



# **RENEWABLE ENERGY PURCHASING SYNDICATES**

**OCTOBER 23, 2017**



**Miriam Posner**

A Better City



**Pam Messenger**

Friends of Post Office Square



**Garrett Sprague**

CustomerFirst Renewables



**Joe Higgins**

Massachusetts Institute of Technology





# SUMMIT FARMS SOLAR

THE LARGEST AGGREGATED RENEWABLE PURCHASE  
BY NON-AFFILIATED PARTIES IN THE U.S.

**Miriam Posner**

Director of Energy & Environmental Policy  
**A Better City**

# SUMMIT FARMS SOLAR

**CAPACITY:** 60 MW Generated from 255,000 Panels

**AREA:** ~650 acres of Contiguous Farmland

**LOCATION:** Currituck County, North Carolina

**RTO:** PJM

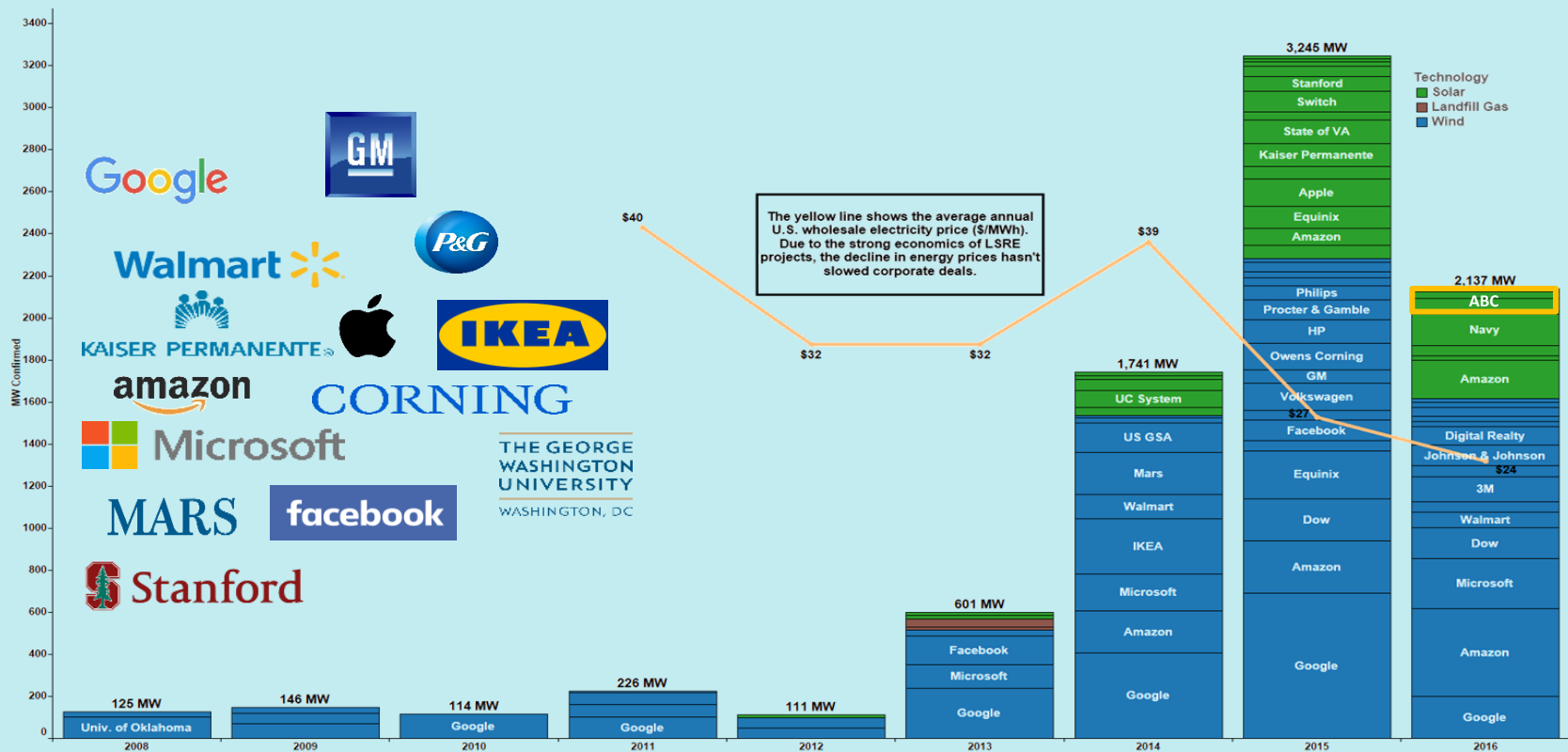
**AGREEMENT LENGTHS:** 25 Years

**AGREEMENT TIMELINE:** One Year from Scoping to Signing

**AGREEMENT SIGNED:** October 2016

**COMMERCIAL OPERATIONS REACHED:** February 2017

## PROJECT COMPARED TO OTHER LSRE



Source: CustomerFirst Renewables

# ACHIEVING LOCAL CLIMATE GOALS



Equivalent to **100%** of electricity consumption



Equivalent to **100%** of electricity consumption



Equivalent to **40%** of electricity consumption



# MAKING A GLOBAL IMPACT

**146 GWh**  
of emissions-free  
power per year



**119,500 tons**  
of CO<sub>2</sub>  
emissions abated



Equivalent to taking  
**22,250 cars**  
off the road annually



A coal-fired power plant was retired as a  
result of Summit Farm's ability to provide  
**substitute power.**





# THE BIG IDEA

**Pam Messenger**  
General Manager  
Friends of Post Office Square



# KEY PLAYERS



Convener



73%



26%



1%

Off-Takers



Technical Advisor



Customized  
Energy Solutions

Agent that Sells the Power  
on the PJM Market



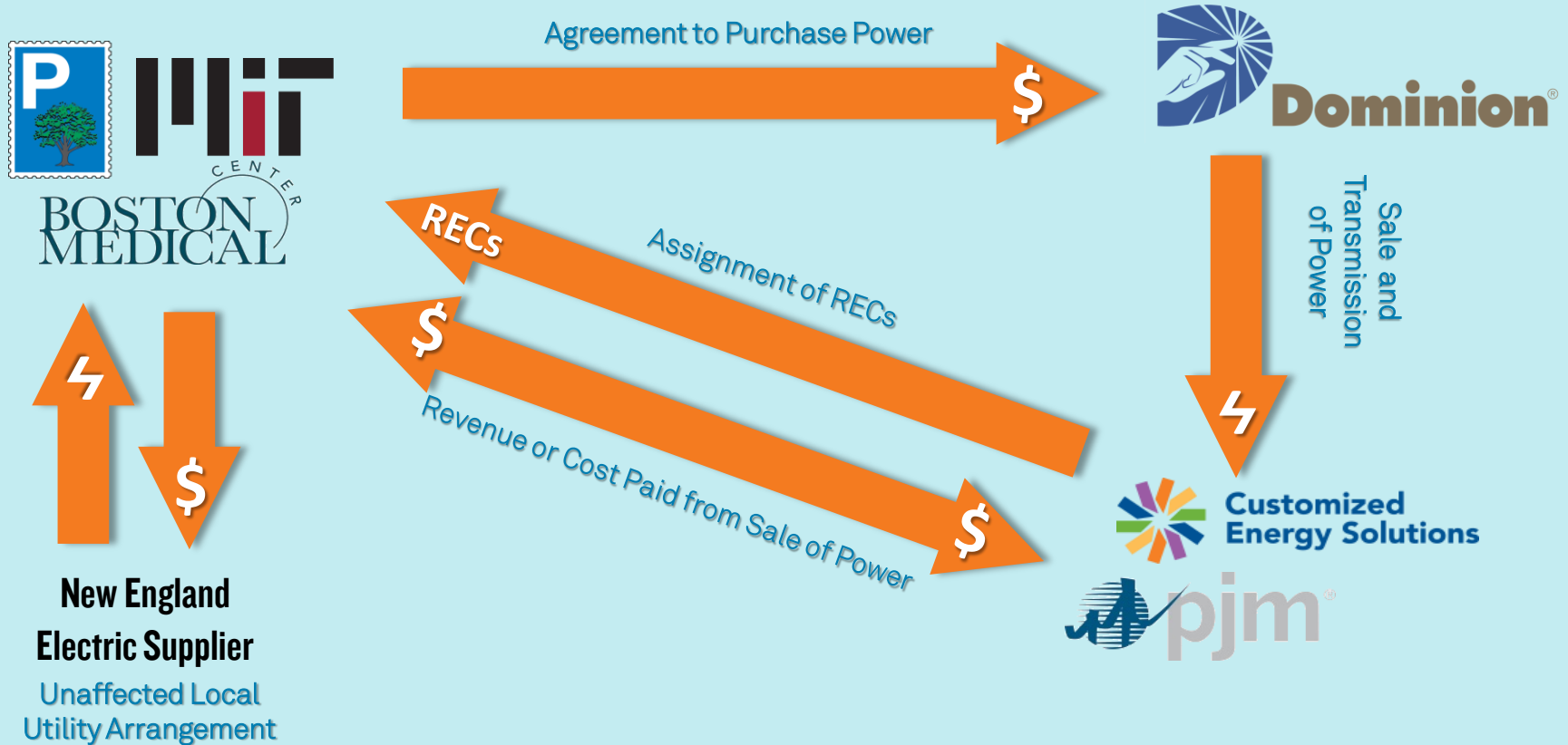
Developer



**Dominion**<sup>®</sup>

Managing Utility and Owner  
of Summit Farms Solar

# HOW IT WORKS







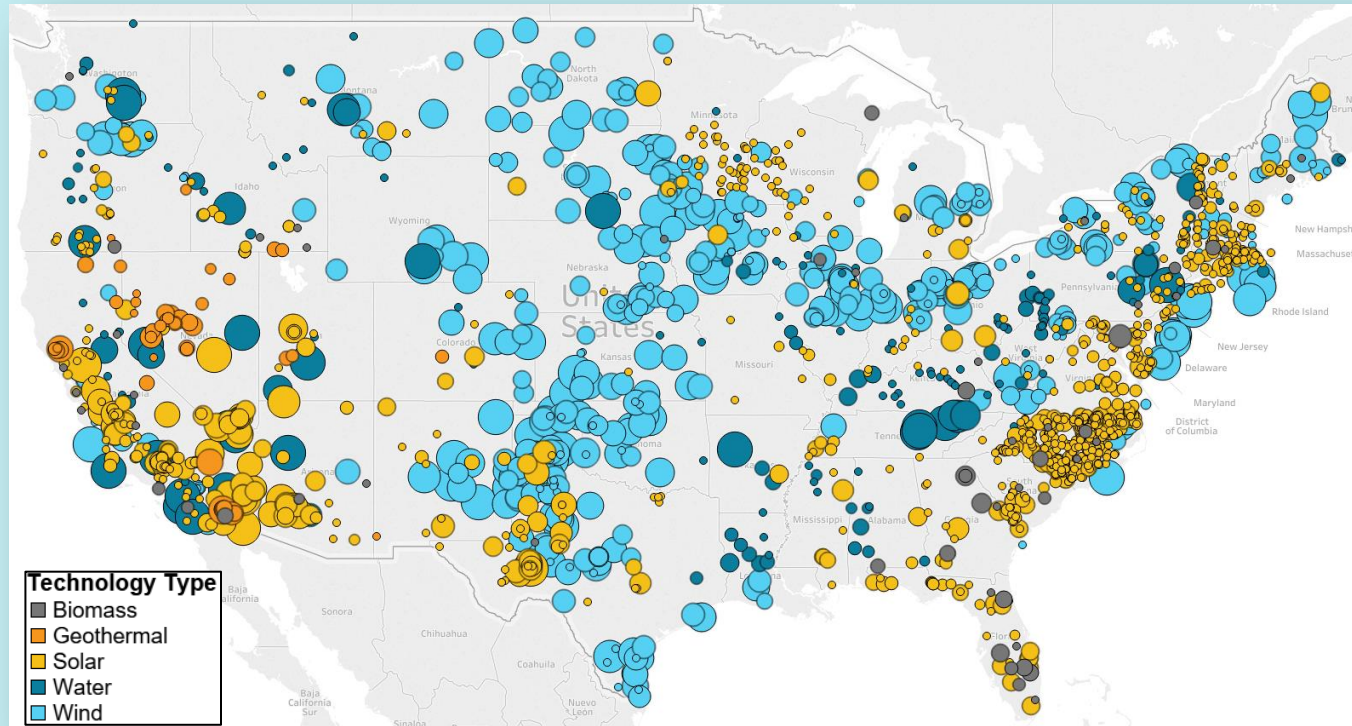
# FROM CONCEPT TO PROJECT

**Garrett Sprague**

Associate, Business Development  
**CustomerFirst Renewables**

# POTENTIAL RENEWABLE ENERGY PROJECTS

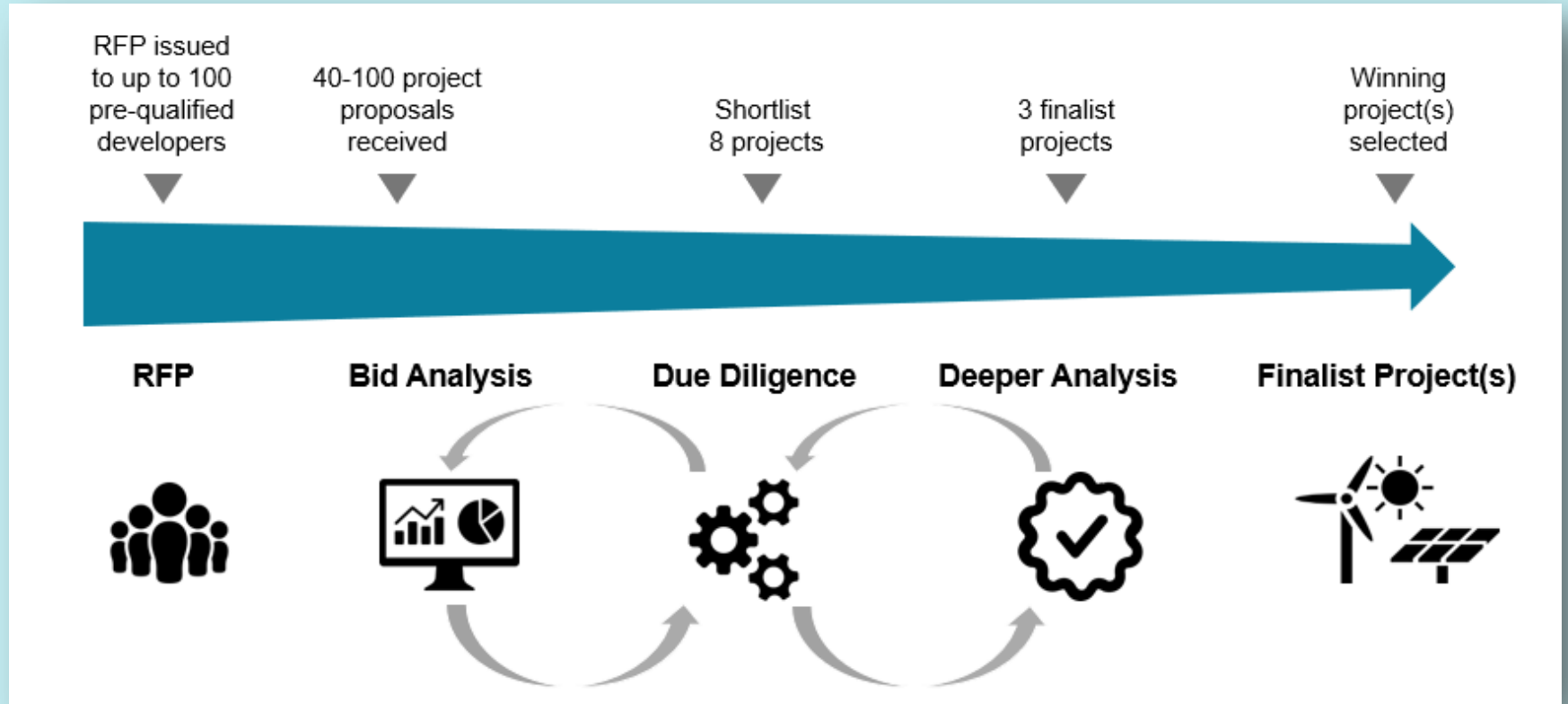
(ILLUSTRATION)



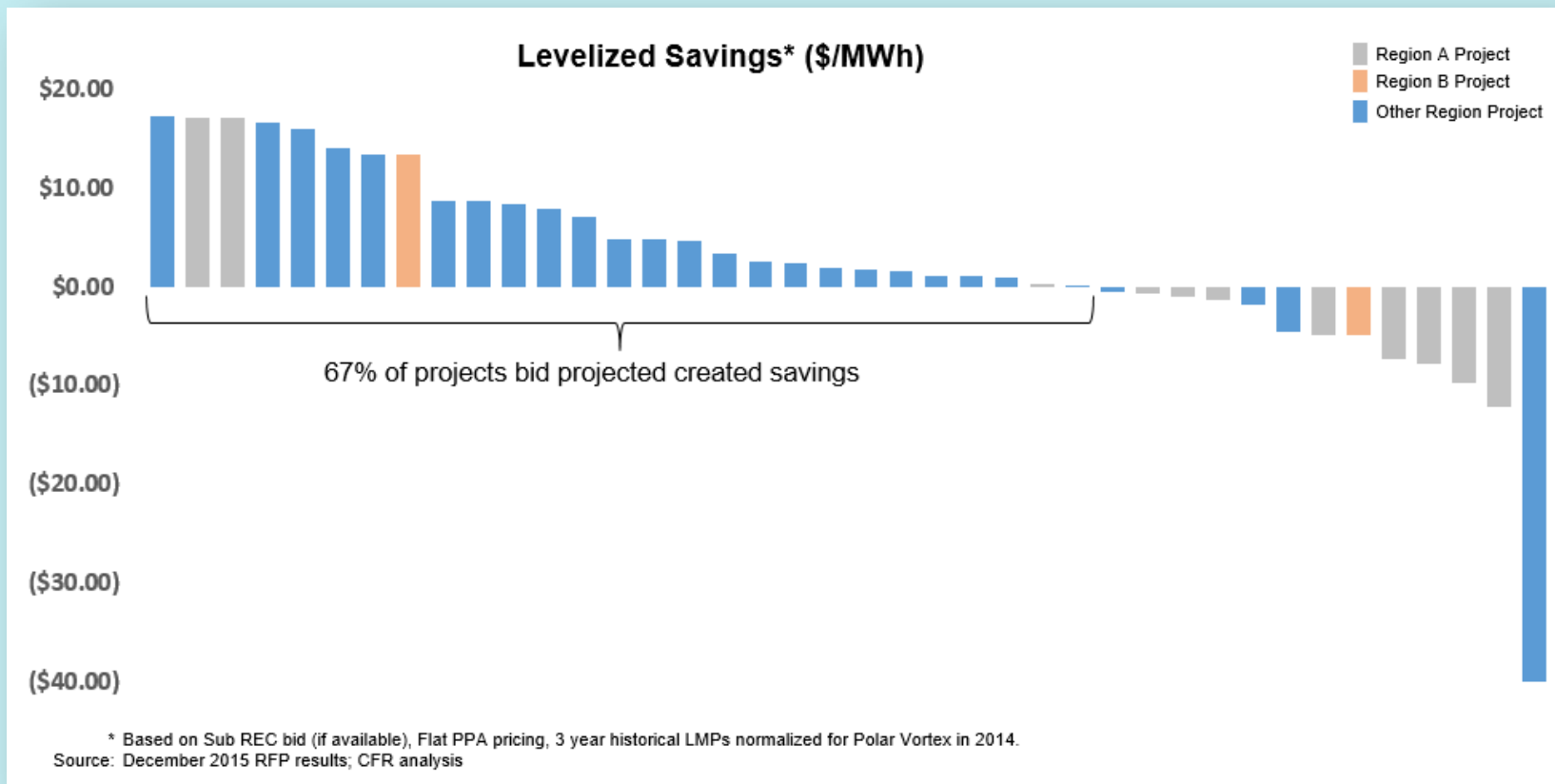
- > **246,000 MW** currently under development (2,400 projects)
- > **An additional 354,000 MW** is operational (8,170 projects, not shown here)



# PROCESS ➡ SUCCESS

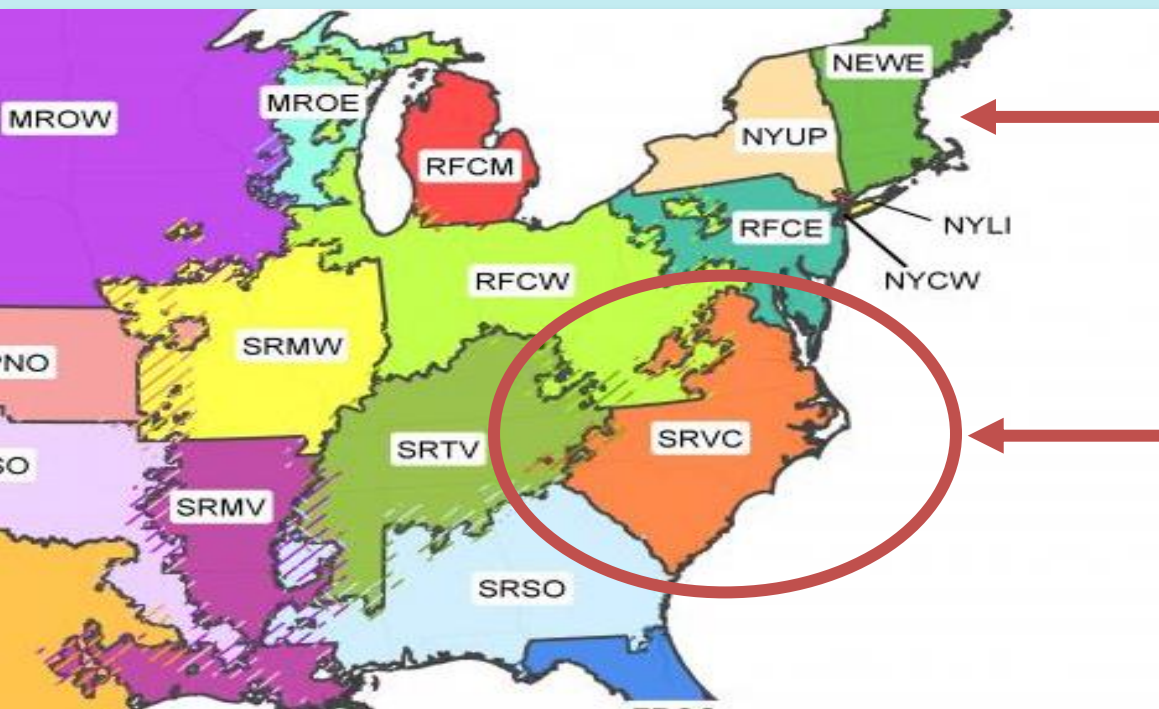


# GREAT RESPONSE, INEFFICIENT MARKET





# PROJECT IMPACT EVALUATION



## CO<sub>2</sub>e AVOIDANCE

**Baseload:** 637 Lbs/MWh

**Marginal:** 1,085 Lbs/MWh

## CO<sub>2</sub>e AVOIDANCE

**Baseload:** 932 Lbs/MWh

**Marginal:** 1,800 Lbs/MWh

**65%** More Emissions Avoided



# WHAT ARE WE TRYING TO SOLVE?

**Joe Higgins**

Director, Infrastructure Business Operations  
**Massachusetts Institute of Technology**

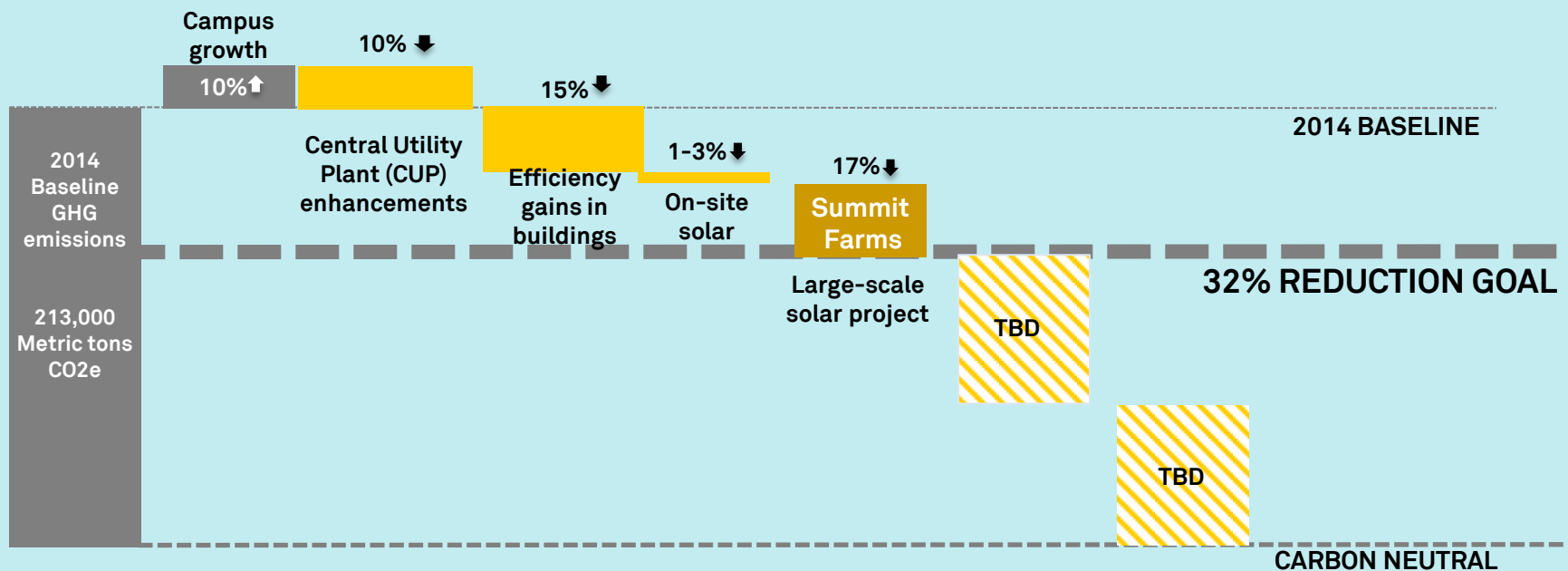


# PLAN FOR ACTION ON CLIMATE CHANGE ALIGNMENT

✓	<b>A</b>	Improve our understanding of climate change and advance novel, targeted mitigation and adaptation solutions	<ul style="list-style-type: none"><li>• Technology solutions and strategies</li></ul>
✓	<b>B</b>	Accelerate progress toward low- and zero-carbon energy technologies	<ul style="list-style-type: none"><li>• Research opportunities</li></ul>
✓	<b>C</b>	Education a new generation of climate, energy, and environmental innovators	<ul style="list-style-type: none"><li>• Educational opportunities</li></ul>
✓	<b>D</b>	Share what we know and learn from others around the world	<ul style="list-style-type: none"><li>• Demonstrates leadership</li><li>• Collaboration and partnerships</li></ul>
✓	<b>E</b>	Use our community as a test bed for change	<ul style="list-style-type: none"><li>• Contributes to 32% reduction goal</li><li>• Additionality</li><li>• Environment and health benefits</li></ul>

# WE ARE ON A PATH TOWARD EXCEEDING OUR GOAL

Reduce emissions at least 32% by 2030 from a 2014 baseline



# 650 ACRES

## 60 MEGAWATTS 255,000 PANELS

### TRANSMISSION LINE

### 3 MILES

LEGEND  
FENCE  
GATE  
PV ARRAY  
PCS LOCATION  
OVERHEAD MEDIUM  
VOLTAGE CABLE  
POWER LINES



# 650 ACRES

MIT Campus

MIT Campus

MIT Campus

MIT Campus

3 MILES

# 4X MIT CAMPUSES!

LEGEND  
FENCE  
GATE  
PV ARRAY  
PCS LOCATION  
OVERHEAD MEDIUM  
VOLTAGE CABLE  
POWER LINES





# A LIVING LABORATORY

## RESEARCH AREAS INCLUDE:

- Data analytics and accessibility
- Balance of system materials and costs
- Weather prediction advantages
- Capacity revenue modeling
- Economics, labor, working capital, and time to deploy
- Incentive structures for operators
- Site environmental impacts—regenerative opportunities



**photovoltaics**  
research laboratory

“If we use this as a vehicle to demonstrate world changing technologies that will emanate from MIT, we derisk by example in the field, and then change the way people think about installations, reducing the costs and increasing the scale. This can change the world.”



**Tonio Buonassisi**, Associate Professor  
Department of Mechanical Engineering  
Photovoltaics Research Laboratory



# AGGREGATION ADVANTAGES

- Broader global benefits!
- More favorable economics at large scale
- Attract a richer set of potential project bids
- Buyers share fixed transaction-related costs (consultants, legal, market agent, etc.)
- Ability to tap into broader & deeper networks
- Sharing the work
- “We’re in this together mindset” helps build momentum for an unfamiliar process



# READY FOR THE NEXT STEP?

Calculate your organization's potential savings with CFR's Renewable Energy Calculator

[lsre-tool.customerfirstrenewables.com](https://lsre-tool.customerfirstrenewables.com)

Case Study of our ground-breaking Summit Farms PPA

[abettercity.org/docs-new/Innovation\\_Through\\_Aggregation.pdf](https://abettercity.org/docs-new/Innovation_Through_Aggregation.pdf)

# FEEL FREE TO REACH OUT TO US!

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