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# 21st Century Transportation Technology & Policy

**The Future of Transportation Symposium**  
Innovation, Technology & Policy

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# Regional Greenhouse Gas Initiative - RGGI

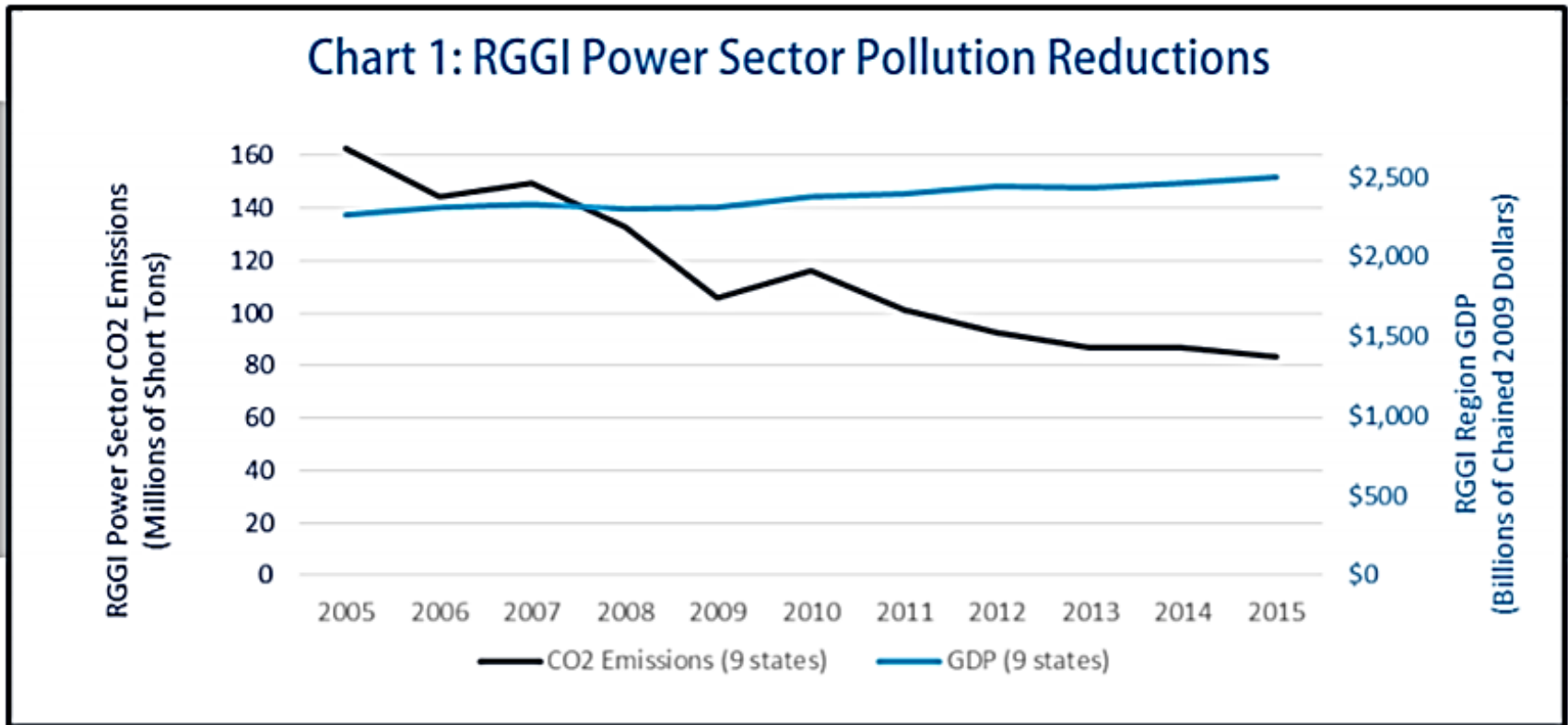
## Northeast and Mid-Atlantic states cap and reduce carbon dioxide emissions from the power sector

- Power plants 25 MW or greater to hold one CO<sub>2</sub> allowance for each ton of CO<sub>2</sub>
- Three-year control periods; currently in fourth control period (2018-2021)

**CO<sub>2</sub> Cap: 86.5 million short tons in 2016, and declines 2.5 percent each year until 2020; in 2021 will be equal to 75,147,784 tons and will decline by 2.275 million tons of CO<sub>2</sub> per year thereafter, resulting in a total 30% reduction in the regional cap from 2020 to 2030.**

- Two interim adjustments to the cap (2014-2020) to account for banked allowances; third adjustment for banked allowances at end of 2020 for pre-2021 banked allowances
- 2016 RGGI adjusted cap is 64.6 million short tons
- Cost containment reserve (CCR) of 10 million allowances then 10% of regional cap starting in 2021 (\$13 in 2021)

# RGGI State Emissions Reductions and Economic Growth



Source: 2015 RGGI Proceeds Report

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# **RGGI Mechanics in Brief**

## **Quarterly regional CO<sub>2</sub> allowance auctions**

- CO<sub>2</sub> allowances are issued by each state
- Compliance occurs at the state level
- One tradable CO<sub>2</sub> allowance market - CO<sub>2</sub> allowances are fungible across the multi-state region
- CO<sub>2</sub> allowances issued by any participating state can be used for compliance in any of the participating states

## **Auction proceeds invested by the states**

## **Emissions Containment Reserve (ECR) in 2021 at \$6**

## **Centralized allowance tracking and emissions tracking platform (RGGI COATS)**

- Market monitoring of CO<sub>2</sub> allowance market

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# **RGGI's Market-Based System**

**CO<sub>2</sub> allowance auctions are open to all prequalified bidders**

**After nine years, no evidence of anti-competitive conduct**

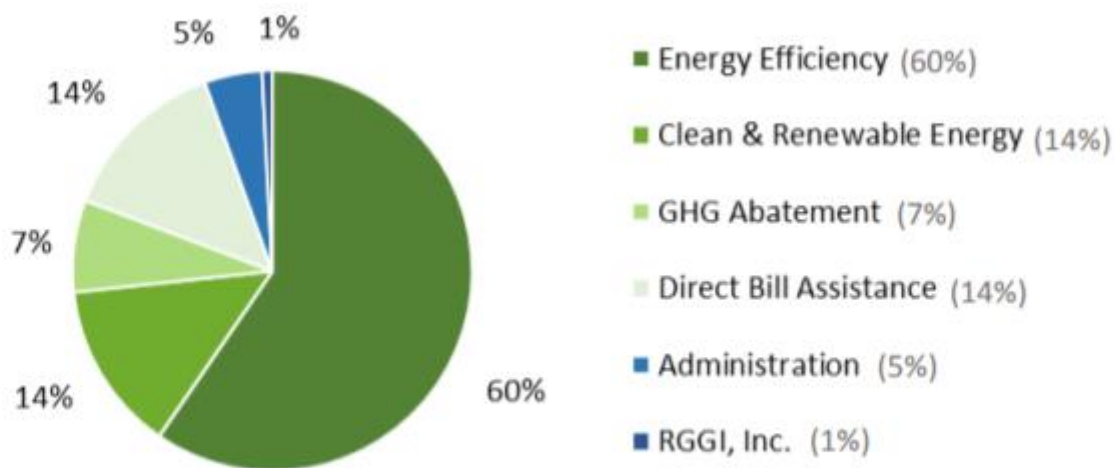
**38 quarterly auctions held from September 2008 through 2017**

- Total of 918 million CO<sub>2</sub> allowances sold
- \$2,835,865,291 in cumulative proceeds

**CO<sub>2</sub> allowance auction clearing prices have ranged from \$1.86 to \$7.50.**

# RGGI's Allowance Investments

Chart 4: Cumulative RGGI Investments by Category











The nine participating RGGI states invested \$1.77 billion during the period covered by this report. \$332.9 million remains to be invested 2016 and future programs. \$93.1 million was transferred to state general funds by acts of state legislatures.

Source: RGGI 2015 Proceeds Reports



# RGGI's Re-Investment

Table 1: Benefits of 2015 RGGI Investments

Category	Annual Benefits of 2015 Investments	Lifetime Benefits of 2015 Investments
 Participating Households	161,805 (Programs)* 1.5 million (Bill Assistance)	N/A
 Participating Businesses	6,060 (Programs)* 37,396 (Bill Assistance)	N/A
 Workers Trained	552	N/A
 Short Tons CO <sub>2</sub> Avoided	298,410	5.3 million
 Equiv. Cars Off Road	57,184	1.0 million
 Megawatt-Hours Saved	505,761 MWh	9.0 million MWh
 MMBtu Saved	1.5 million MMBtu	28.0 million MMBtu
 Energy Bill Savings	\$154.5 million	\$2.31 billion

\*Participants in all programs other than direct bill assistance.

Source: RGGI 2015 Proceeds Report

# Electric Vehicle Energy Impact



Source: NW Energy Coalition research paper, "Building "good load" to reduce carbon emissions", 2016



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# How would the States Cap Transportation Emissions?

## A Modified RGGI Model

Will require transportation officials, legislative and stakeholders

Transportation and Climate Initiative –  
12 Northeast and MidAtlantic States

<https://www.transportationandclimate.org/>

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# Issues to Resolve

## Transportation

Funding for roads, bridges, winter operations, etc.

Transportation Stakeholders

## Cultural

Suburban SUV Culture

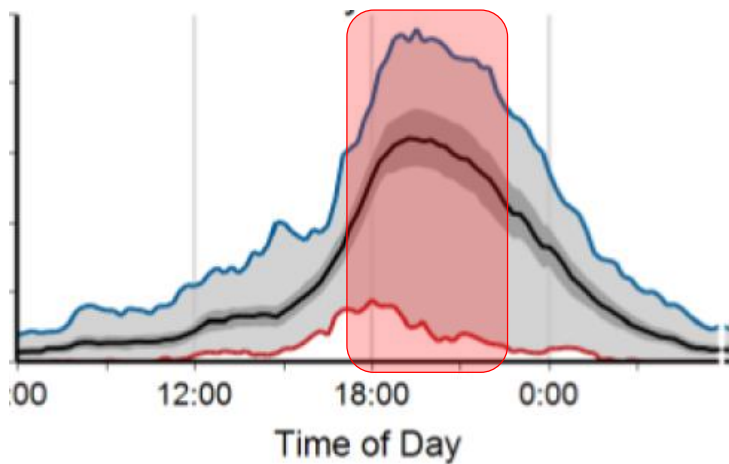
Rural Truck Culture

## Cost

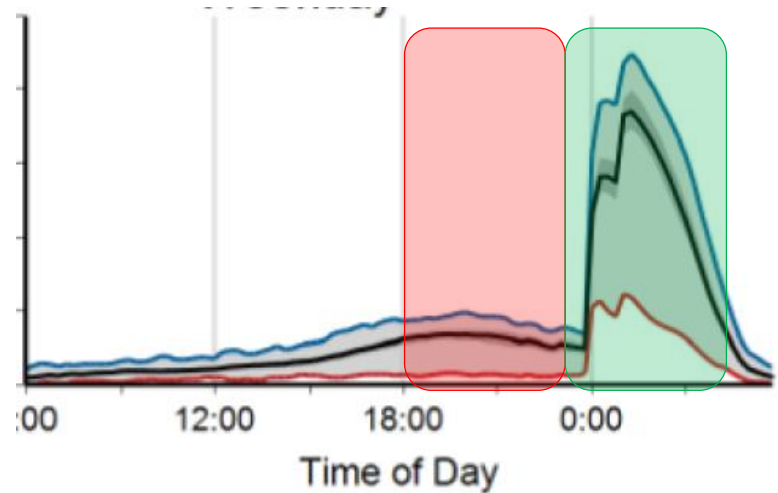
Public Charging Infrastructure including fast chargers for long-distance

Rate Design

# Price Can Influence When EVs Are Charged



Dallas/Ft Worth  
(standard rates)



San Diego  
(time-of-use rates)

Source: MJ Bradley, 2017

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# Benefits of 21<sup>st</sup> Century Transportation Modernization

## Environmental Benefits

Reduce local,  
regional and  
global pollution

Water and  
habitat  
benefits

## Consumer Benefits

Save drivers  
money

Give  
customers  
choice and  
control

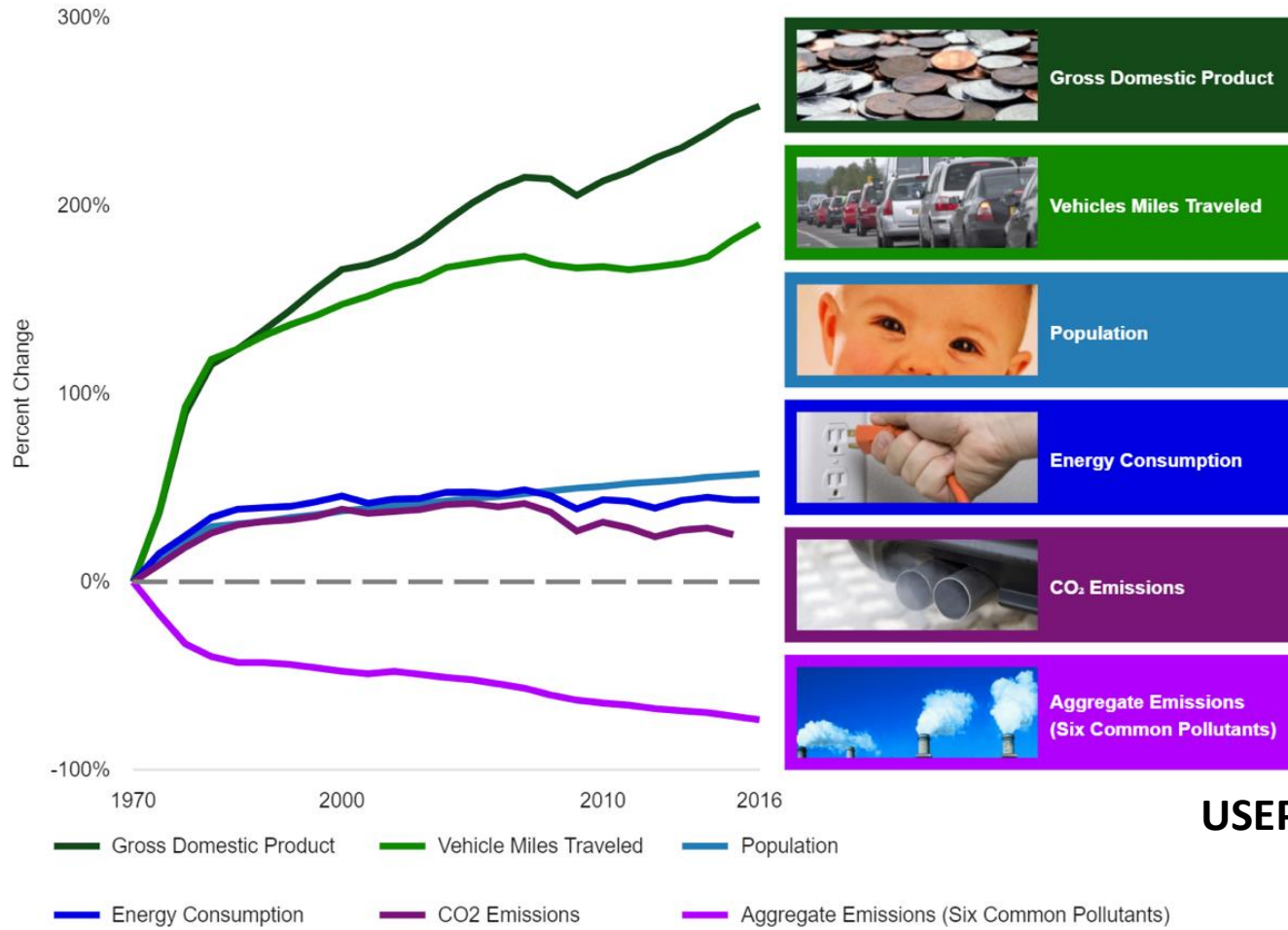
## Grid Benefits

Integrate other  
Distributed  
Resources

Needs to  
Benefit  
Utilities too

# GDP ↑ and Pollution ↓

Comparison of Growth Areas and Declining Emissions  
1970-2016



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# Conclusions

- Clean car market transformation is happening
- Substantial consumer and environmental benefits
- Barriers need to be addressed in the long-run with strategies that buy in a broad group of transportation stakeholders
- Leadership from the top matters
- Regional cooperation – with leadership from the top – is what will lead to transformation



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# Resources

- [Getting From Here to There: Regulatory Considerations for Transportation Electrification](#)
- [Smart Rate Design for a Smart Future \(WUTC\)](#)
- [Quantifying the Air Quality Impacts of Energy Efficiency Policies and Programs](#)
- [Beneficial Electrification – blog post series](#)
- [Teaching the Duck to Fly](#)
- [Opportunity Knocks for Beneficial Electrification – webinar](#)

# About RAP

The Regulatory Assistance Project (RAP)® is an independent, non-partisan, non-governmental organization dedicated to accelerating the transition to a clean, reliable, and efficient energy future.

Learn more about our work at [raponline.org](https://raponline.org)



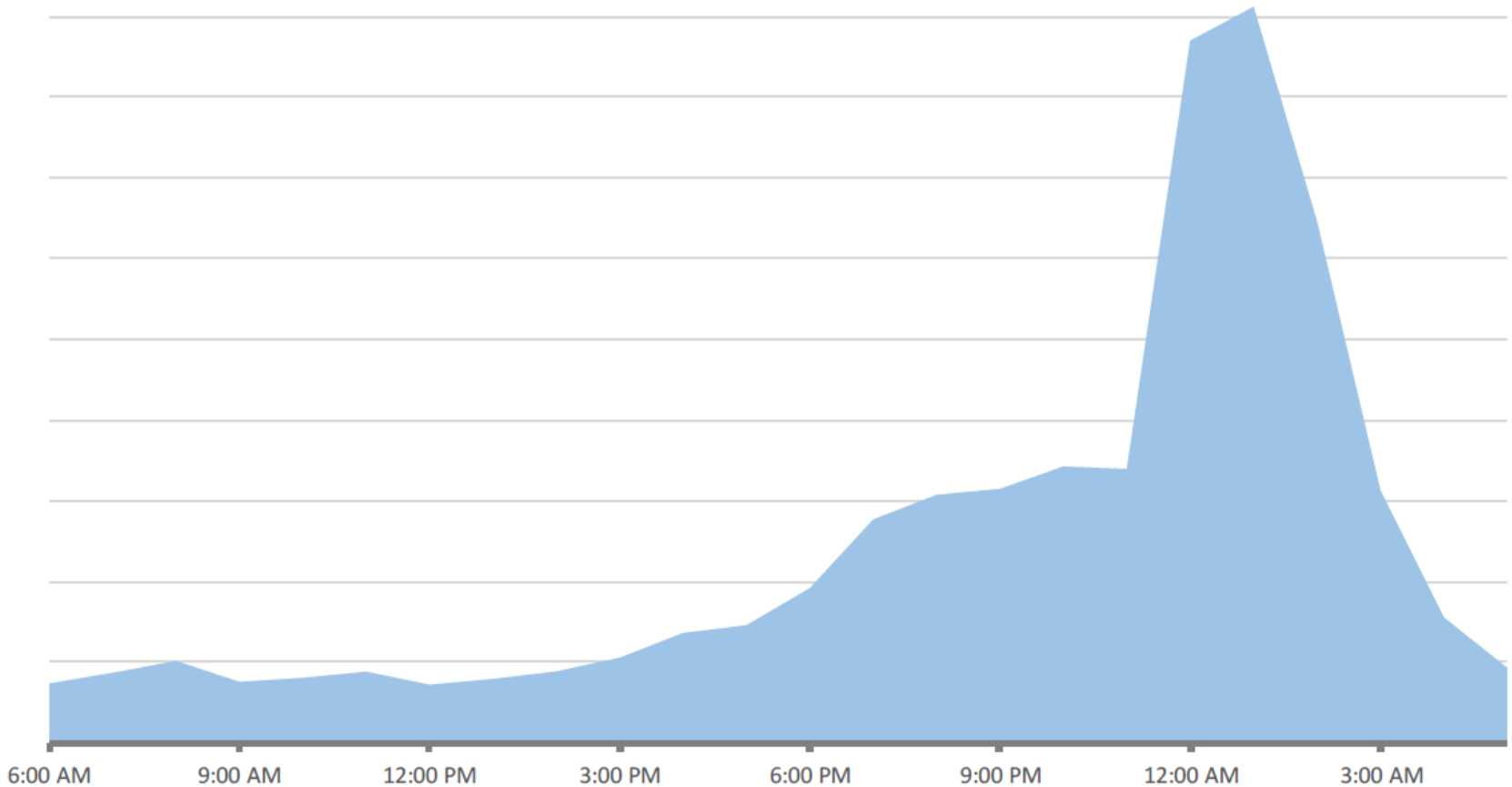
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# BMW Charge-Forward With TOU Rates



# BMW Smart Charging With 40% Under Control

(EXAMPLE ASSUMES 40% CONTROL)

