



Come Together, Right Now, Over ZNC

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New York State Energy Research and Development Authority

**Getting to Zero Forum
Oakland, California
October 11, 2019**

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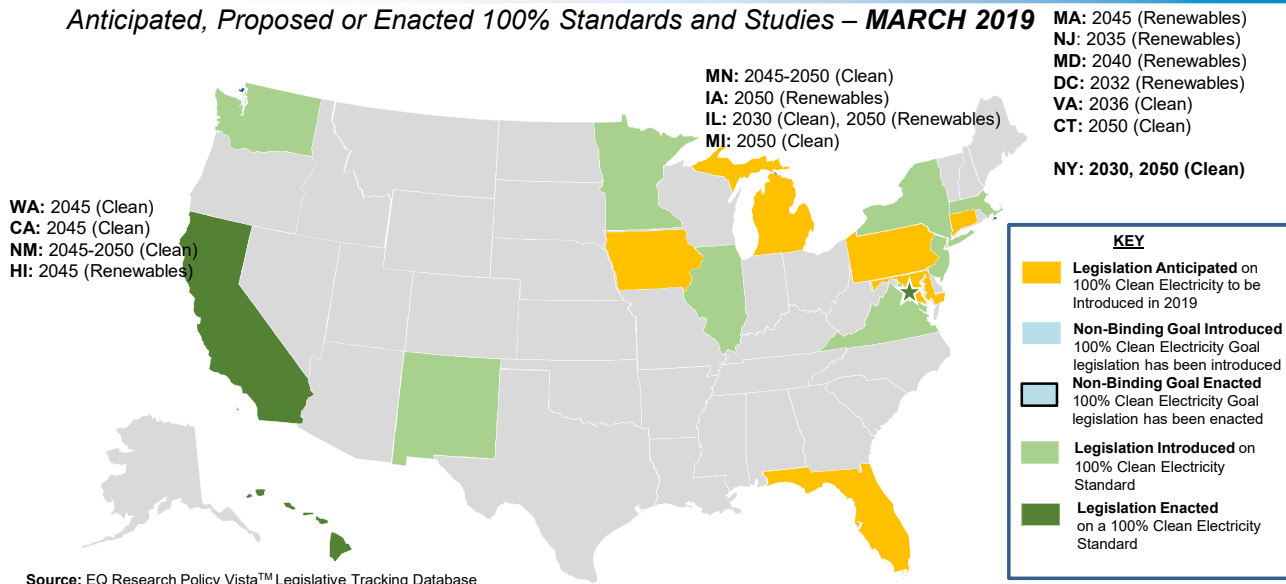
**"There is no documented historic precedent
for the changes needed to prevent even
worse disasters from coming."**

**IPCC "Global Warming of 1.5°C"
October, 2018**



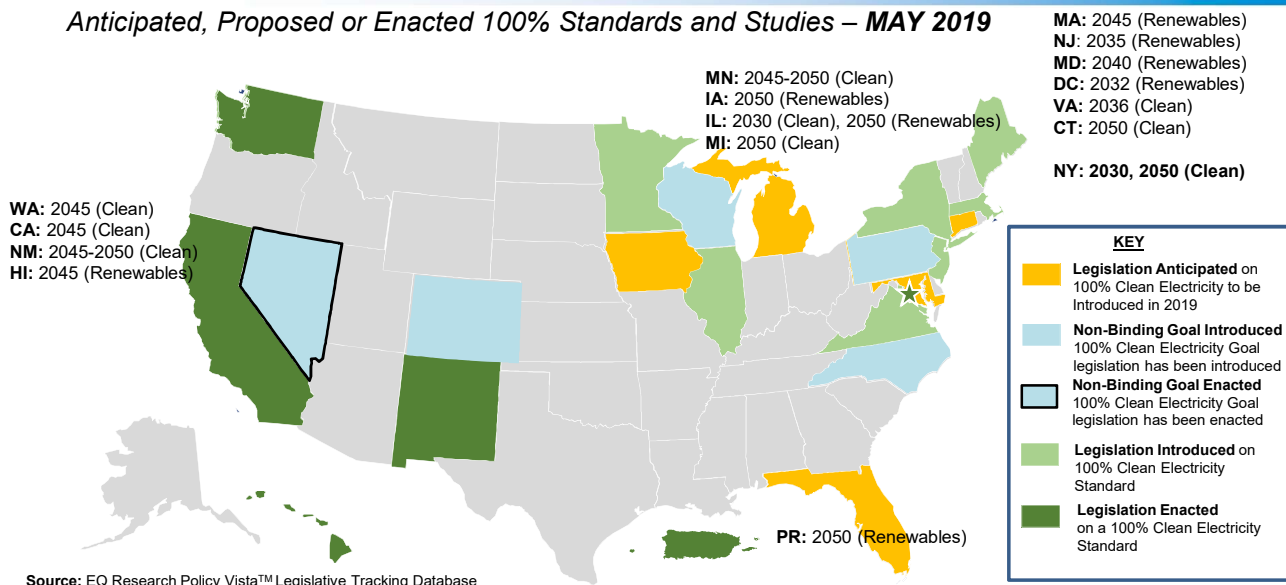
Joining, and Raising the Stakes for the 100% Clean Electricity Club

Anticipated, Proposed or Enacted 100% Standards and Studies – **MARCH 2019**



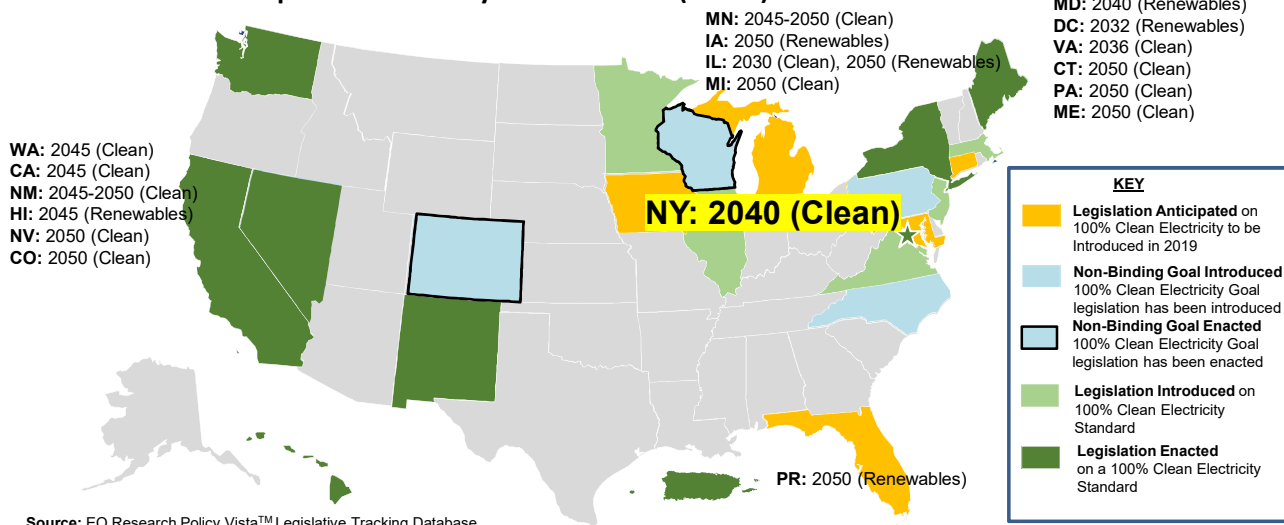
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Anticipated, Proposed or Enacted 100% Standards and Studies – **MAY 2019**

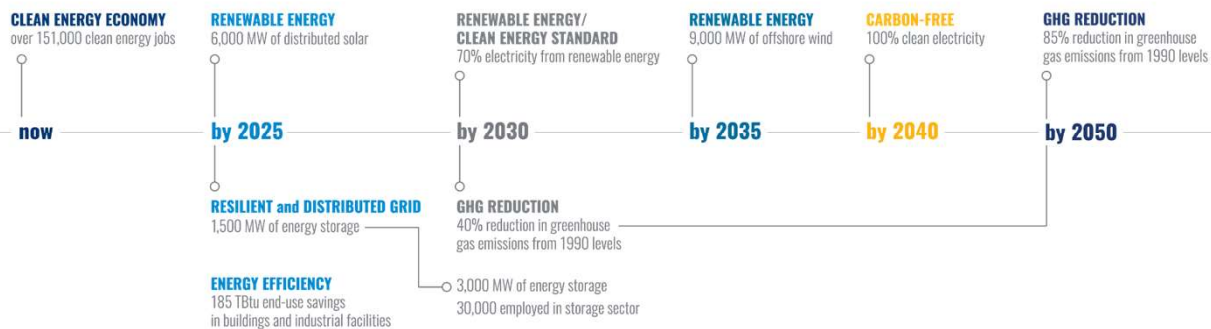


Joining, and Raising the Stakes for the 100% Clean Electricity Club

Anticipated, Proposed or Enacted 100% Standards and Studies – **AUGUST 2019** Climate Leadership and Community Protection Act (CLCPA)



New York State Clean Energy Goals Climate Leadership and Community Protection Act (CLCPA)



Climate Leadership and Community Protection Act (CLCPA) – Overview

- Most aggressive greenhouse gas reduction goals of any major economy: 40% by 2030, 85% by 2050
- 70% renewable energy by 2030, 100% zero-carbon electricity by 2040
- Path to carbon neutrality
- Codifies clean energy targets
- Commitments to environmental justice, disadvantaged communities, and just transition
- First statutory Climate Action Council



Greenhouse Gas Emissions Reduction Target

85

by

50

New York's 85x50 emissions reduction target will require a carbon neutral statewide building stock



Carbon Neutral Buildings Roadmap

- Identify potential pathways to a carbon neutral building stock
- Research critical decarbonization issues / engage Stakeholders
- Send long-term market signal & mobilize different sectors
- Create jobs and spur economic development
- Raise awareness of the benefits of carbon neutrality
 - Energy savings
 - Health, comfort, and productivity
 - Resilience
- Guidance for other state agencies and local governments
- Living document



NYSERDA Programs Informing the Roadmap

RetrofitNY

Buildings of
Excellence

Codes to Zero

Lead by
Example

Net Zero Energy for
Economic Development

Net Zero
Manufactured Housing

Net Zero in New Construction:
All Sectors & Portfolio Support

Single Family Net Zero
Market Segmentation





Adapting the Successful Energiesprong Model to New York State

- 4,500 rehabs
- 5,000 new construction
- 20,000 in pipeline



Key Components of Net Zero Retrofit Solution



Elements

- Highly insulated building envelope
- New, downsized all-electric mechanical works
- [On-site] distributed generation
- Grid interactivity



REV principle: engage private sector capital

Cost reduction



Carbon Neutral Buildings
at
business-as-usual cost



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Then vs Now



MARKETING

SALES
MAINTENANC

CUSTOMER



Report
 McKinsey Global Institute
 February 2017

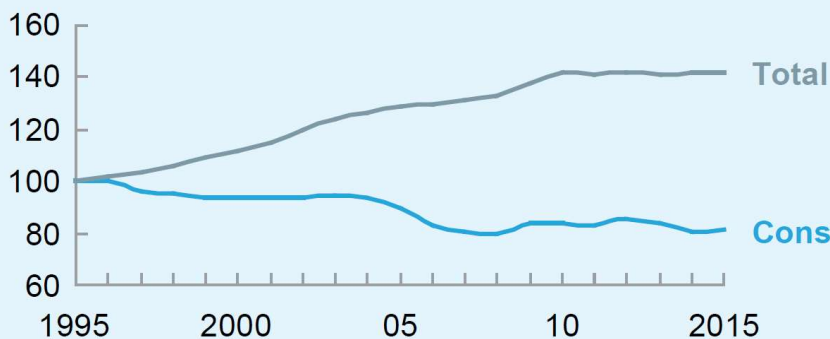


Reinventing construction through a productivity revolution



Productivity evolution, 1995–2015

Gross value added¹ per hour worked
 Index: 100 = 1995



Compound annual growth rate
 %

Total	1.76
Construction	-1.04

Source: McKinsey Global Institute, Reinventing Construction: a Route to Higher Productivity, 2017





Action in seven areas
can boost sector
productivity by
50-60%

- Reshape regulation
- Rewire contracts
- Rethink design
- Improve procurement and supply chain
- Improve onsite execution
- Infuse technology and innovation
- Reskill workers

5-10X productivity boost

possible for some parts of the industry by moving to a manufacturing-style production system



MCKINSEY GLOBAL INSTITUTE

McKinsey&Company



NYSERDA

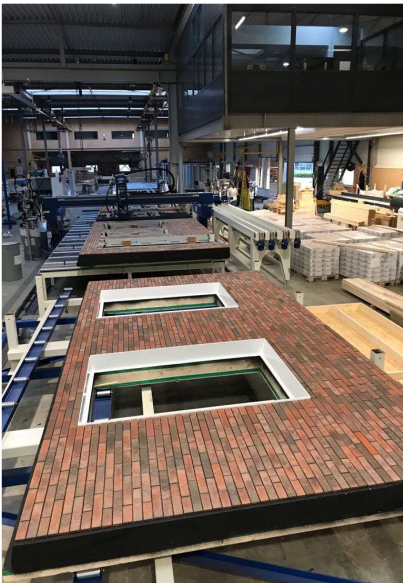


Conventional Process



NYSERDA

Prefabricated High Performance Components



Conventional Configuration

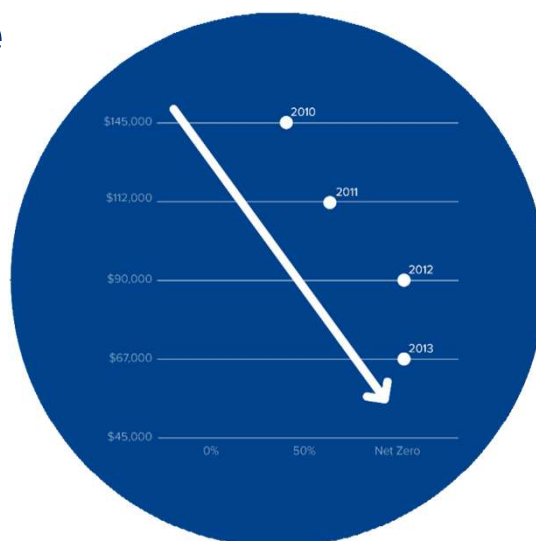


Integrated Mechanical Systems



Key Achievements of the Energiesprong Program

Net Zero Energy Buildings
at 40% of the Cost of Initial
Pilots





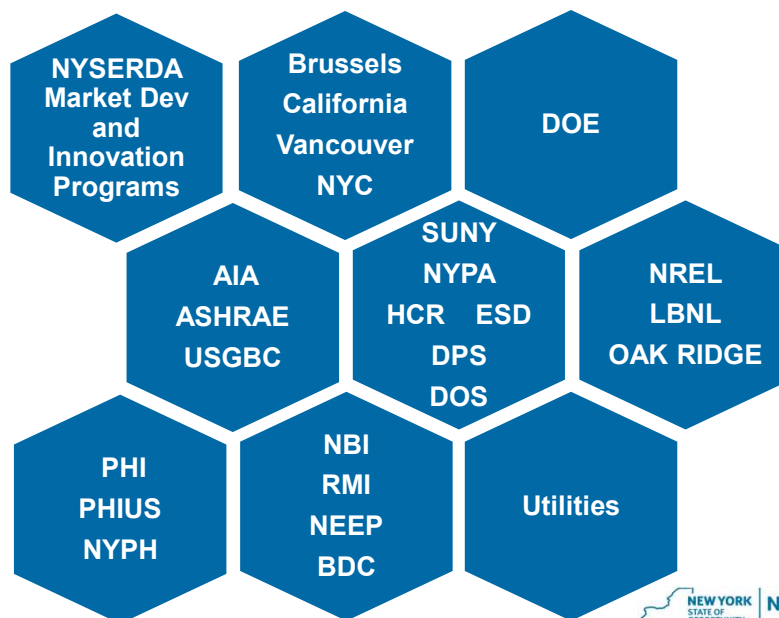
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Strategic Partners:

Demonstrating Demand to the Manufacturing Sector



New York City Q1 2021

