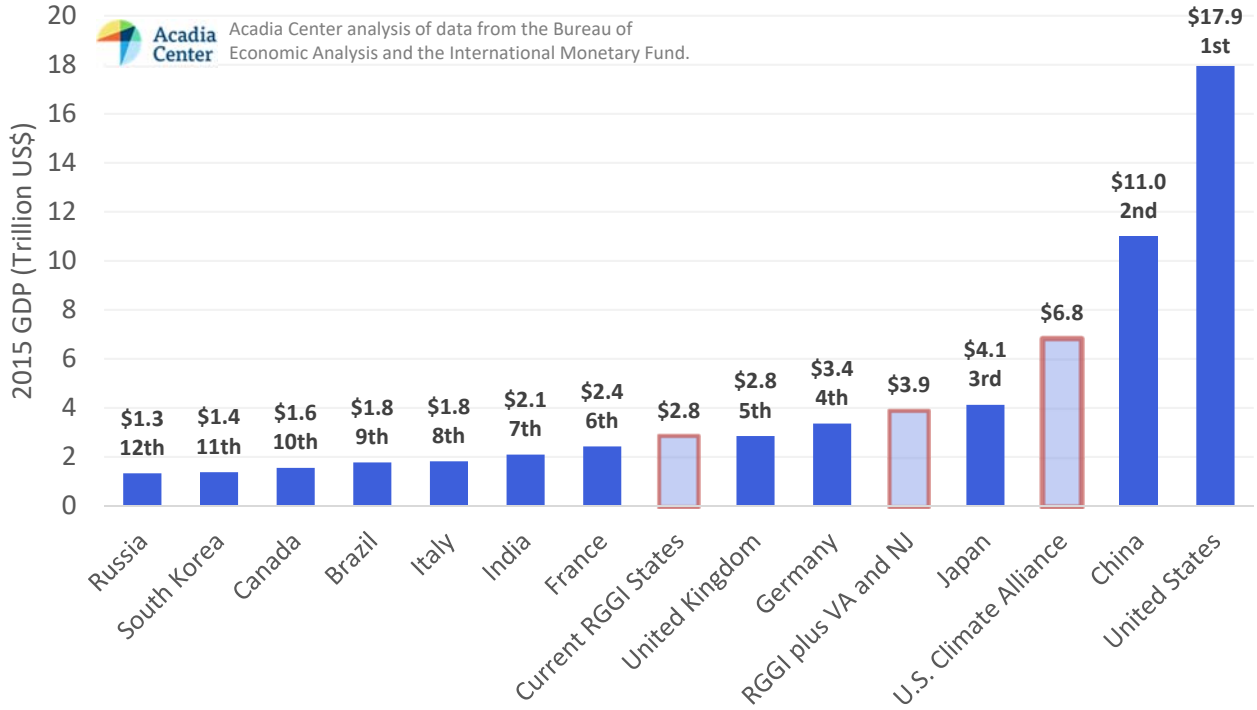
RGGI on the World Stage

States Acting on Climate Constitute 3rd Largest Global Economy

June 27, 2017

Following the Trump Administration's withdrawal from the Paris Agreement, cities, states and regions will increasingly need to lead on climate. The nine states participating in the Regional Greenhouse Gas Initiative (RGGI) have demonstrated a will to forge ahead in the absence of federal action in the past, and their leadership will make a substantial impact on the global fight against climate change; together, these states have a GDP of $2.8 trillion, representing the world's 6th largest economy. Fortunately, the list of states taking action on climate is growing.

Figure 1: Economic Strength of State Climate Leaders



New Jersey[i] and Virginia[ii] are both positioned to participate in RGGI in the coming years, which would increase the regional GDP to $3.9 trillion, comprising the world's 4th largest economy. Separate from RGGI, twelve states[1] (and Puerto Rico) accounting for nearly 40% of U.S. economic output have joined the U.S. Climate Alliance, pledging to uphold the tenets of the Paris Agreement in their states. This group has a combined GDP of $6.8 trillion, ranking behind only China and the United States on the world stage. The U.S. Climate Alliance represents a major union of the nation's hubs of climate action, bringing together leaders from the East Coast, the West Coast, the Midwest, and vulnerable islands in the Pacific Ocean and the Caribbean Sea. Building on effective efforts to-date, states need to strengthen RGGI to continue progress toward state and global climate commitments, support new states joining the program, and step forward to fill the void left by federal inaction.

[1] As of June 5th, California, Connecticut, Delaware, Hawaii, Massachusetts, Minnesota, New York, Oregon, Puerto Rico, Rhode Island, Vermont, Virginia, and Washington have joined the U.S. Climate Alliance.

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This document profiles:

- RGGI's heft as the 6th largest economy in the world
- RGGI's success reducing emissions by over 40% since 2008
- 3.4% *lower* electricity prices than when RGGI started
- 3.6% *higher* economic growth in RGGI states compared to the rest of the country

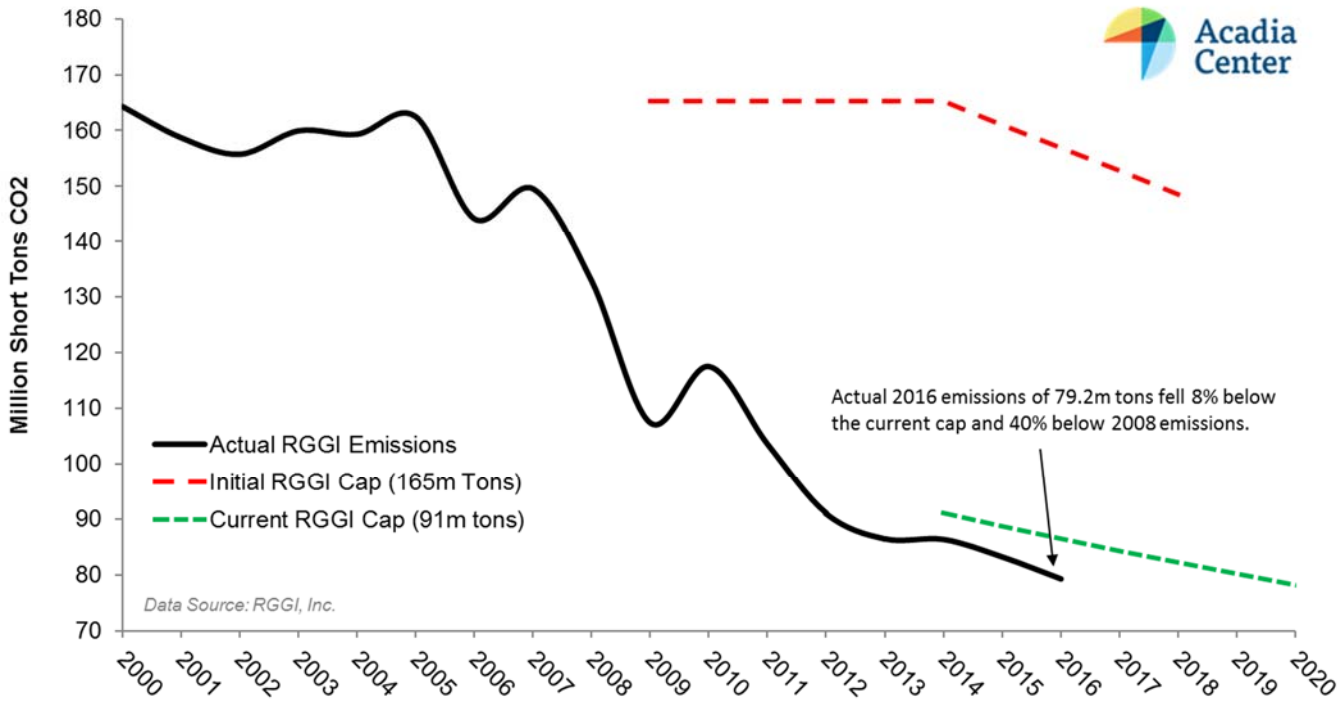
Emissions

CO_2 emissions from power plants have been steadily declining across the nine states of the Regional Greenhouse Gas Initiative (RGGI) for the last decade, and in 2016 fell 8.4 percent below the emissions cap. Since the program began in 2009, the decarbonization of the electric sector has been a major victory for the environment, health and economy of the region. Continued investments in clean energy and complementary climate policies in the participating states will help to achieve greater emissions reductions, but the RGGI states must do more to build on their first-in-the-nation program. Through the current Program Review,[iii] the participating states should strengthen RGGI to align the program with the current emissions trends and future climate goals.

RGGI CO_2 emissions fell to 79.2 million tons in 2016, a 4.7 percent decrease from 2015, marking the sixth consecutive year of power-sector emissions declines. Since 2008, the year before RGGI began, emissions are down 40.4 percent.

Several factors including growth in renewable energy, efficiency improvements, and fuel-switching have contributed to regional emissions reductions, and a large share of these reductions has been attributed to the RGGI program itself.[iv] By establishing a price on carbon emissions and generating revenue for clean energy investments, RGGI has accelerated the transition to a cleaner electric sector. Increases in energy efficiency and growth in renewable energy output will enable the RGGI states to continue to achieve ambitious emissions reductions.

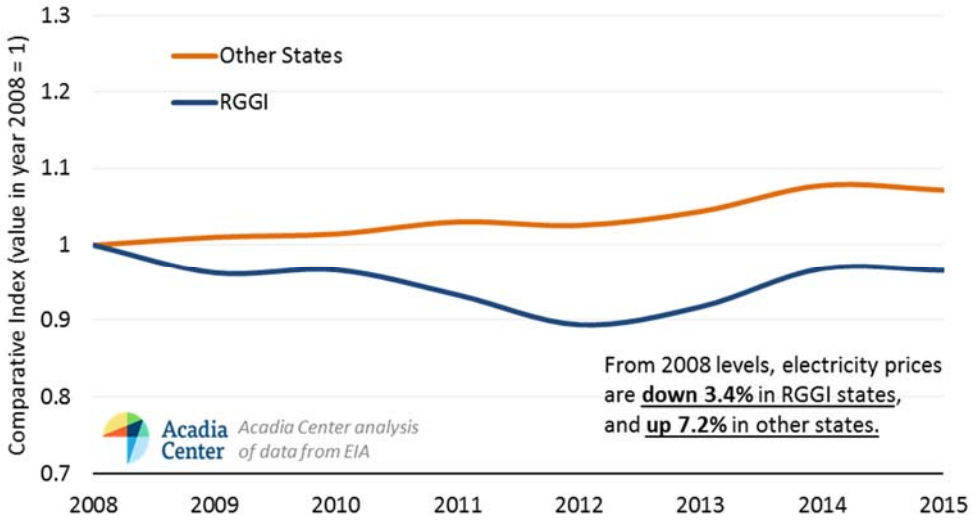
Figure 2: RGGI Emissions Continue to Fall



Electricity Prices

Electricity prices are lower than they were before RGGI took effect. Comparing retail electricity prices from 2008 (before RGGI's launch) to 2015 shows that prices have dropped by 3.4% across the region.[v] While RGGI's direct impact on electricity prices is difficult to isolate from other factors, it is evident that the program has not caused electricity prices to increase above 2008 levels.[vi] As shown in Figure 1, while RGGI's electricity prices remain lower than they were in 2008, the rest of the country[2] has experienced a 7.2% increase in retail electricity prices over the same period.

Figure 3: Volume-Weighted Electricity Prices, 2008 to 2015 (Cents/kWh)



RGGI's Economic Impacts

RGGI has generated significant economic benefits for states participating in the program. By selling allowances (permits to emit CO_2), RGGI states raise revenue to reinvest in energy efficiency, renewable energy, and other consumer programs that increase economic activity in participating states. The majority of program revenue has been invested in energy efficiency programs that reduce consumers' bills and reduce demand for power. Lower power demand means fewer emissions from power plants, and less money leaving the region to pay for imported fossil fuels. Energy bill savings increase consumer spending, benefiting businesses that offer goods and services in the region. Independent macroeconomic analysis has found that programs supported with revenue raised over RGGI's first six years of operation will generate over $1.56 billion in energy bill savings.[vii] These savings create over $2.76 billion in net economic gains and 28,500 job-years of employment.[3]

As efficiency investments have increased and the regional economy has become less energy-intensive, RGGI states have experienced economic growth as emissions have declined. While similar trends are seen across the country, RGGI states have outpaced other states on both emissions reductions and economic growth. From 2008 to 2015, RGGI states' economies grew by 24.9% versus 21.3% in states that do not regulate or put a price on carbon emissions (this group of

[2] The "rest of the country" excludes California, which, like the RGGI states, has implemented a cap-and-invest program to reduce CO_2 emissions.
[3] These figures are based on the combined findings from two separate reports from the Analysis Group, the first of which covered impacts from 2009 through the first half of 2011 (New Jersey employment and net economic impacts have been excluded from this analysis), the second report covering 2012 to 2014. As a result, the combined benefits included above only account for five and a half years of revenue reinvestment, rather than the full six years from 2009 to 2014.

40 "other states" does not include California, which has similarly outpaced national growth since capping GHG emissions[viii]). Over the same period, emissions in the RGGI region dropped by 30% versus 14% in other states.[4]

Table 1: Change in Economic Growth and Emissions, 2008 to 2015

	Economic Growth	CO_2 Emissions
RGGI States	+24.9%	-30%
Rest of the Country	+21.3%	-14%
RGGI vs. Others	**+3.6%**	**-16%**

Electricity demand has historically been tied to economic growth, with electricity consumption and related emissions increasing during periods of economic expansion and decreasing in economic downturns. This correlation has broken in the RGGI region and appears to be mirrored—slightly less dramatically—at the national level, demonstrating that emissions reductions can be achieved at the same time as economic growth.

Endnotes

[i] The leading candidates from both parties in New Jersey's Gubernatorial race have committed to rejoining RGGI, which the legislature supports.

[ii] Gov. McAuliffe's May 16th Executive Directive requires establishment of a GHG emissions cap for power plants, calling for a program that allows "for the use of market-based mechanisms and the trading of carbon dioxide allowances through a multi-state trading program." See: http://governor.virginia.gov/media/9155/ed-11-reducing-carbon-dioxide-emissions-from-electric-power-facilities-and-growing-virginias-clean-energy-economy.pdf

[iii] For more information on the current RGGI Program Review, see: http://rggi.org/design/2016-program-review

[iv] *Why Have Greenhouse Emissions in RGGI States Declined? An Econometric Attribution to Economic, Energy Market, and Policy Factors*, Brian Murray and Peter Maniloff, Duke Nicholas Institute, August 2015. Available at: https://nicholasinstitute.duke.edu/environment/publications/why-have-greenhouse-emissions-rggi-states-declined-econometric-attribution-economic

[v] Energy Information Administration (EIA), Form 826, http://www.eia.gov/electricity/data/eia826/. The volume-weighted average shown in Table 1 is a product of each state's electricity price multiplied by electric load in the given year.

[vi] Vermont – one of two states where electricity prices have not dropped – buys more power through long term contracts than other states in the region. This approach has stabilized prices, but means that Vermont is insulated from wholesale price trends, which have recently decreased power prices in other states in the region. It is worth noting that Vermont's RGGI revenue supports thermal efficiency programs for customers using propane, fuel oil, and natural gas. While thermal efficiency programs generate greater cost and GHG savings than electricity programs in Vermont, electric price suppression is not as significant as in other states that direct RGGI revenue to electric efficiency programs. New Hampshire – the other state where prices have not declined – is also more dependent on long term contracts, though not to the same extent as Vermont, and New Hampshire directs the majority of auction revenue to rebates, which do not suppress electric prices.

[vii] Energy Information Administration (EIA), Form 826.

[viii] As detailed in the Environmental Defense Fund's recent report, *Carbon Market California: A Comprehensive Analysis of the Golden State's Cap-and-Trade Program*, California has experienced significant economic benefits resulting from AB 32, and GDP growth in the state outpaced the national average in 2011, 2012, and 2013: http://www.edf.org/sites/default/files/content/carbon-market-california-year_two.pdf

[4] In order to compare emissions in the RGGI states to emissions in the rest of the country, the emissions measured in this section are from EIA Form 826. This represents a broader range of emissions sources than those covered by RGGI, which explains the difference in reported RGGI emissions here versus elsewhere in this fact sheet.