 Intervale St.	5,000
	TOTAL	**19,500**

Privately Owned HUD Buildings		
#	Name	Roof Area (ft^2)
1	42 Julian St.	2,000
2	34 Cunningham St.	3,500
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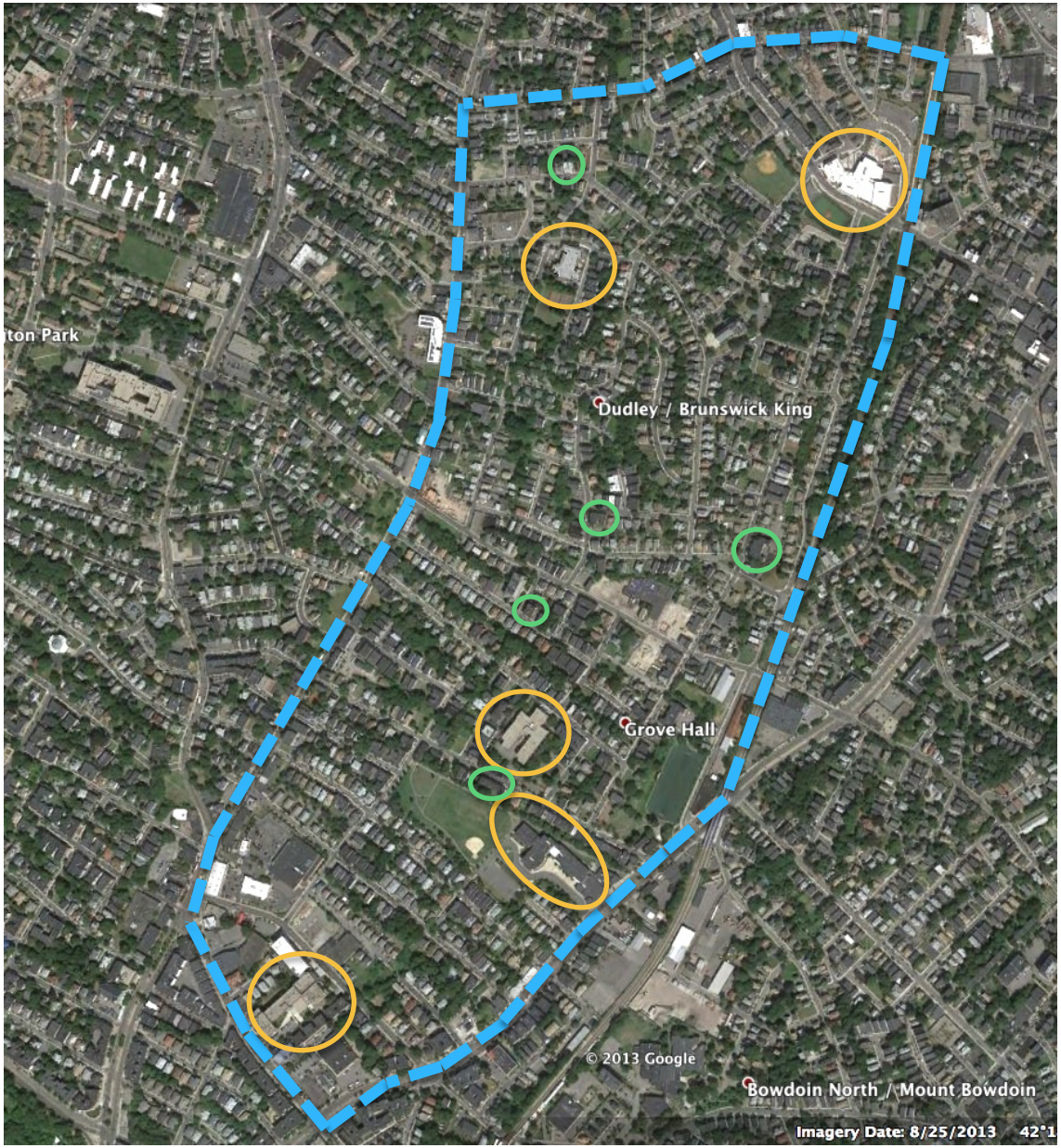
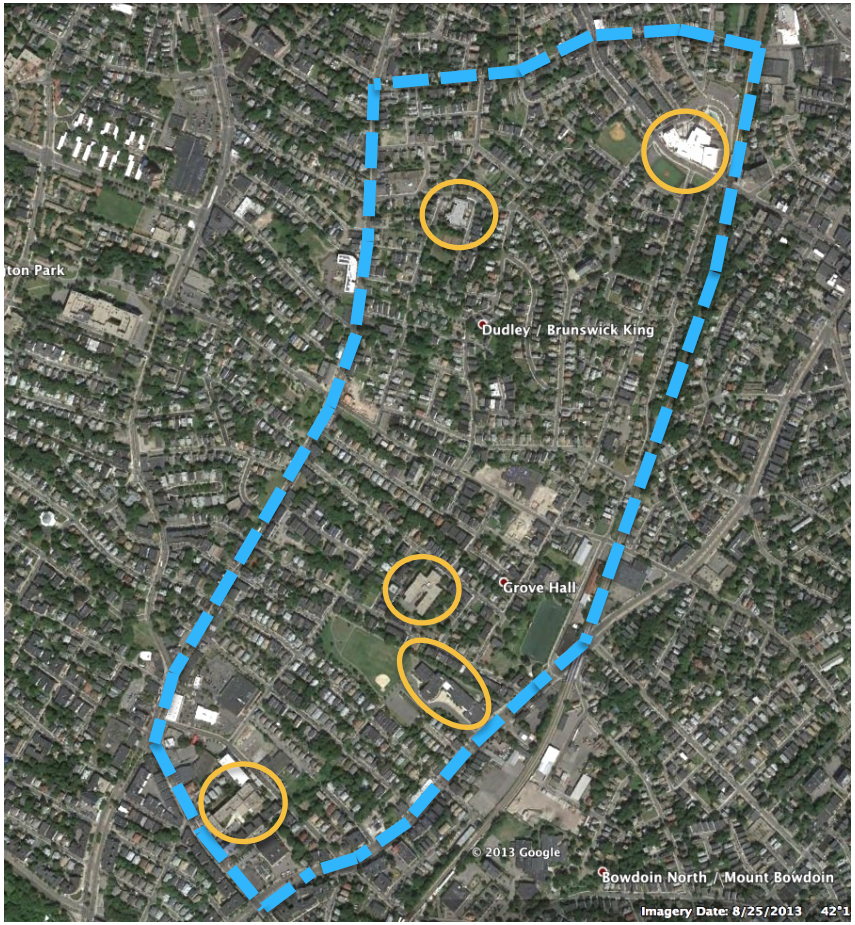
4	95 Perth St.	2,000
5	97 Intervale St.	5,000
	TOTAL	19,500

Community Buildings		
#	Name	Roof Area (ft^2)
1	Kroc Center	38,000
2	Winthrop M.S.	13,000
3	King M.S.	29,000
4	Federick M.S.	53,000
5	Burke H.S.	25,000
	TOTAL	158,000



Privately Owned HUD Buildings		
Name	Area (ft^2)	Potential MW
42 Julian St.	2,000	0.024
34 Cunningham St.	3,500	0.134
150 Magnolia St.	7,000	0.084
95 Perth St.	2,000	0.024
97 Intervale St.	5,000	0.060
TOTAL	**19,500**	**0.242**

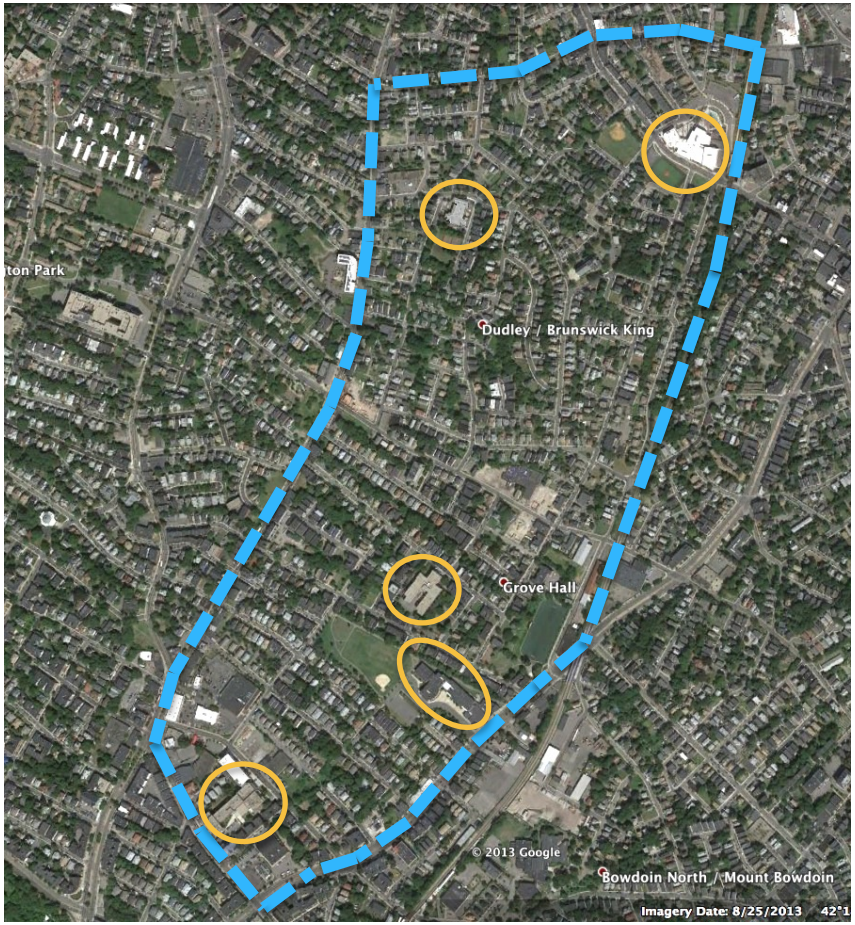
Community Buildings		
Name	Area (ft^2)	Potential MW
Kroc Center	38,000	0.456
Winthrop M.S.	13,000	0.156
King M.S.	29,000	0.348
Federick M.S.	53,000	0.636
Burke H.S.	25,000	0.300
TOTAL	**120,000**	**1.89**



Resiliency

Building Secure Communities

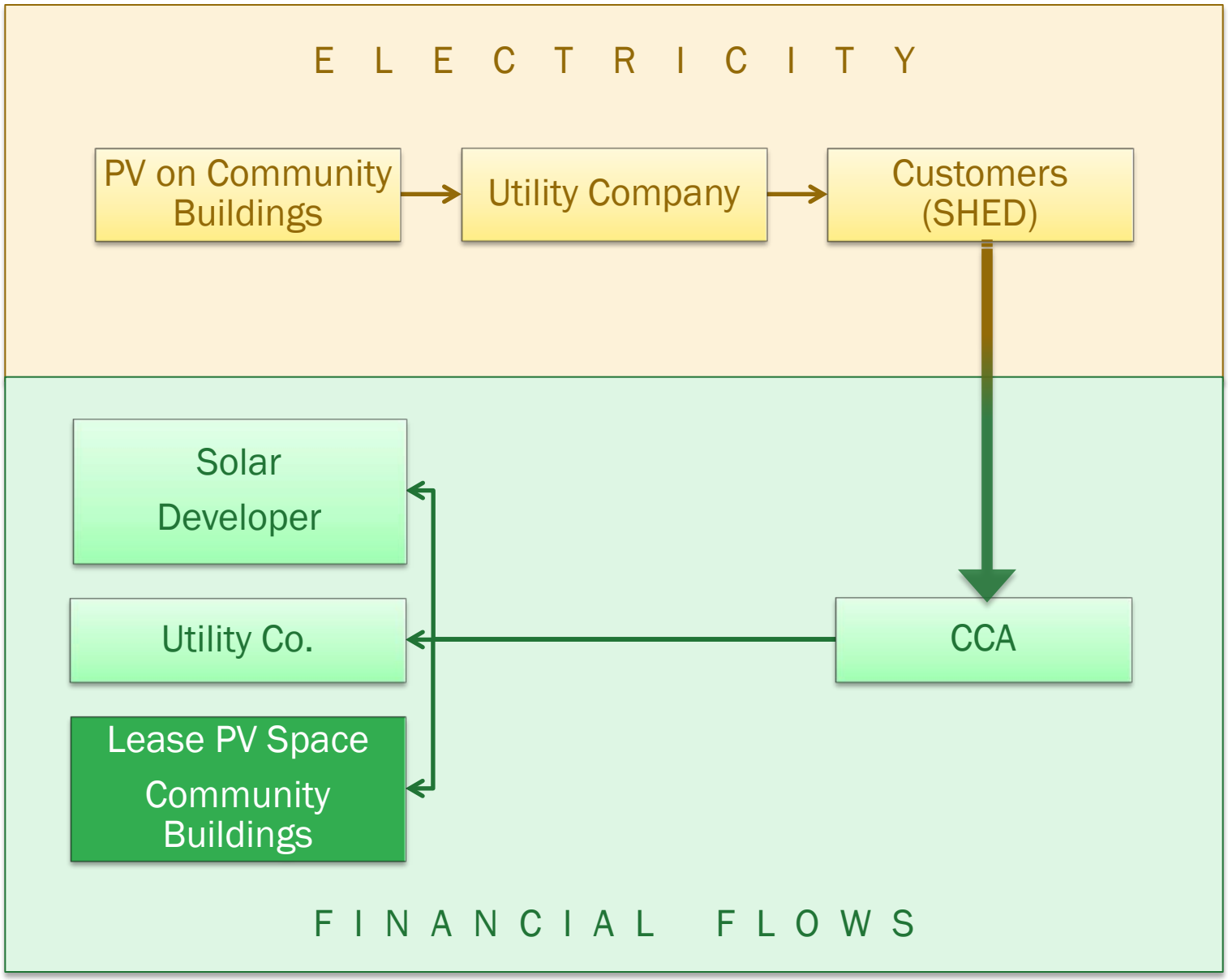
- Energy Generation at Strategic Community Centers
- Refuge in Secure Structures
- Battery Backup

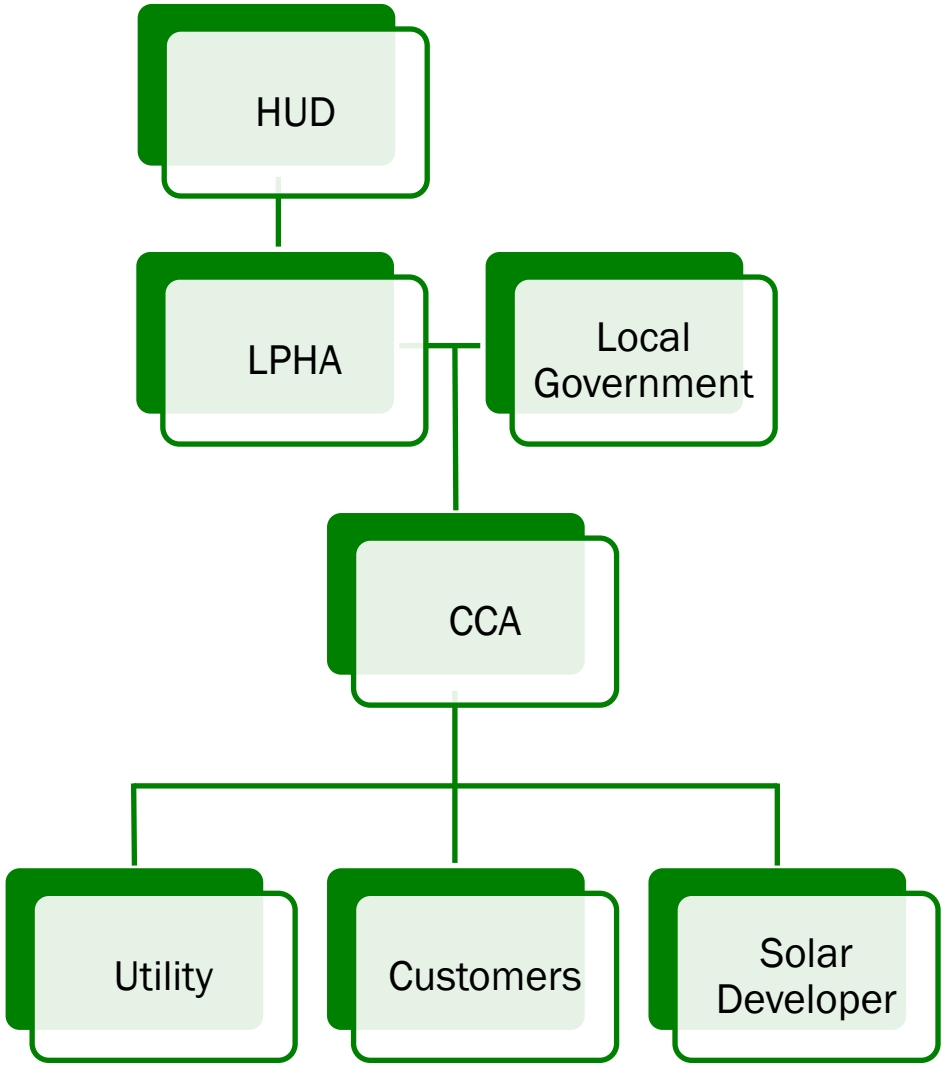


C C A

Community Choice Aggregation

- Public, Nonprofit Entity
- Alternative to Utility Co.
- Policy Framework in Place


E L E C T R I C I T Y
PV on Community Buildings
Utility Company
Customers (SHED)
Solar Developer
Utility Co.
CCA
Lease PV Space Community Buildings
F I N A N C I A L F L O W S



HUD'S Role

Local Empowerment

- Funding LPHA
- Policy Promotion
- Technical Assistance
- Credibility of US Government

Plug-Ins

Enhancements to the CCA

- MESA: Managed Energy Service Agreements
- Demand Response with the CCA as Aggregator
- Community Structures

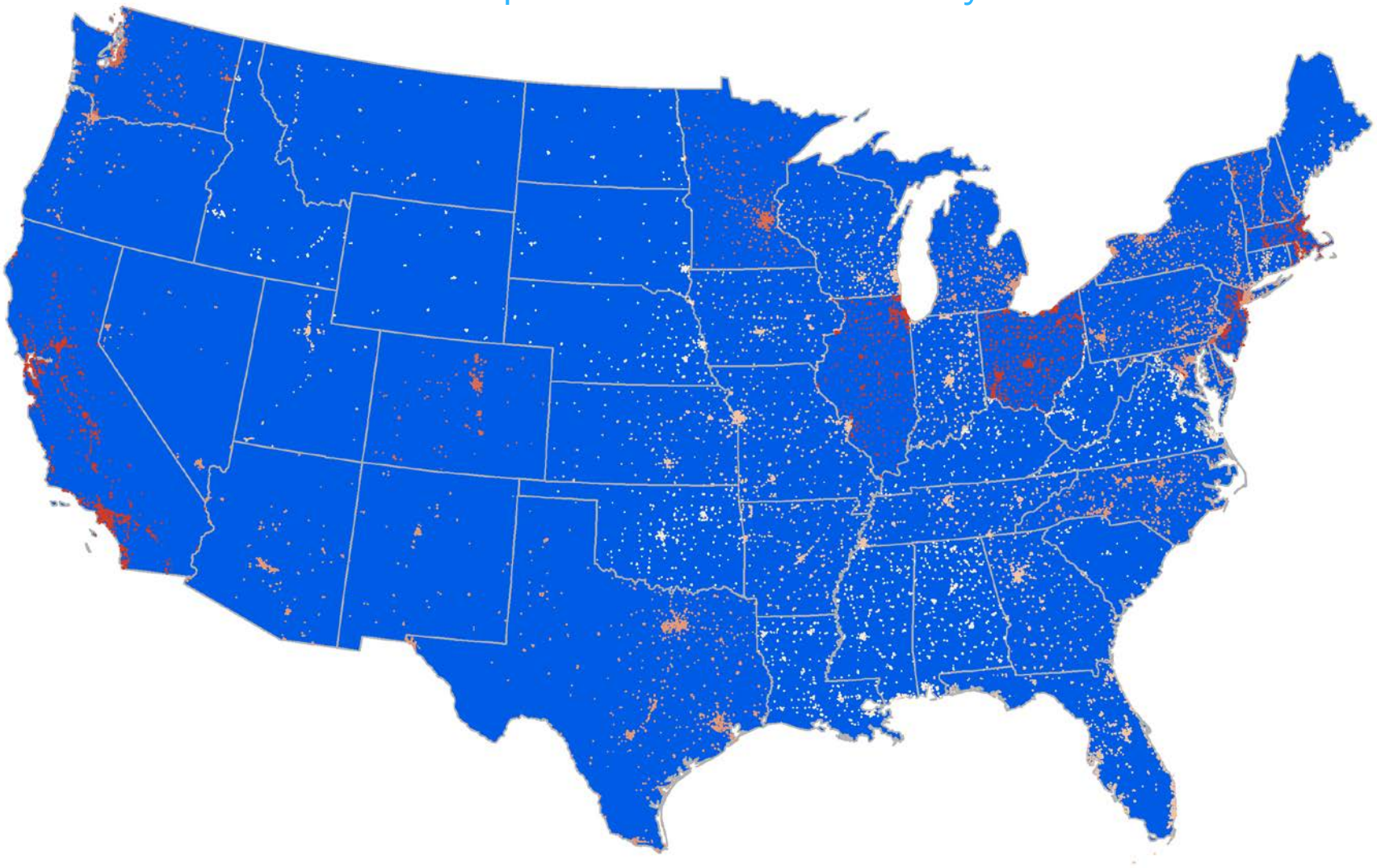
Community

Welcome Home

- Local Clean Energy
- Neighborhood Identity
- Locally Defined Districts
- Catalyst for Community Engagement

The Future

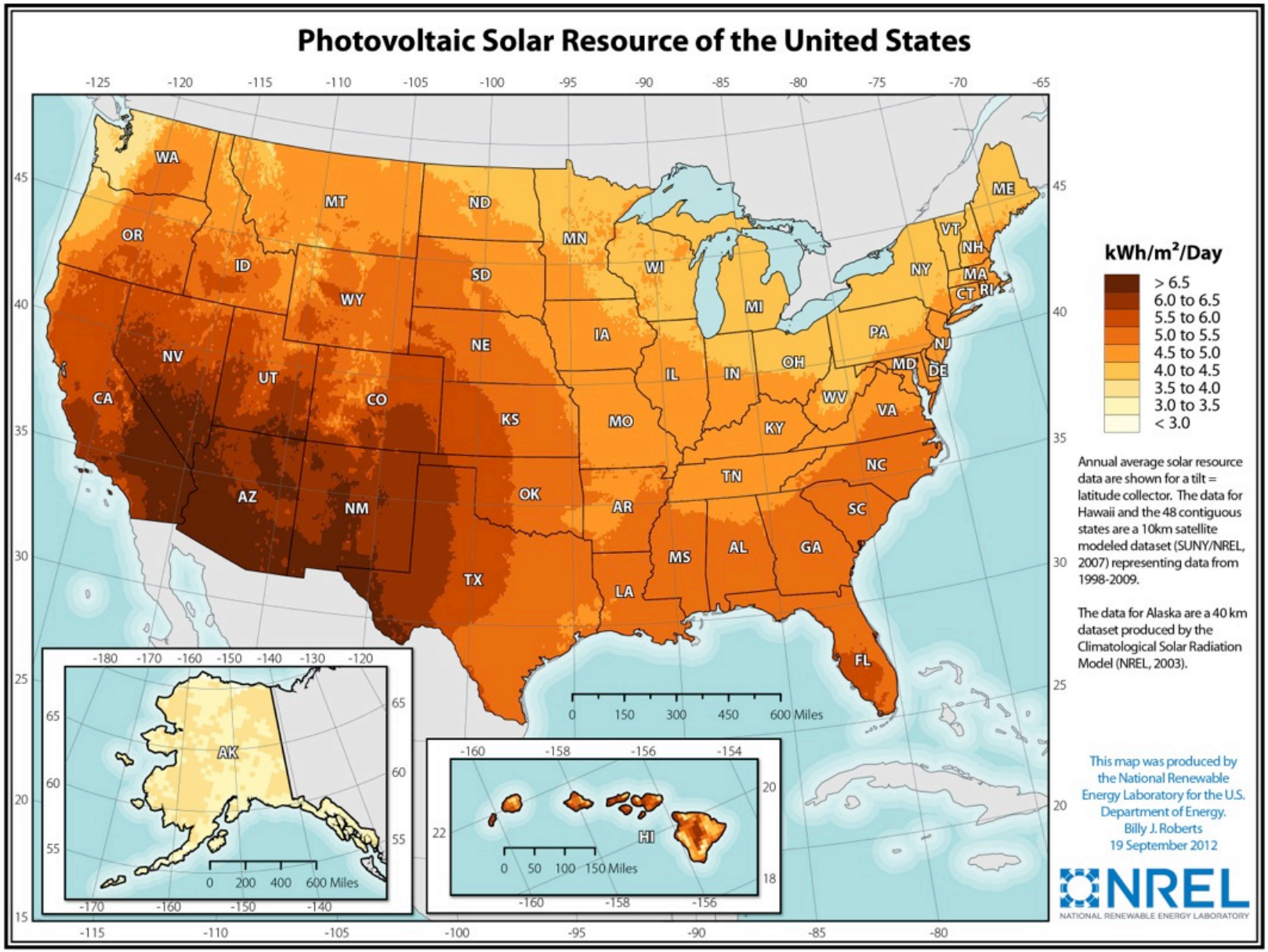
Replicability



T h a n k Y o u

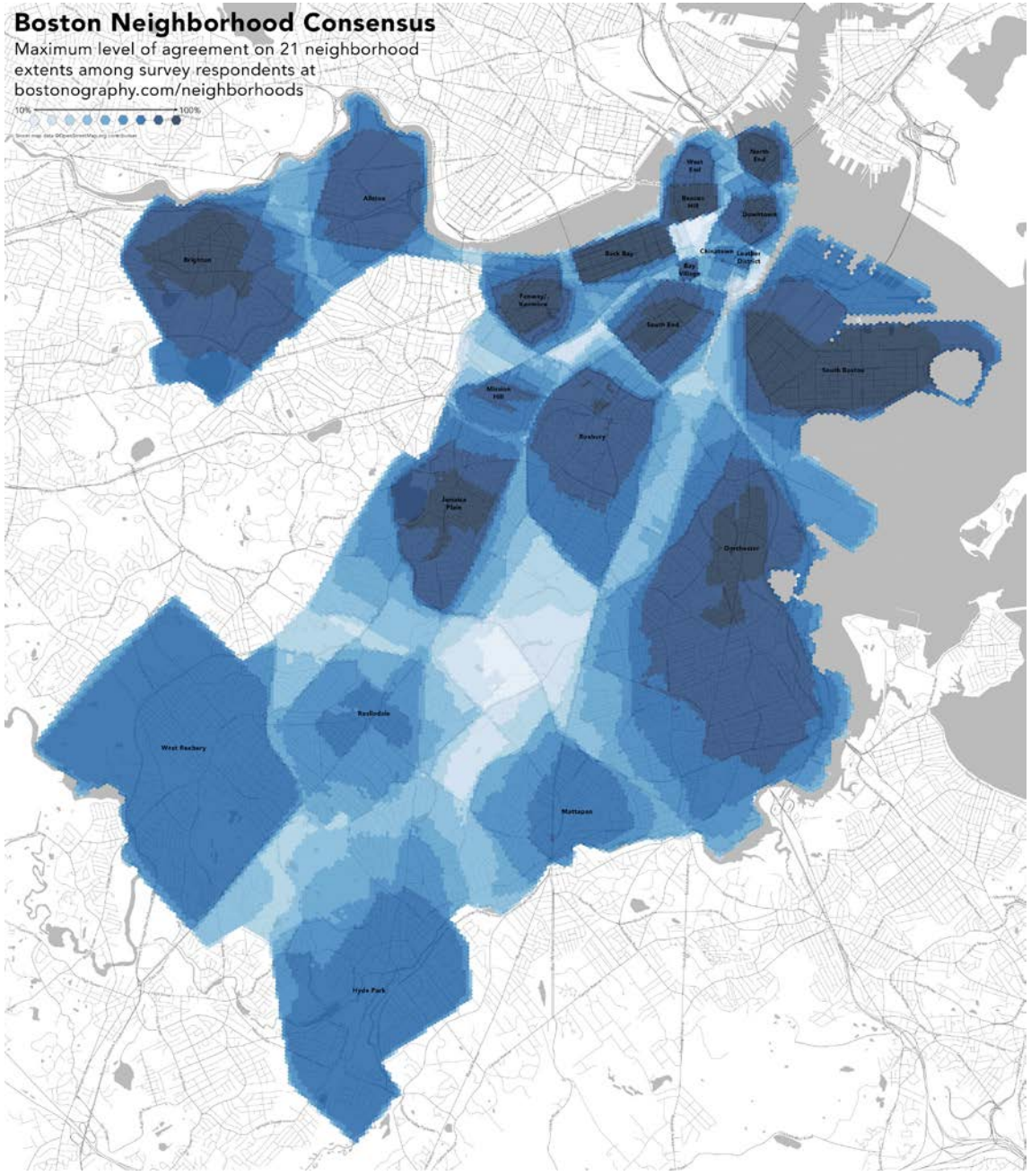
Team Xenergy

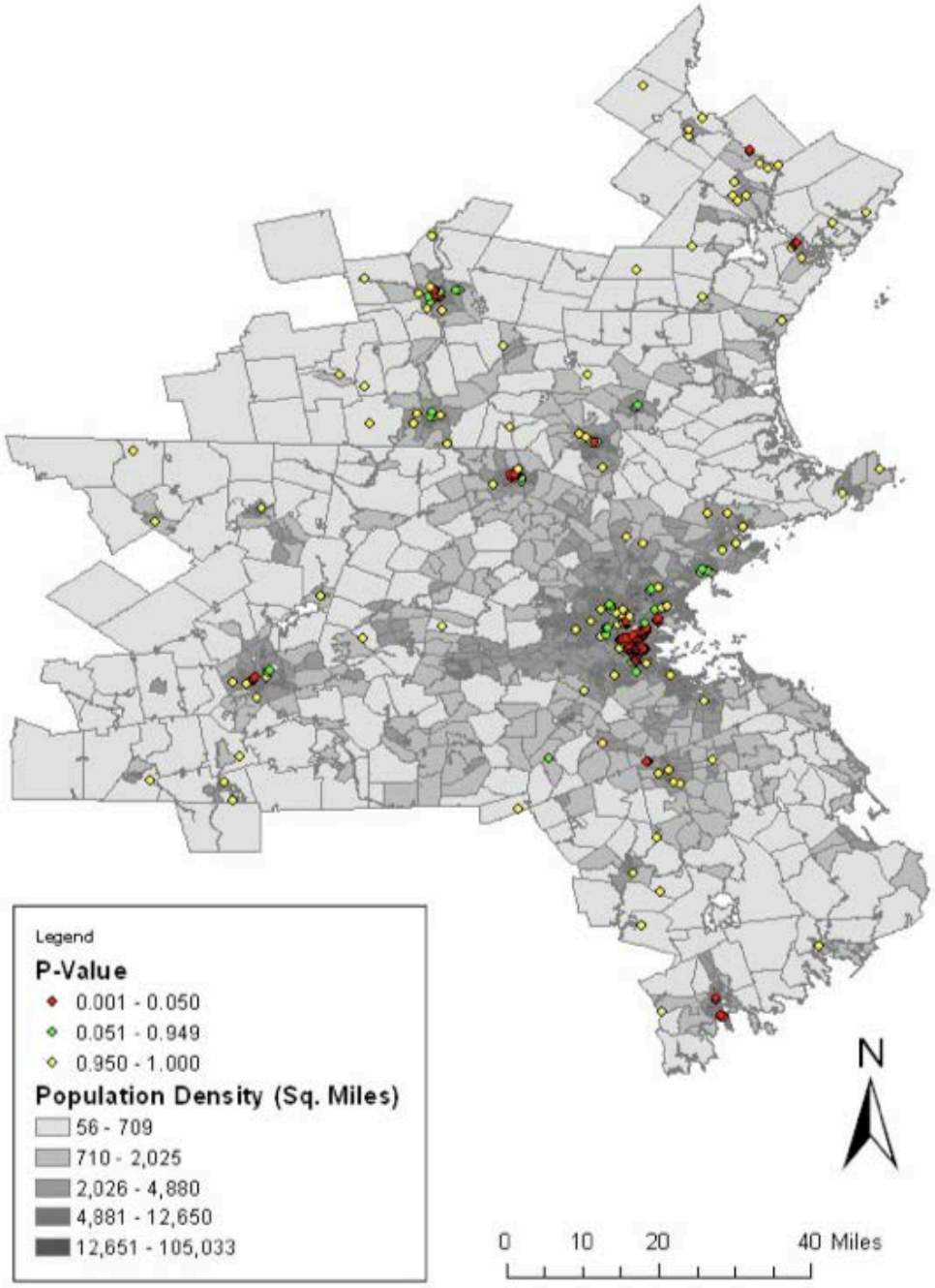
Harry, Laura, Kathy, Kavitha, Ben


Photovoltaic Solar Resource of the United States
kWh/m²/Day
> 6.5
6.0 to 6.5
5.5 to 6.0
5.0 to 5.5
4.5 to 5.0
4.0 to 4.5
3.5 to 4.0
3.0 to 3.5
< 3.0
Annual average solar resource data are shown for a tilt = latitude collector. The data for Hawaii and the 48 contiguous states are a 10km satellite modeled dataset (SUNY/NREL, 2007) representing data from 1998-2009.
The data for Alaska are a 40 km dataset produced by the Climatological Solar Radiation Model (NREL, 2003).
0 150 300 450 600 Miles
AK
0 200 400 600 Miles
HI
0 50 100 150 Miles
This map was produced by the National Renewable Energy Laboratory for the U.S. Department of Energy.
Billy J. Roberts
19 September 2012
NREL
NATIONAL RENEWABLE ENERGY LABORATORY

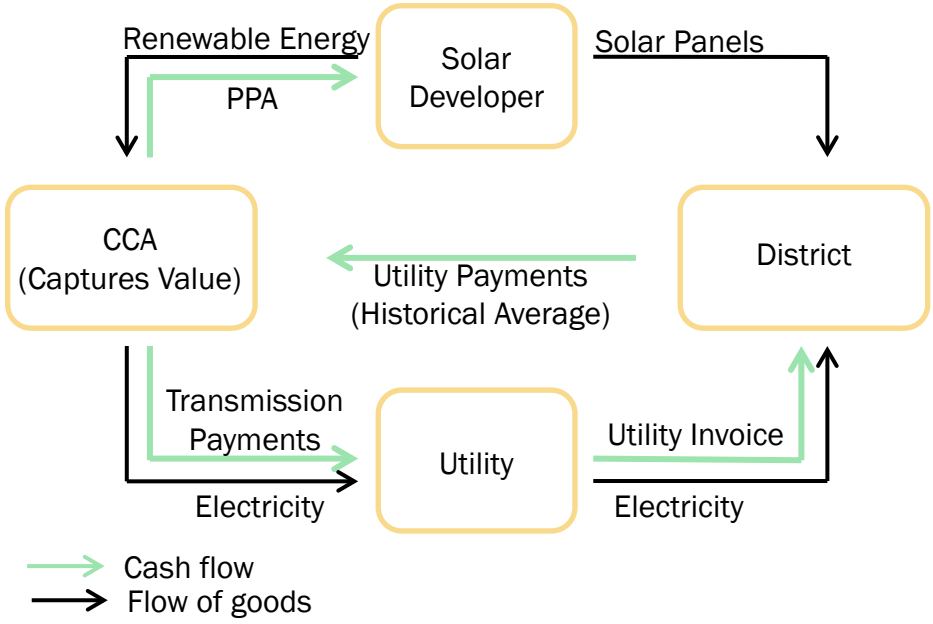
Boston Neighborhood Consensus

Maximum level of agreement on 21 neighborhood extents among survey respondents at bostonography.com/neighborhoods



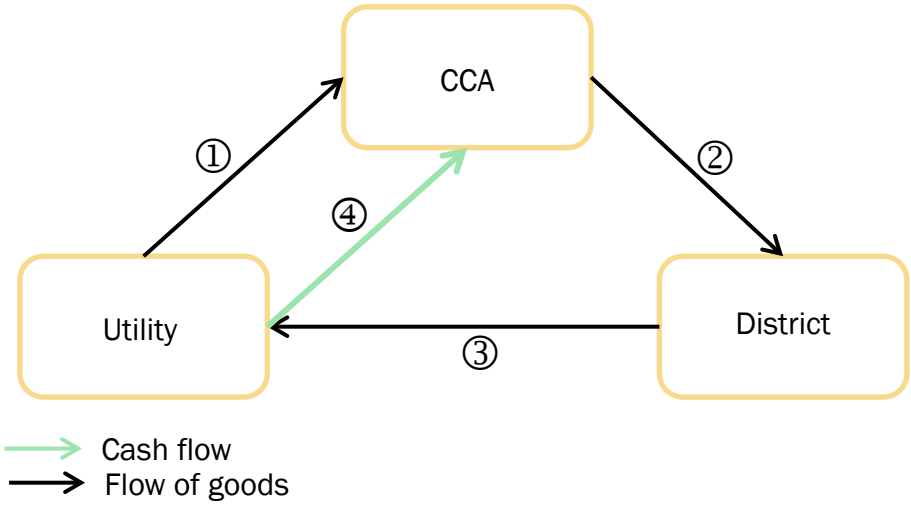

Legend
P-Value
0.001 - 0.050
0.051 - 0.949
0.950 - 1.000
Population Density (Sq. Miles)
56 - 709
710 - 2,025
2,026 - 4,880
4,881 - 12,650
12,651 - 105,033
N
0
10
20
40 Miles

MESA
(Managed Energy Service Agreements)



- Consumers pay rates based on historical use (pre-solar/pre-efficiency improvements)
- CCA can capture the difference between the historical use payments and current consumption to reinvest in the community.

Demand Response with the CCA as Aggregator



① Notification of Demand Response event is issued.
② CCA engages solar generation for emergency systems only.
③ District facilities (CCA Customers) reduce use and stress on the grid.
④ For meeting the DR reduction requirement, the utility rewards the CCA with a cash payment.