2017

Acadia Center EnergyVision 2030 Electric Generation

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EnergyVision 2030

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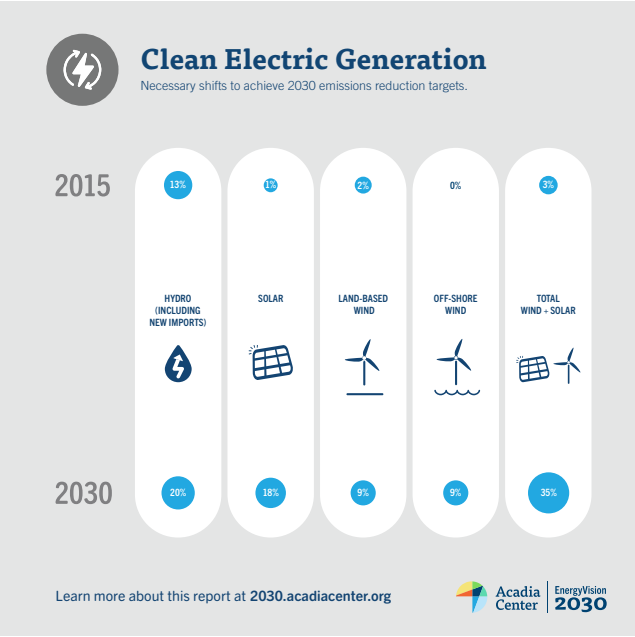
Companion Brief

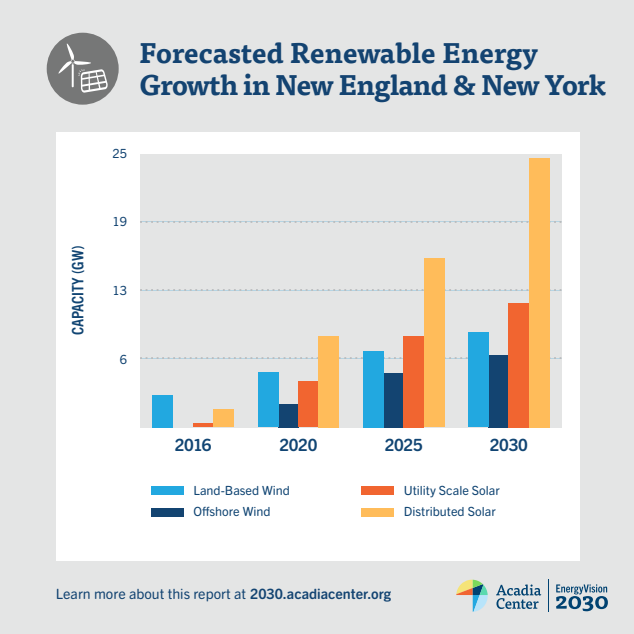
Electric Generation

Sources of electricity generation must become increasingly clean to build a low-carbon energy system in the Northeast. As renewable energy displaces high-carbon fossil fuel generation, cleaner electricity can replace petroleum and natural gas in transportation and heating by fueling electric vehicles and heat pumps. To move successfully to a clean, low-carbon future, states can advance grid-scale renewables, promote clean distributed generation, and strengthen market-based greenhouse gas (GHG) policies. The figure below shows some of the shifts necessary to achieve 2030 emissions reduction targets.



Accelerating Renewables Development

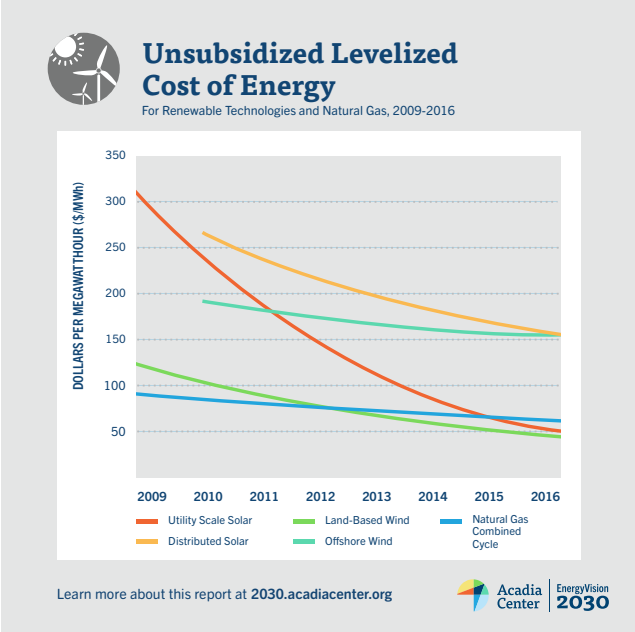
To meet 2030 emissions targets, New York and the New England states will need to strengthen existing policies to expand renewable generation. To date, states have stimulated renewable development primarily through Renewable Portfolio Standards (RPSs). An RPS requires electricity suppliers (e.g., a utility) to provide a minimum percentage of power from renewable sources. RPSs generally increase that percentage over time. Electricity suppliers prove their RPS compliance through the generation or purchase of tradable Renewable Energy Certificates (RECs). Renewable energy developers use the value of RECs to cover a share of construction costs, and RPS targets help support bulk procurement of new renewables (see below). Current RPS policies in New England states are set to achieve 22% renewables in 2030. **New England states must increase their RPSs to achieve at least 40% renewable energy by 2030. New York—which has already set an ambitious commitment to achieve 50% renewables and hydroelectricity by 2030—will need to meet or exceed its target.**



Bulk Procurement of Grid-Scale Renewables

RPSs provide overarching targets for developers and policymakers, and the Northeast states are also advancing renewable generation by issuing large-scale purchase bids, or long-term contracts, in the market. These contracts finance and construct large renewable projects that have significant capital costs and require upgrades to transmission infrastructure. Large-scale purchases of renewable energy reduce costs and can help to overcome financial barriers that could otherwise stifle development.

Building transmission to connect renewable energy to the grid is a regional challenge. The existing transmission grid was built around central power stations located near population centers. Large renewable projects are often far from cities where the power is consumed. Upgrading the existing system or building new transmission lines to renewable sites can carry significant up-front costs



Source: see note 1

that are difficult to finance with uncertain revenue from REC and energy markets alone. In recognition of this challenge, several states have pursued bulk purchasing of renewable energy and hydroelectricity through long-term contracting. **States should continue and expand bulk purchasing to enable 26 GW of grid-scale wind and solar photovoltaic (PV)** to help satisfy expanded RPS requirements. This will require coordination among states and with regional grid operators.

Offshore Wind

Good wind speeds, shallow water, and proximity to population centers make offshore wind a promising grid-scale renewable resource in the Northeast. The first offshore wind farm in the country is operational in Rhode Island, and Massachusetts utilities will solicit 1,600MW of offshore wind capacity pursuant to new legislation. New York is also pursuing offshore wind development to achieve renewable energy targets. As with many nascent industries, early project cost levels are likely to decline as the wind market grows; this has been the experience of large-scale developers in Europe, where costs have already been driven down significantly. Costs can be reduced further through dedicated offshore wind purchases. With continuing commitments to offshore wind, the Northeast could be the offshore industry hub for northern America, attracting a large share of industry jobs and economic development. **States should seize the opportunity offered by offshore wind with dedicated procurements of at least 6,400 MW by 2030.**

Clean Distributed Generation

Unlike large-scale electricity generation that feeds into the transmission system, distributed generation (DG) provides energy directly to consumers and the local distribution grid. In addition to generating clean energy, clean DG resources like rooftop solar or small-scale wind can make the electric grid more resilient and reduce the need for expensive grid infrastructure. On-site distributed generation can be a valuable resource that benefits the energy system, while empowering consumers to control their energy bills and receive payment for the local energy they produce. Measures like community solar provide equitable access to clean distributed generation for renters, disadvantaged communities, and those without suitable roofs. States can enable clean DG by compensating customers with bill credits for exported energy that reflect the value of distributed resources and by updating grid planning standards to accommodate DG and other local energy resources—topics identified in the EnergyVision 2030 Grid Modernization companion brief.

Solar Photovoltaic

Solar photovoltaic (PV) projects can be grid-scale or built to provide energy to a single home. The technology can be installed in a variety of places and is therefore uniquely suited to provide distributed generation. Distributed solar projects bring special value by avoiding expensive infrastructure and providing local jobs. As a result, solar PV has been promoted across the region through dedicated programs that reflect this value. These programs include the NY-SUN program, the ZREC program in Connecticut, and the Renewable Energy Growth program in Rhode Island. Solar programs have traditionally been distinguished based on project size, both in terms of incentive levels and payment structures. A new Massachusetts solar program will innovate further, creating incentives for siting in preferred locations, offering bonuses for low-income participation, and incorporating energy storage. By 2030, **25,000MW of distributed solar will be required in New York and New England.**

Programs Directly Addressing GHG Emissions

States should take advantage of market-based programs like the Regional Greenhouse Gas Initiative (RGGI) to reduce carbon pollution and level the playing field for renewable energy. RGGI requires power plants to buy pollution permits

(called "allowances") and establishes an emissions cap, which declines over time. Since RGGI's launch in 2009, emissions have declined 40%, while RGGI has generated over $2.6 billion for states to reinvest in clean energy and consumer programs through the sale of allowances. Northeast states are currently determining how ambitious RGGI will be from 2020 to 2030, focusing on the rate of decline in the emissions cap and reforms to reduce allowance surpluses that undermine RGGI's effectiveness.

Emissions Cap

RGGI's cap currently declines by 2.5% each year, but from 2020 to 2030 the annual decline should be doubled to 5% each year. This cap will accelerate the transition beyond natural gas to renewable energy and will raise additional funds for investments in clean energy. Since RGGI's launch, emissions have declined by approximately 5% each year, demonstrating that significant reductions in power plant emissions are achievable.

Addressing Surplus Allowances

A rapid decline in emissions has left RGGI awash in surplus allowances that undermine the program's effectiveness. To protect the integrity of RGGI's emissions cap, states need to: 1) adjust the future emissions cap downward in proportion to surplus allowances purchased since the last adjustment in 2015, and; 2) establish an Emissions Containment Reserve that withholds allowances from circulation when emissions decline faster than anticipated.

Increase Price Thresholds

RGGI's upper and lower price thresholds are too low. States should increase both price thresholds to avoid under-valuing the cost of pollution and releasing additional allowances at low prices. RGGI's price floor (the minimum price for allowances) should be raised to at least $4 per ton, and the price at which additional RGGI allowances are created and sold should be increased substantially to avoid undermining the program's environmental integrity.[2]

References

1 All data from Lazard's Levelized Cost of Energy Analysis Reports, Versions 4.0-10.0 (Version 10.0 available here: https://www.lazard.com/perspective/levelized-cost-of-energy-analysis-100/). These unsubsidized levelized cost of energy values do not include Federal tax incentives, which would further reduce levelized costs for renewable technologies.
2 RGGI includes a Cost Containment Reserve (CCR) which allows for the creation and sale of additional allowances if prices are sufficiently high, inflating the cap to mitigate price increases. As currently constructed, low CCR trigger prices have increased the RGGI cap under normal market conditions, adding to the allowance surplus and weakening RGGI's environmental integrity.

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