



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

"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

MA: 2045 (Renewables)

NJ: 2035 (Renewables)

MD: 2040 (Renewables)

DC: 2032 (Renewables)

VA: 2036 (Clean)

CT: 2050 (Clean)

NY: 2030, 2050 (Clean)

MN: 2045-2050 (Clean)

IA: 2050 (Renewables)


IL: 2030 (Clean), 2050 (Renewables)

✓ **MI: 2050 (Clean)**

KEY

Legislation Anticipated on 100% Clean Electricity to be Introduced in 2019

Non-Binding Goal Introduced
100% Clean Electricity Goal
legislation has been introduced

 **Non-Binding Goal Enacted**
100% Clean Electricity Goal legislation has been enacted

Legislation Introduced on
100% Clean Electricity
Standard

Legislation Enacted
on a 100% Clean Electricity
Standard

WA: 2045 (Clean)

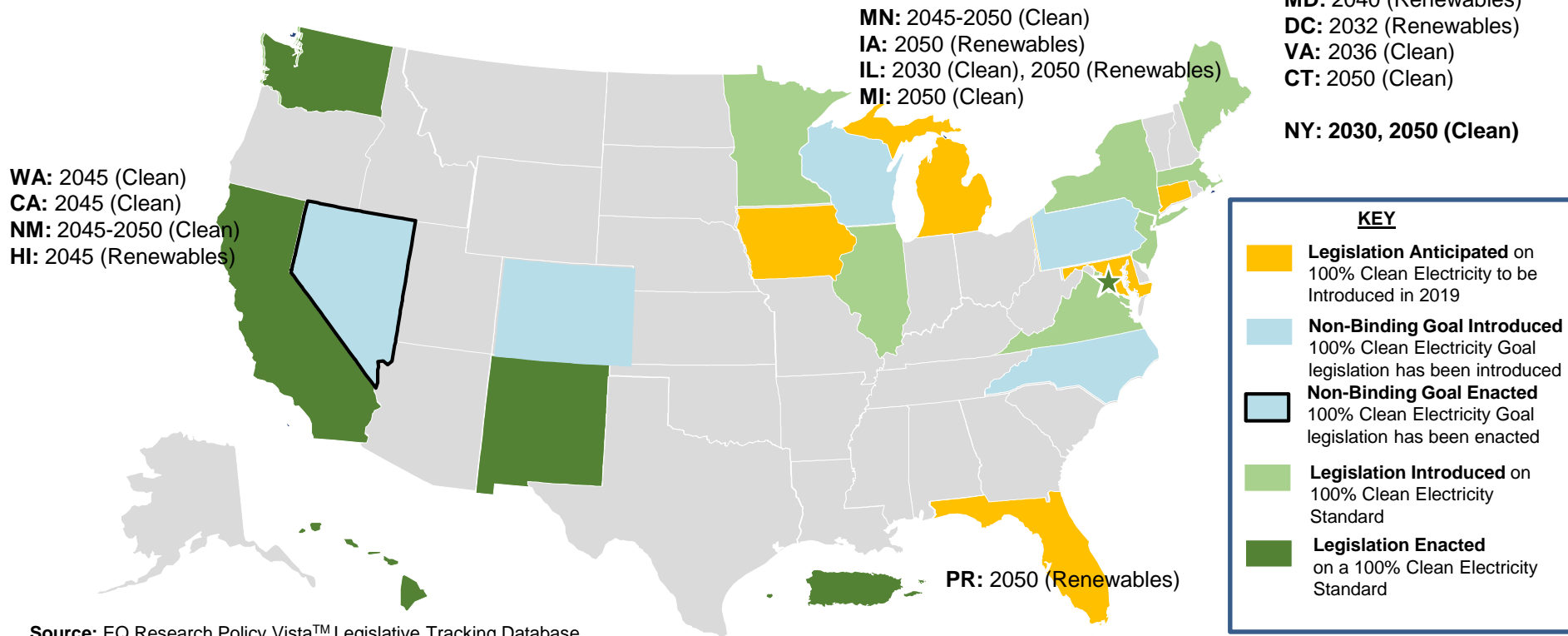
CA: 2045 (Clean)

NM: 2045-2050 (Clean)

HI: 2045 (Renewables)

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

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)

MA: 2045 (Renewables)
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NY: 2040 (Clean)

KEY

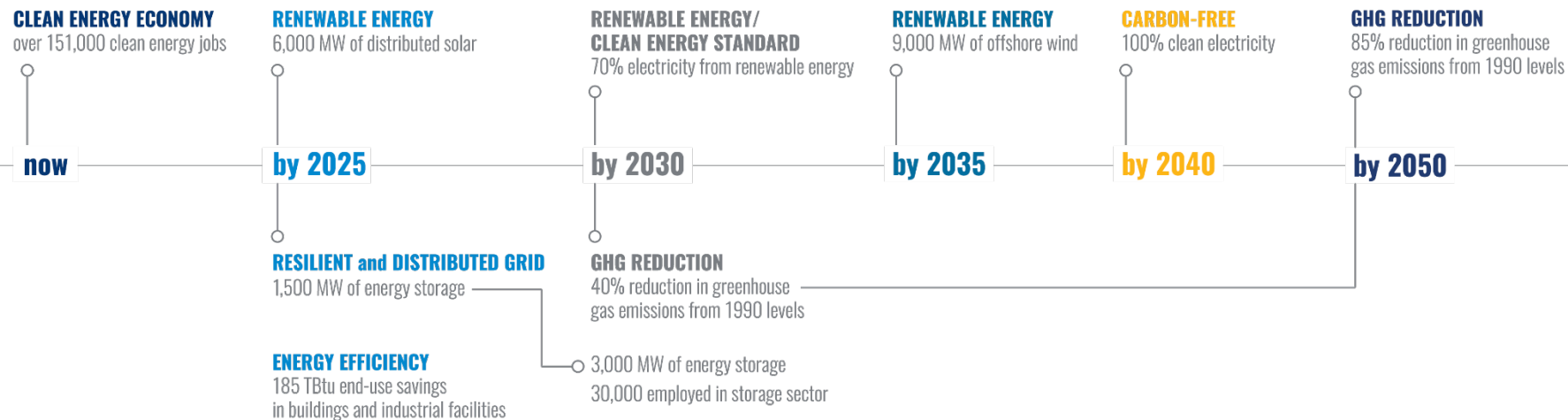
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WA: 2045 (Clean)
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NM: 2045-2050 (Clean)
HI: 2045 (Renewables)
NV: 2050 (Clean)
CO: 2050 (Clean)

PR: 2050 (Renewables)

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

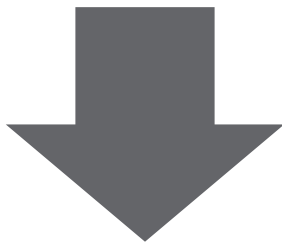


Elements

- 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**

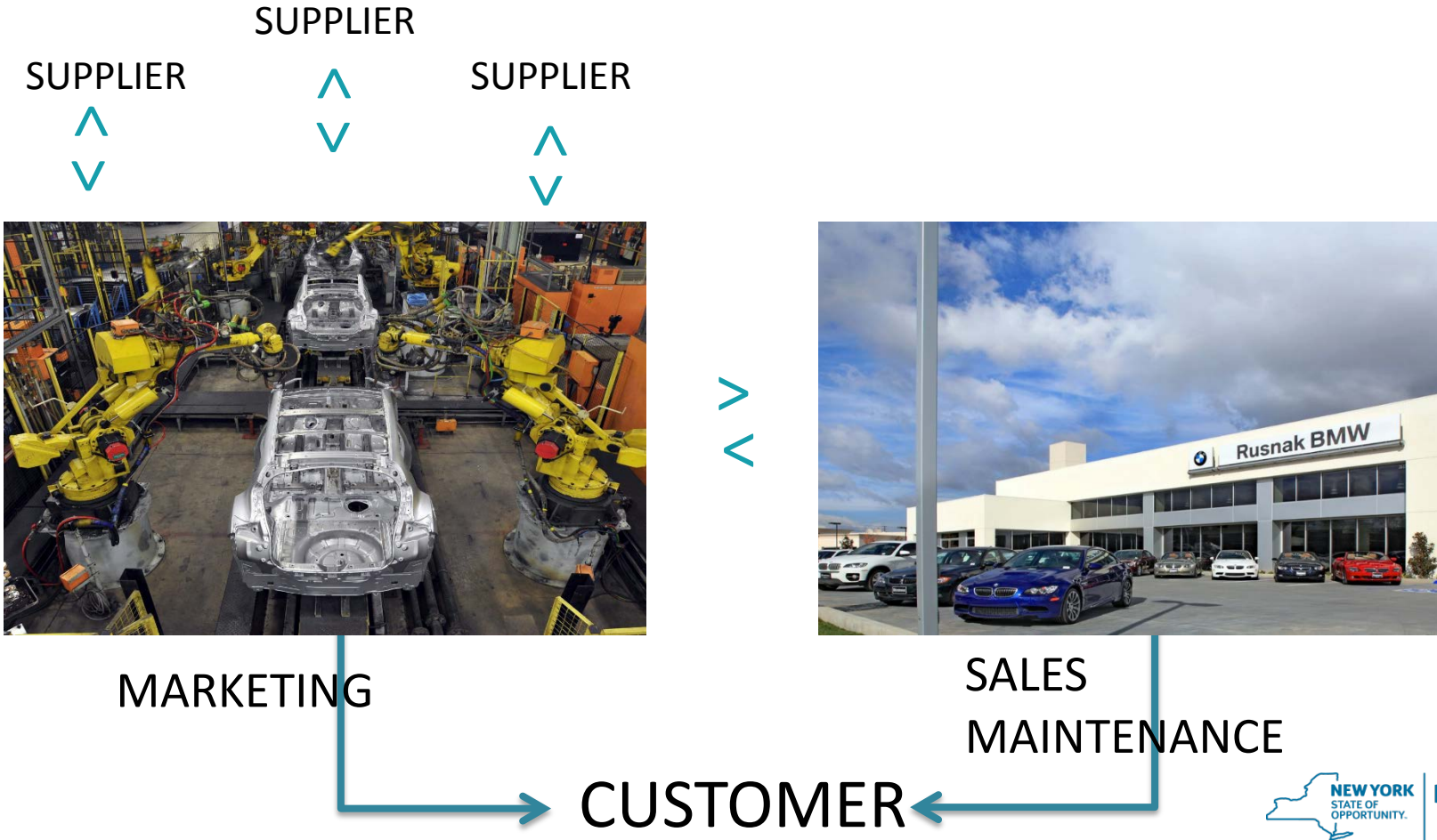
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Then vs Now





Report

McKinsey Global Institute

February 2017

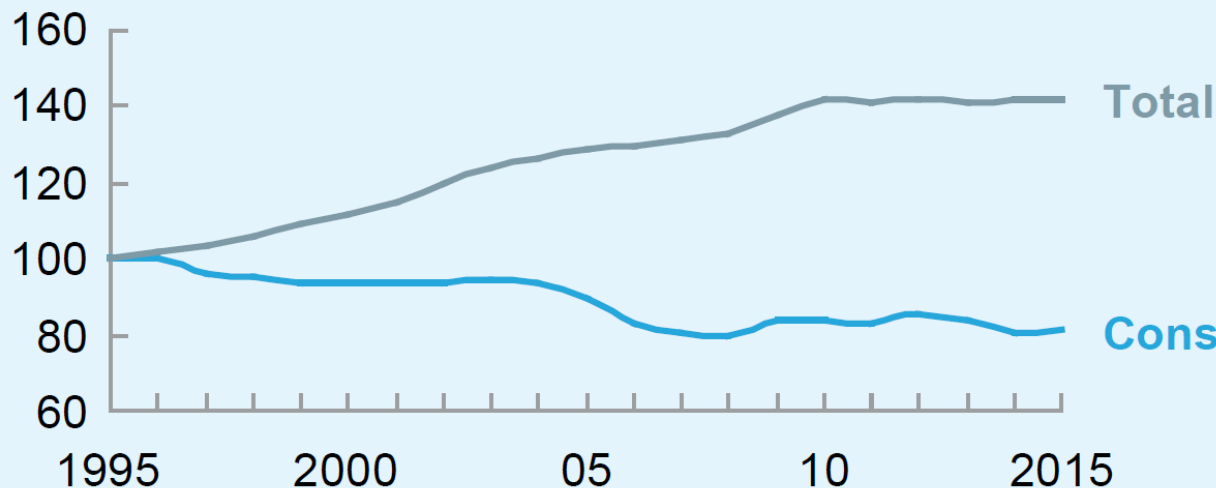


Reinventing construction through a productivity revolution

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



NYSERDA

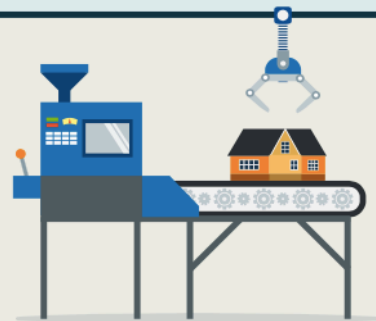


**Action in seven areas
can boost sector
productivity by
50–60%**

- 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



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



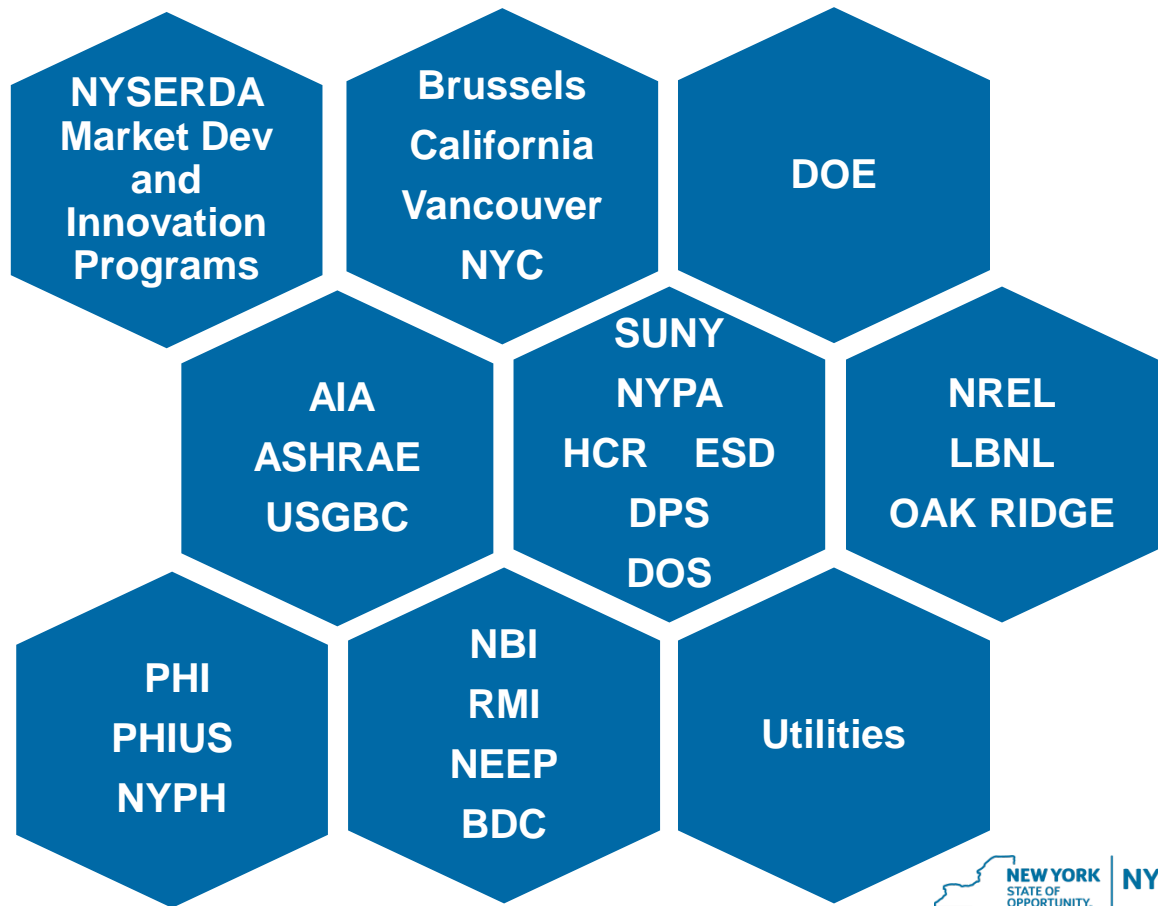
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Strategic Partners:

Demonstrating Demand to the Manufacturing Sector



New York City Q1 2021

