

Microgrids: At the junction of community resilience and energy planning

Third Thursday Webinar

August 16, 2018

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Agenda

- Community-led: Neighborhood leadership principle
- Aggregation of non-contiguous subscribers
- Optimization of economic dispatch for sustainability
- Feasibility Assessment: Value Streams

Questions? Send them to webinar@synapse-energy.com



Inspiration: Low & Middle Income (LMI) Concept

A stylized illustration of a landscape. The background is a solid blue color. In the foreground, there is a dark blue silhouette of a city skyline with several buildings. In front of the city, there are several white wind turbines. In the upper right corner, there is a bright yellow sun. The text "People and communities should have the right to control their energy future." is written in white, bold, sans-serif font across the center of the image.

**People and communities
should have the right to
control their energy future.**

Community Benefits

Goal: Resilience & Prosper-in-place

Implications

Clean Energy

Health benefits from improved air quality
EV availability
Meeting carbon emission reduction goals

- *Local, state, and federal*

Communications

Uninterruptable cell service

- *Reliable communications in emergencies*

Utility

New groundwork for utility of the future

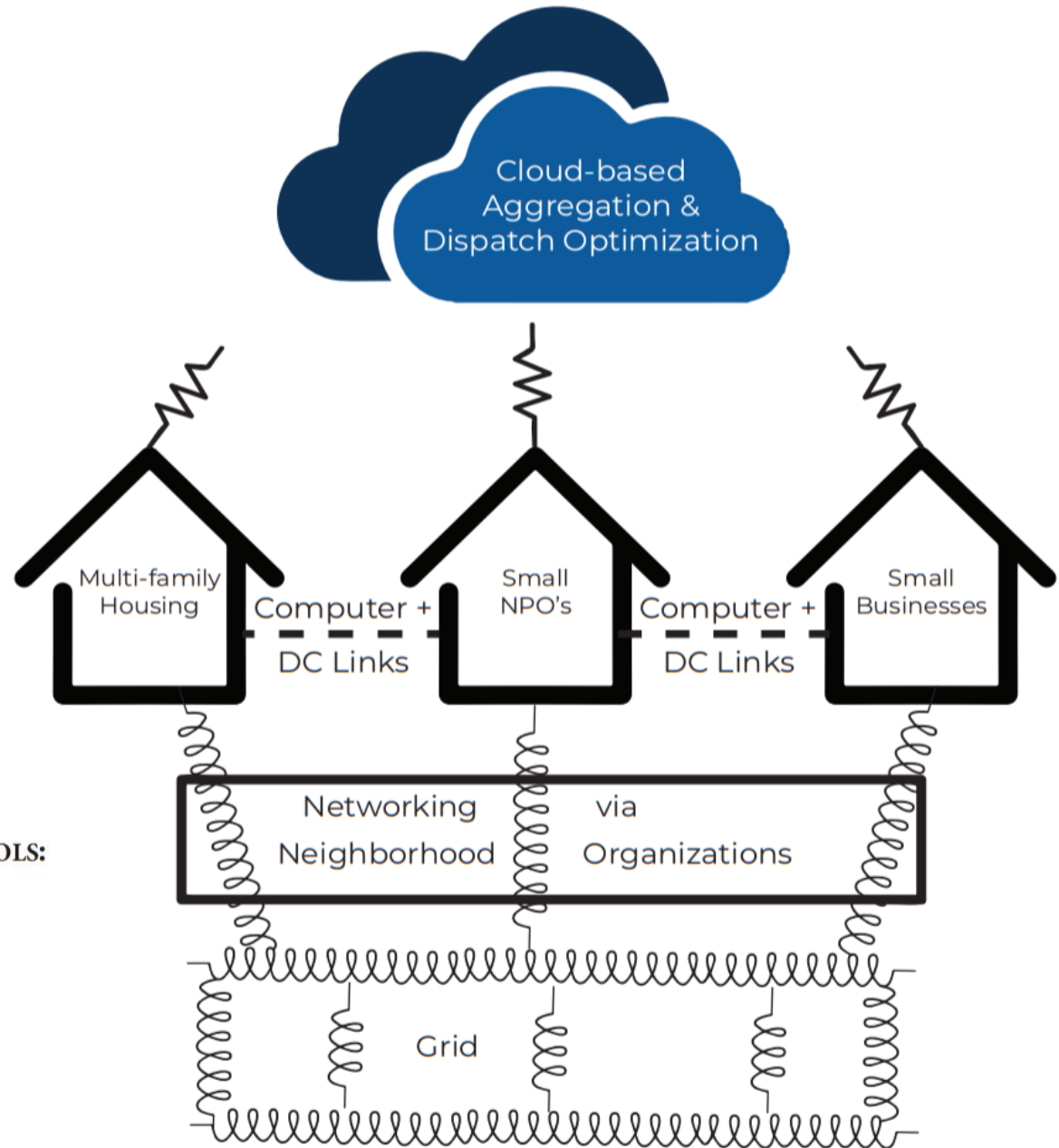
- *Improve ratepayer-utility relations*

Economic

Local green-collar job creation
Peak-shaving and other revenue opportunities

- *Cost Savings*

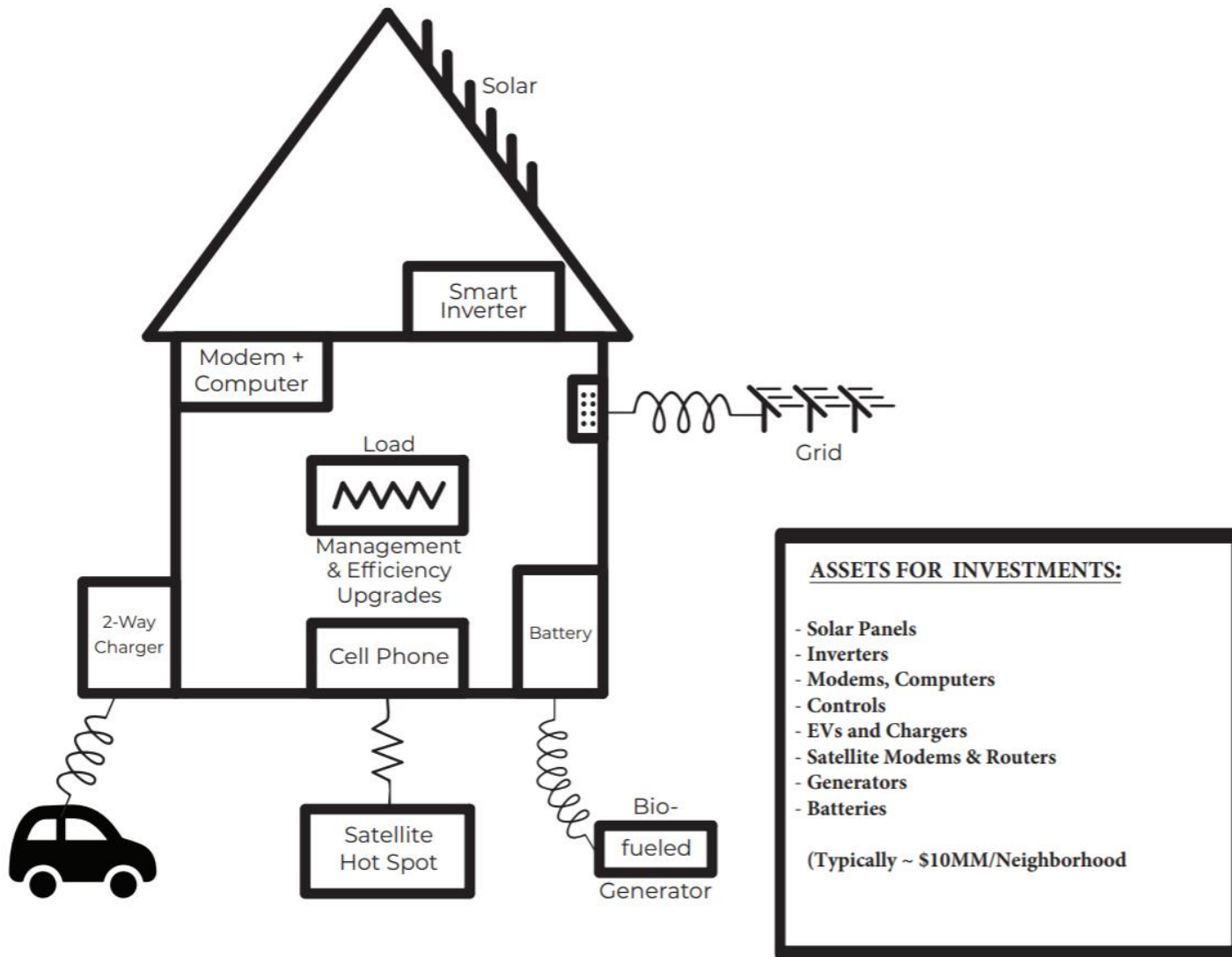
Microgrid Model



EXAMPLES OF ECONOMIC OPTIMIZATION TOOLS:

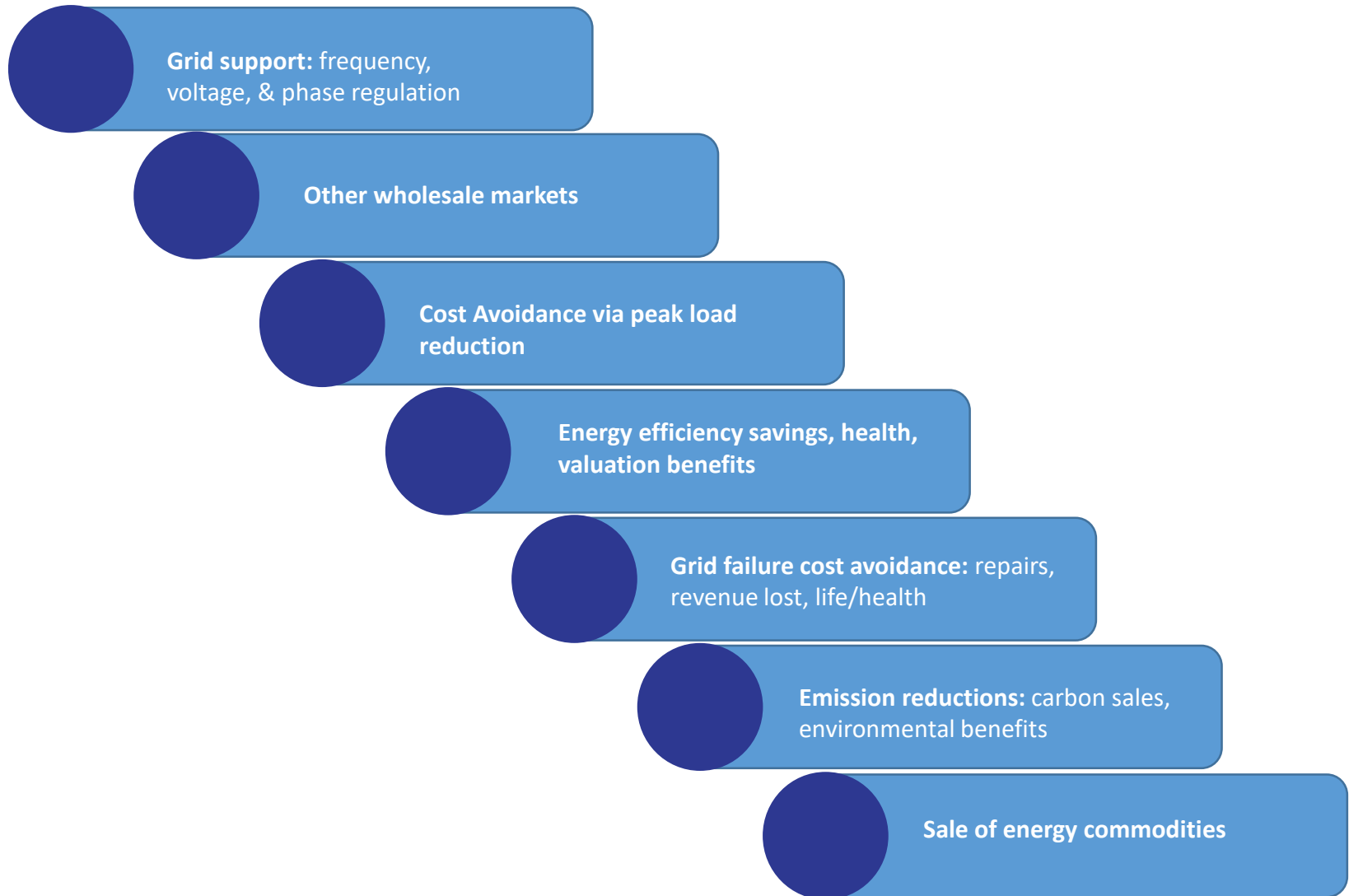
REopt, NREL
DER CAM, Berkeley
Redcloud, muGrid Analytics
Scholarly and Proprietary Models

Single Building

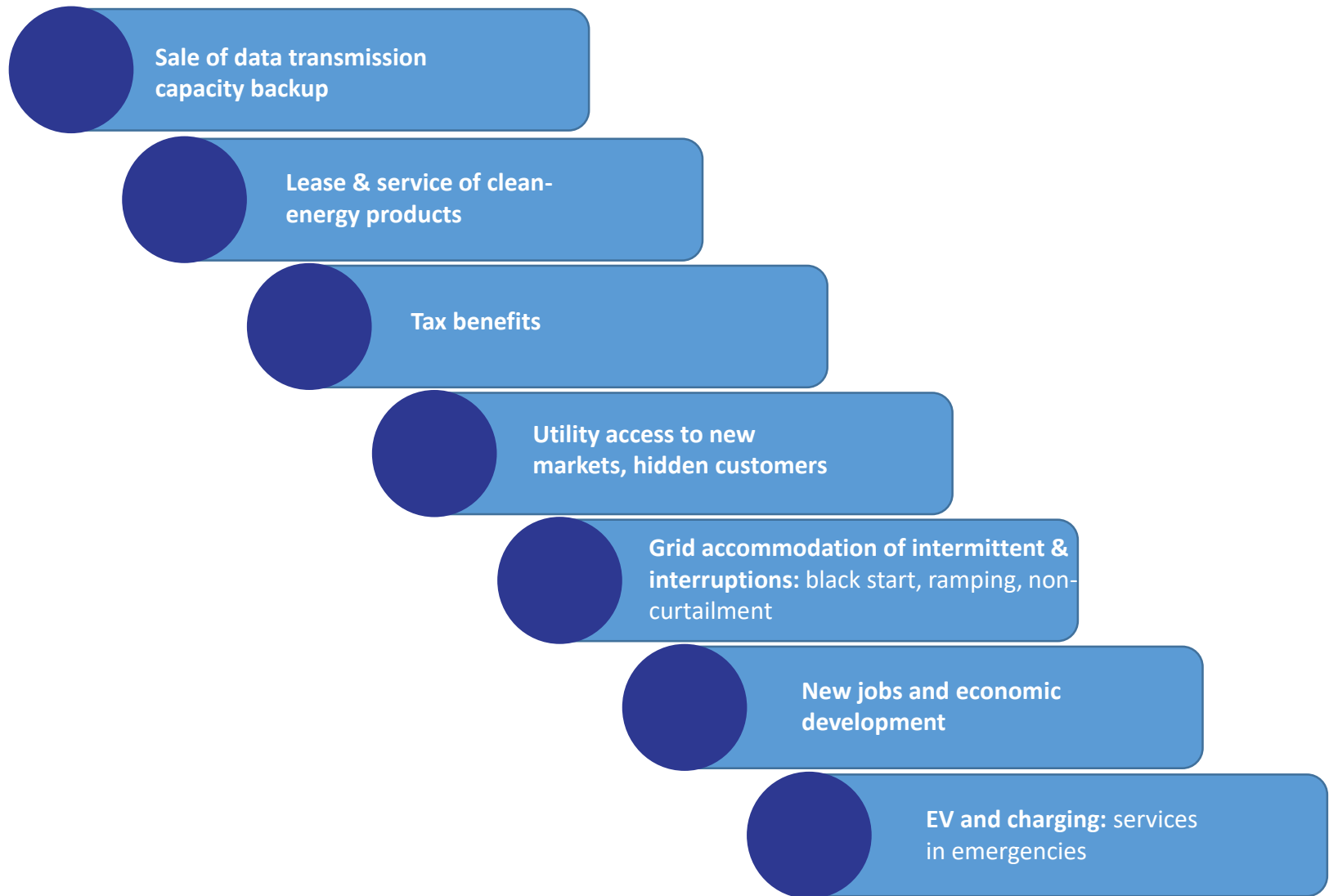


Monetizing Value Streams: A Feasibility Assessment Template

Examples of Value Streams



Value Streams (ctd)



Assessment Factors

Financial Projections

1. Invested
2. Operational Cost
3. Revenue

Parametric Modeling

Counterparty Collaboration

1. Utility
2. ISO
3. Regulator
4. City
5. Legislature
6. Developers

Define collaboration needed, under existing authority or new public policy

Commercial Customers

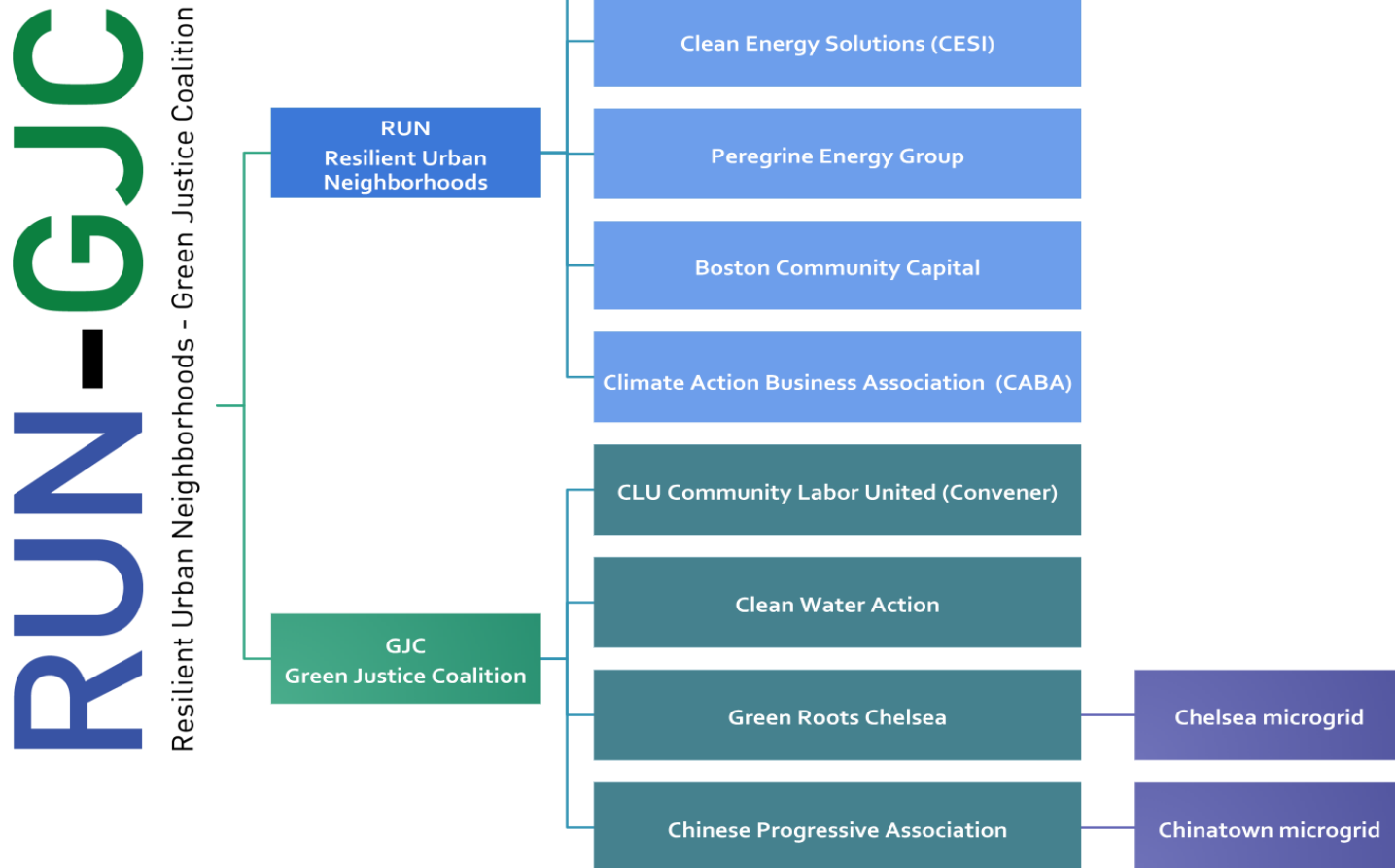
1. Local
2. Export

Marketing Plan

RUN-GJC Team:

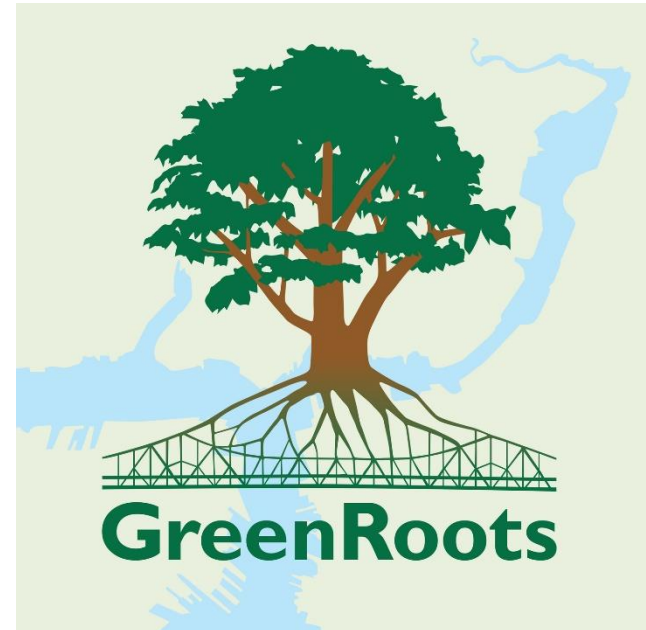
**Resilient Urban Neighborhoods-Green
Justice Coalition**

Organizational Structure



Chelsea & GreenRoots

- Demographics: low-income, racially & ethnically diverse, densely populated
- 90 hazardous waste sites
- Waterfront fuel storage & road salt hub
- New England Produce Center
- Proximity to Boston's Logan Airport
- Strong sea level rise/ flooding danger
- Threatened by gentrification
- EJ Community



GreenRoots' vision is to achieve environmental justice and greater quality of life through collective action, unity, education and youth leadership across neighborhoods and communities, as well as their plans for a full-time, permanent, resilient resource network in their neighborhood.

Chinatown & Chinese Progressive Association

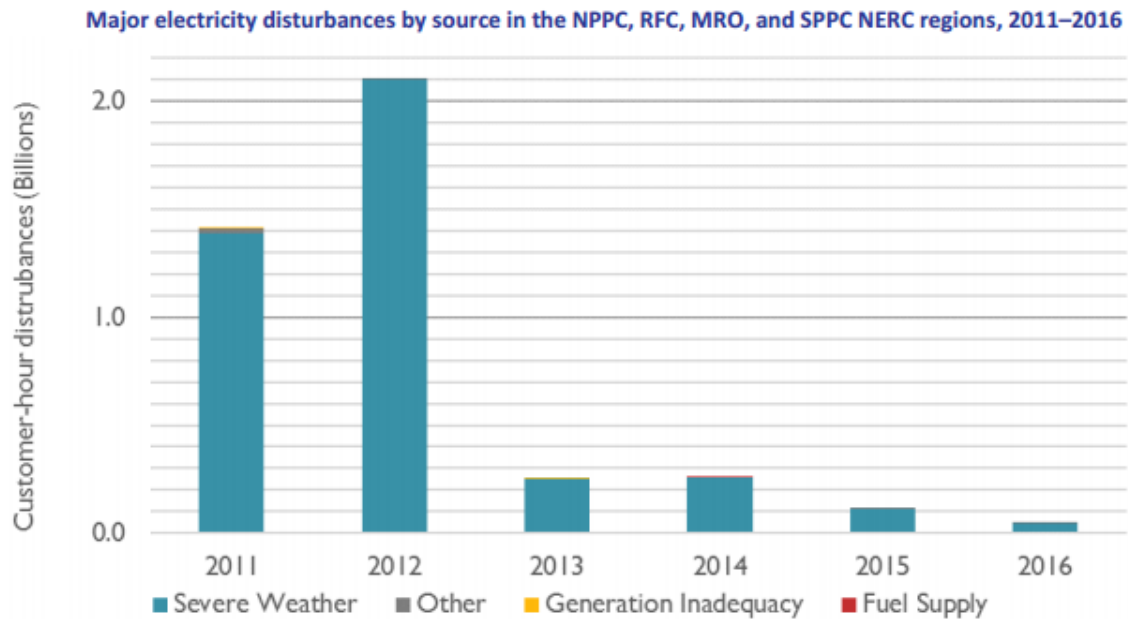
- Demographics: Densely populated, low-income, tight-knit community, some language barriers
- Infrastructure challenges, proximity to Tufts Medical
- Poor air quality/ proximity to major traffic arteries
- Strong heat island effect, prone to flooding
- Threatened by gentrification
- EJ Community



CPA believes that people have many concerns—jobs, education, freedom from discrimination, a clean and safe living environment. CPA has seen that once people achieve their rights in one aspect of their lives, they will be more likely to actively participate in solving other community problems.

Community Outage Considerations

- 94% of service disruptions result from weather-related impacts
- Weather-related outages most commonly result from damages to transmission and distribution systems
- Low-income communities are most vulnerable to climate change caused weather incidences
- Nor'easter storms in MA from January through March of 2018 cost MA businesses \$950 million in sales



Sources: U.S. Energy Information Administration (EIA), Synapse

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During the presentation, send questions to webinar@synapse-energy.com

