

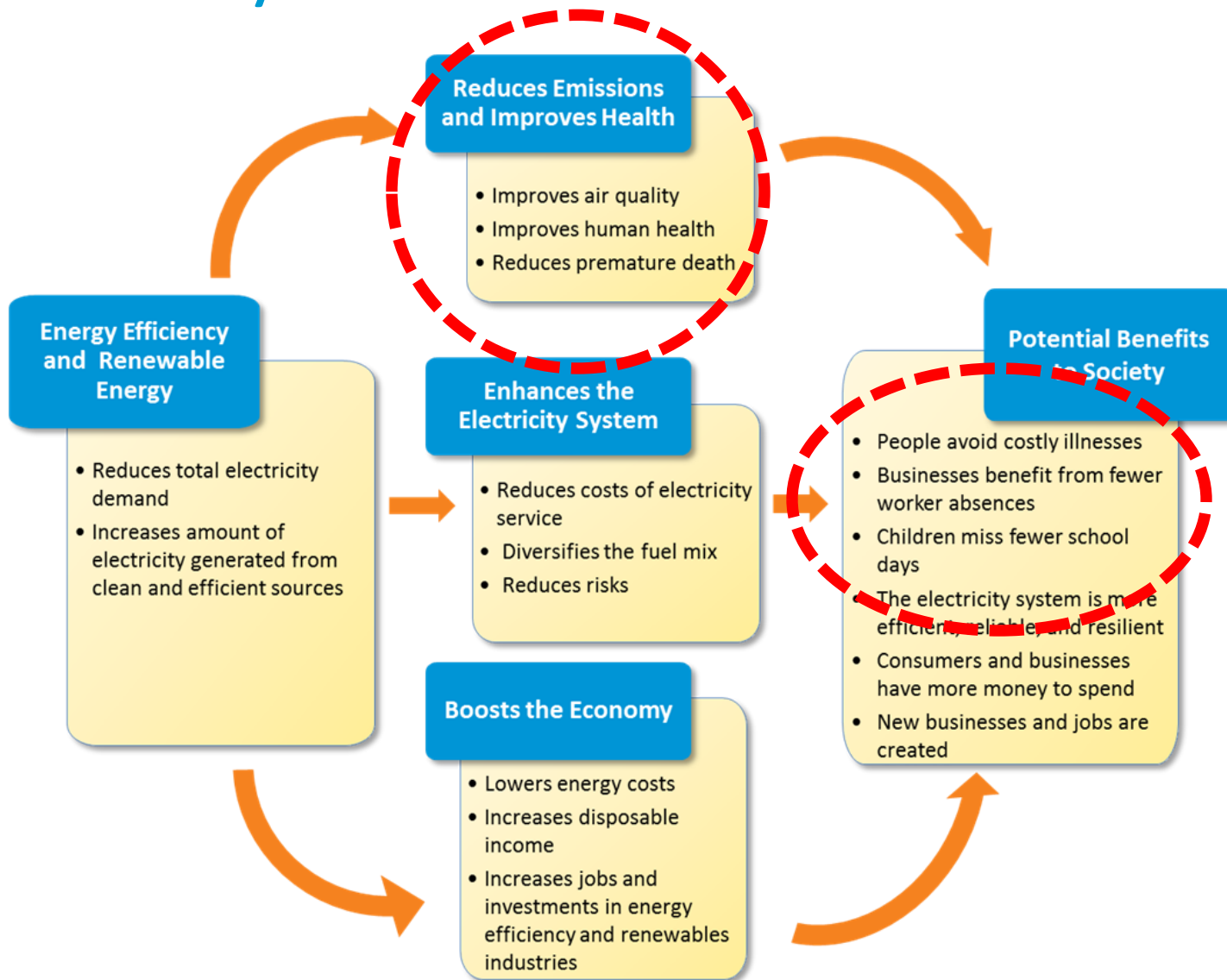
Quantifying the Emissions and Health Benefits of Energy Efficiency: Recent Experiences in the U.S.

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*IEA's Beyond Energy Savings:
The Multiple Benefits of Energy Efficiency*
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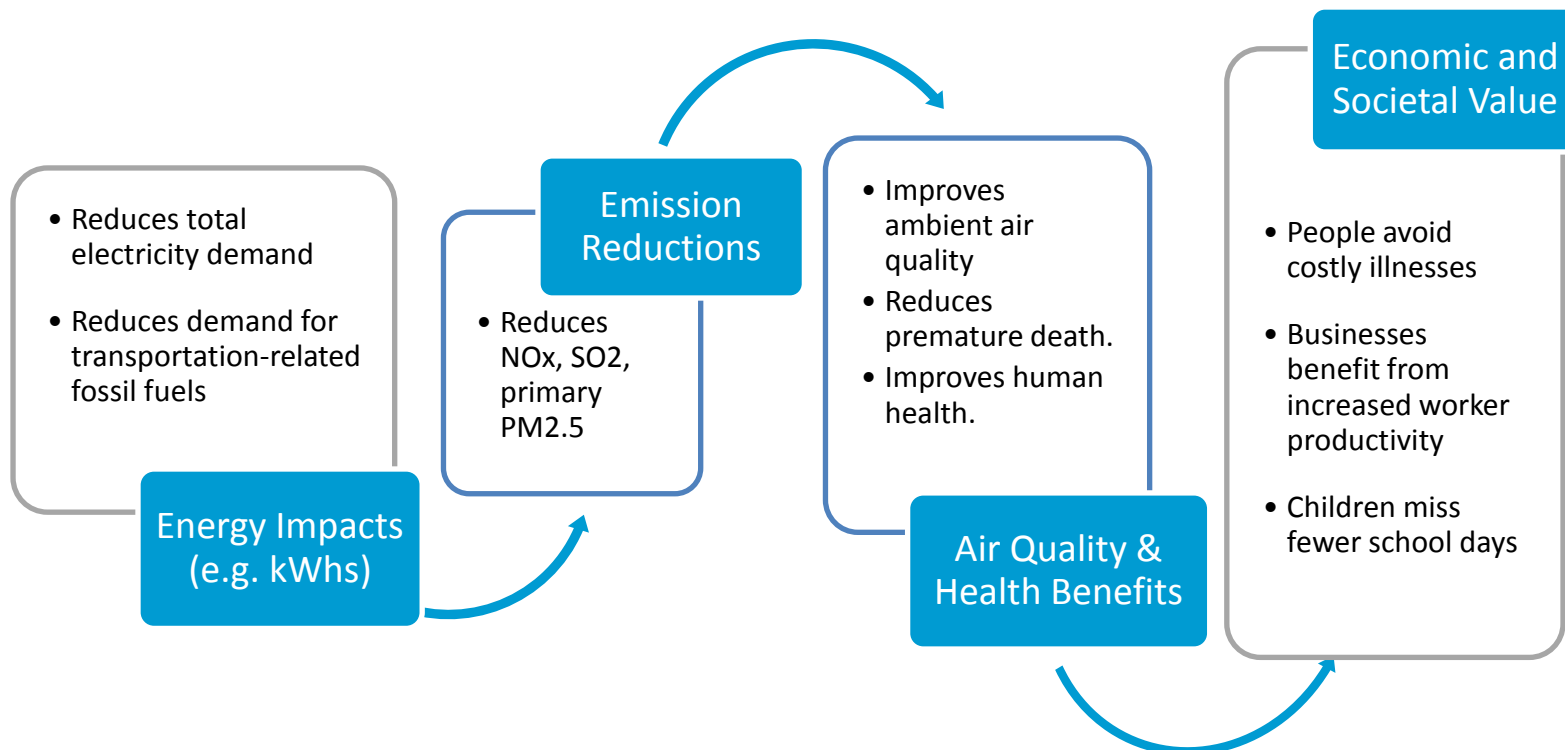
The Multiple Benefits of Energy Efficiency





Quantifying the Emissions and Health Benefits: Location Matters

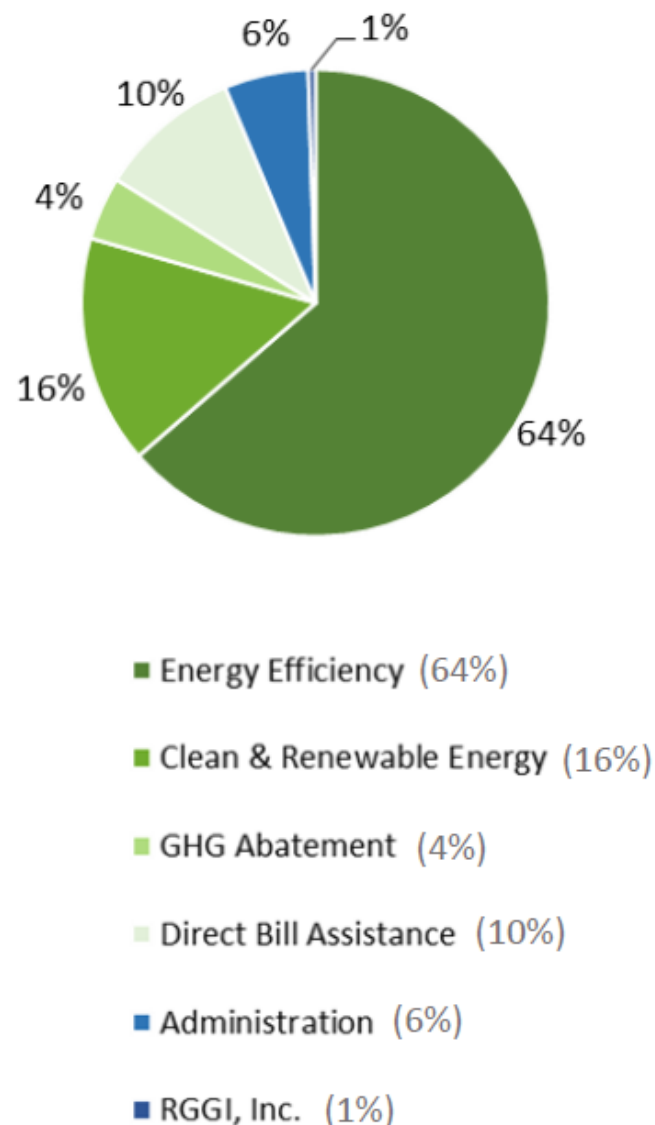
Energy efficiency



Recent U.S. State Experiences Quantifying Health Benefits: The Regional Greenhouse Gas Initiative (RGGI)



- RGGI is a regional market-based regulatory cap and trade program in nine NE U.S. states designed to reduce greenhouse gas (GHG) emissions from the electric power section
 - It auctions GHG allowances to regulated power plants which is spent on EE/RE
 - In 2015 alone, RGGI states invested more than \$410M
- In 2017, an Abt Associates analysis was released quantifying the health benefits associated with outdoor air quality impacts between 2009 – 2014.



Source: RGGI, 2017



Cumulative Health Benefits of RGGI: 2009 - 2014

	2009	2010	2011	2012	2013	2014
Generation change in RGGI States	-5.8%	-2.9%	-2.0%	-3.4%	-7.0%	-6.9%

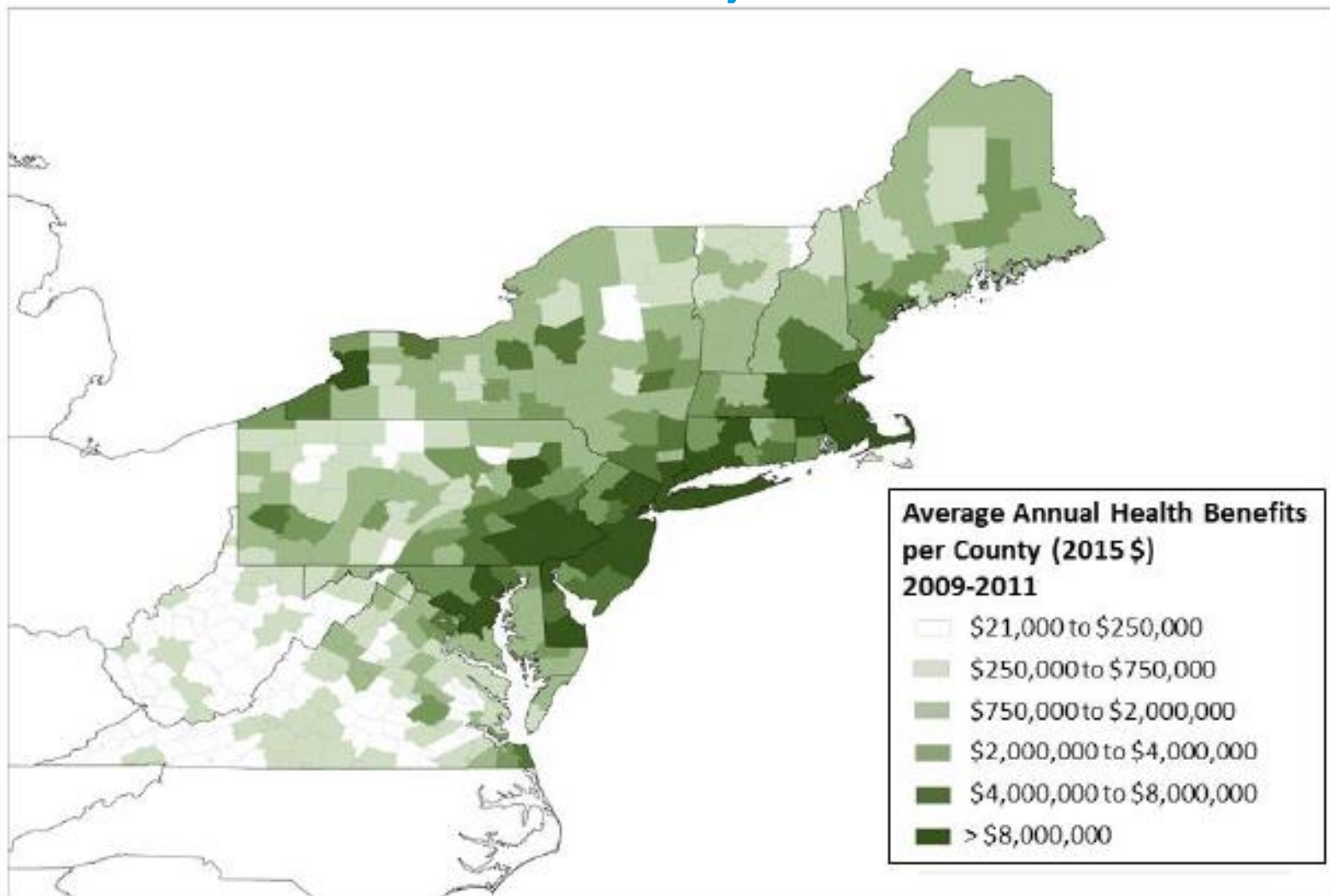
Source: Abt Associates analysis (2017).

Health Effect	Avoided Health Effects due to RGGI, 2009-2014		Value of Health Benefits due to RGGI, 2009-2014 (Million 2015 dollars)		
	Low	High	Low	Central	High
Acute Bronchitis	420	510	\$0.25	\$0.27	\$0.3
Adult Mortality	300	830	\$3,000	\$5,600	\$8,200
Asthma ER Visits	200	230	\$0.11	\$0.12	\$0.13
Asthma Exacerbations	8,200	9,900	\$0.57	\$0.63	\$0.69
Cardiovascular Disease Hospital Admissions	100	120	\$5.2	\$5.8	\$6.3
Infant Mortality	<1	<1	\$5.9	\$6.6	\$7.3
Lower Respiratory Symptoms	5,400	6,500	\$0.14	\$0.15	\$0.17
Minor Restricted Activity Days	240,000	280,000	\$19	\$21	\$23
Non-Fatal Heart Attacks	35	390	\$5.5	\$33.5	\$61.6
Respiratory Hospital Admissions	82	98	\$2.8	\$3.1	\$3.4
Upper Respiratory Symptoms	7,700	9,300	\$0.31	\$0.34	\$0.37
Work Loss Days	39,000	47,000	\$9.2	\$10.1	\$11
Total			\$3,000	\$5,700	\$8,300

Source: Abt Associates analysis (2017).



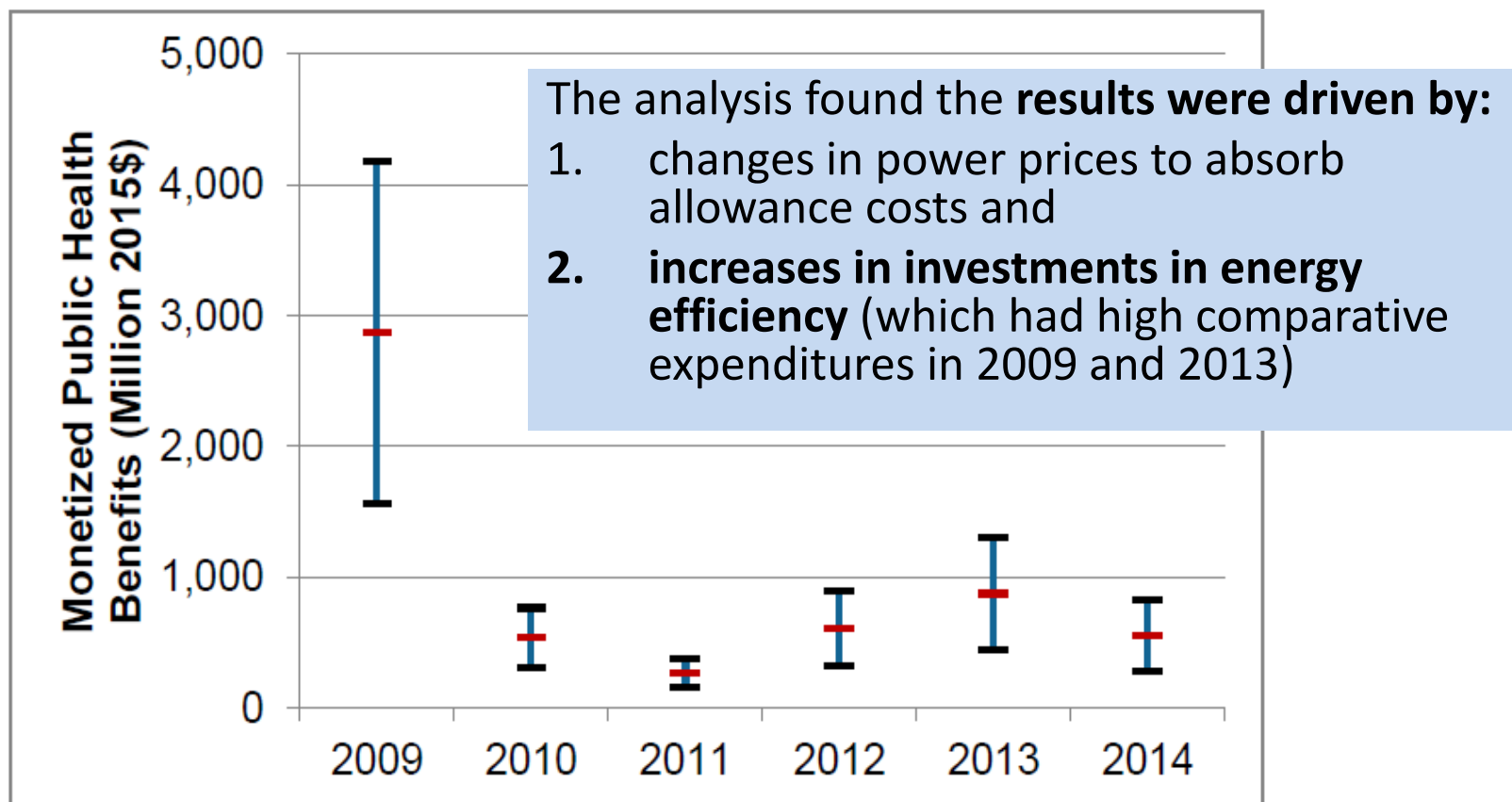
Cumulative Health Effects of RGGI 2009-2011: Visually



Source: Abt Associates analysis (2017).

RGGI Annual Health Benefits

Figure 1. Annual Health Benefits due to RGGI, 2009 to 2014



Source: Abt Associates analysis (2017).

Note: Value of annual health benefits is the sum of health benefits to RGGI states and neighboring northeastern states, based on a 3 percent rate of discount.



Beyond RGGI



- California
 - CA Energy Commission quantified expected health benefits of appliance standards, 2015
 - Found 10-year cumulative estimated air quality benefit of proposed regulations is between \$36 million and \$90 million.
 - CA Public Utilities Commissions is developing an adder for cost-effectiveness testing, 2018
- New ACEEE Report: ACEEE “Saving Energy, Saving Lives: The Health Impacts of Avoiding Power Plant Pollution with Energy Efficiency,” 2018
 - “...reducing annual electricity use by 15% nationwide would save more than six lives every day, prevent nearly 30,000 asthma episodes each year, and save Americans up to \$20 billion through avoided health harms annually.”
 - <http://aceee.org/press/2018/02/save-energy-protect-health-how>
- IL Future Energy Jobs Act, signed into law in 2016; motivated by health benefits, in part.
 - “The health, welfare, and prosperity of all Illinois citizens require the provision of adequate, reliable, affordable, efficient, and environmentally sustainable electric service at the lowest total cost over time, taking into account any benefits of price stability.”
 - “**Energy efficiency**, demand-response measures, zero emission energy, and renewable energy are resources currently underused in Illinois. These resources **should be used, when cost effective, to** reduce costs to consumers, improve reliability, and **improve environmental quality and public health.**”



Thank you!

For more information, please:

- Contact me:

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- Check out our program tools and resources:

<https://www.epa.gov/statelocalenergy>

- Check out our Multiple Benefits Guide:

<https://www.epa.gov/statelocalenergy/assessing-multiple-benefits-clean-energy-resource-states>

