

The Value of Energy Efficiency as a Public Health and Climate Change Mitigation Strategy

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The American Council for an Energy-Efficient Economy is a nonprofit 501(c)(3) founded in 1980. We act as a catalyst to advance energy efficiency policies, programs, technologies, investments, & behaviors.

Our research explores economic impacts, financing options, behavior changes, program design, and utility planning, as well as US national, state, & local policy.

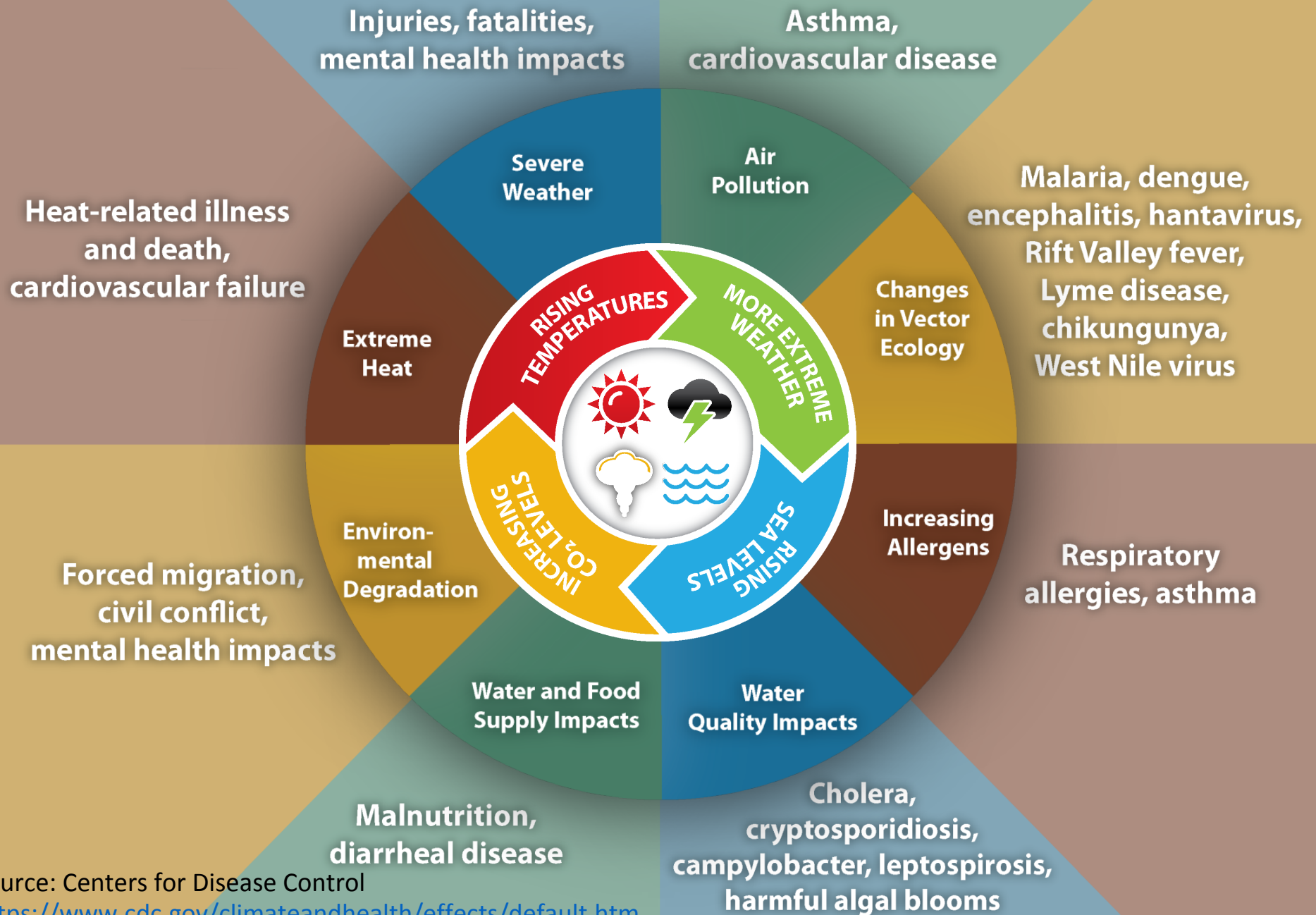
Our work is made possible by foundation funding, contracts, government grants, and conference revenue.



Accounting for Health Impacts of EE

- Public health benefits of energy efficiency (EE) are oftentimes underestimated or omitted when communicating its value as a climate strategy.
- Understanding the health benefits of EE creates an opportunity to motivate leaders to take action on climate change.
- Estimates from two analyses underscore the magnitude of public health benefits that can be achieved through EE and make the case for an increased commitment from the US to mitigate climate change.

Impact of Climate Change on Human Health

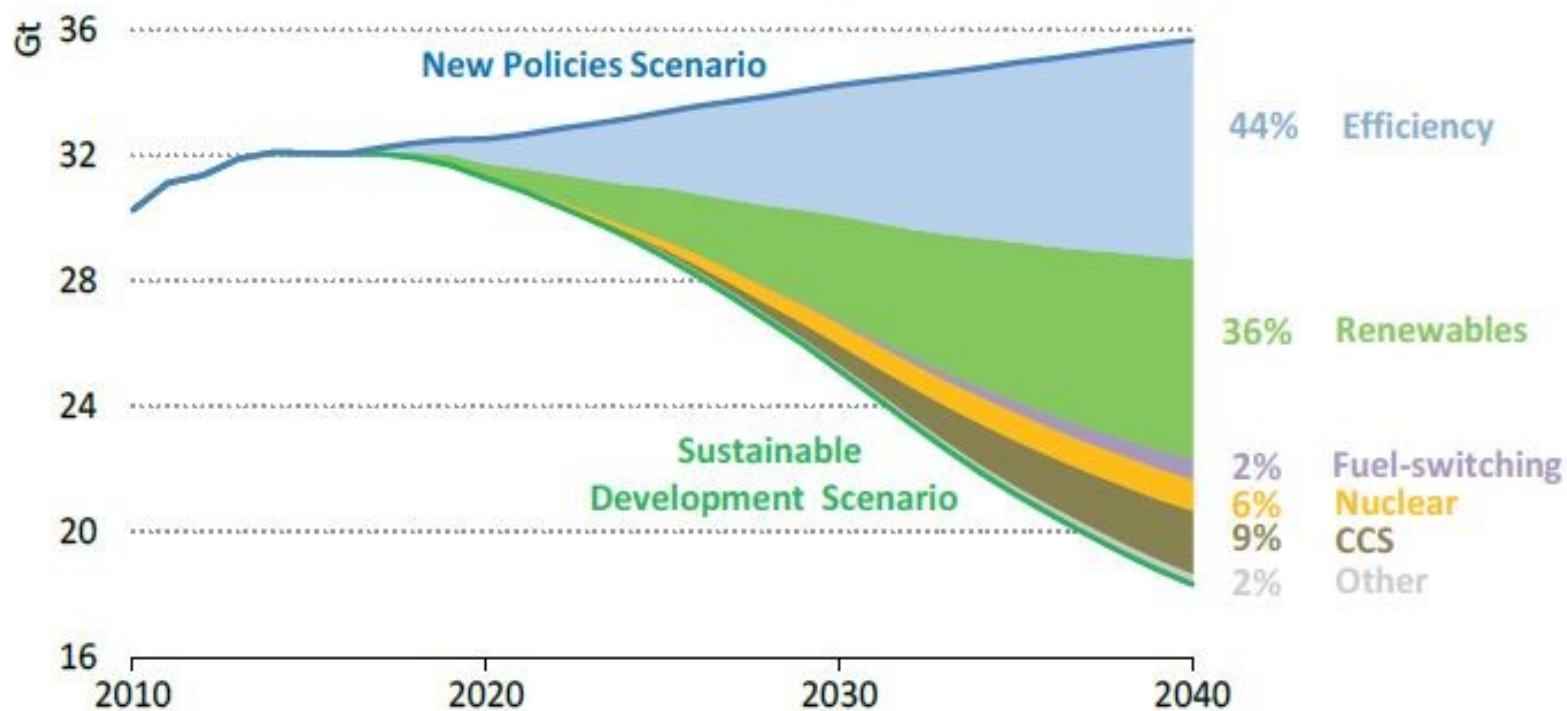


Source: Centers for Disease Control

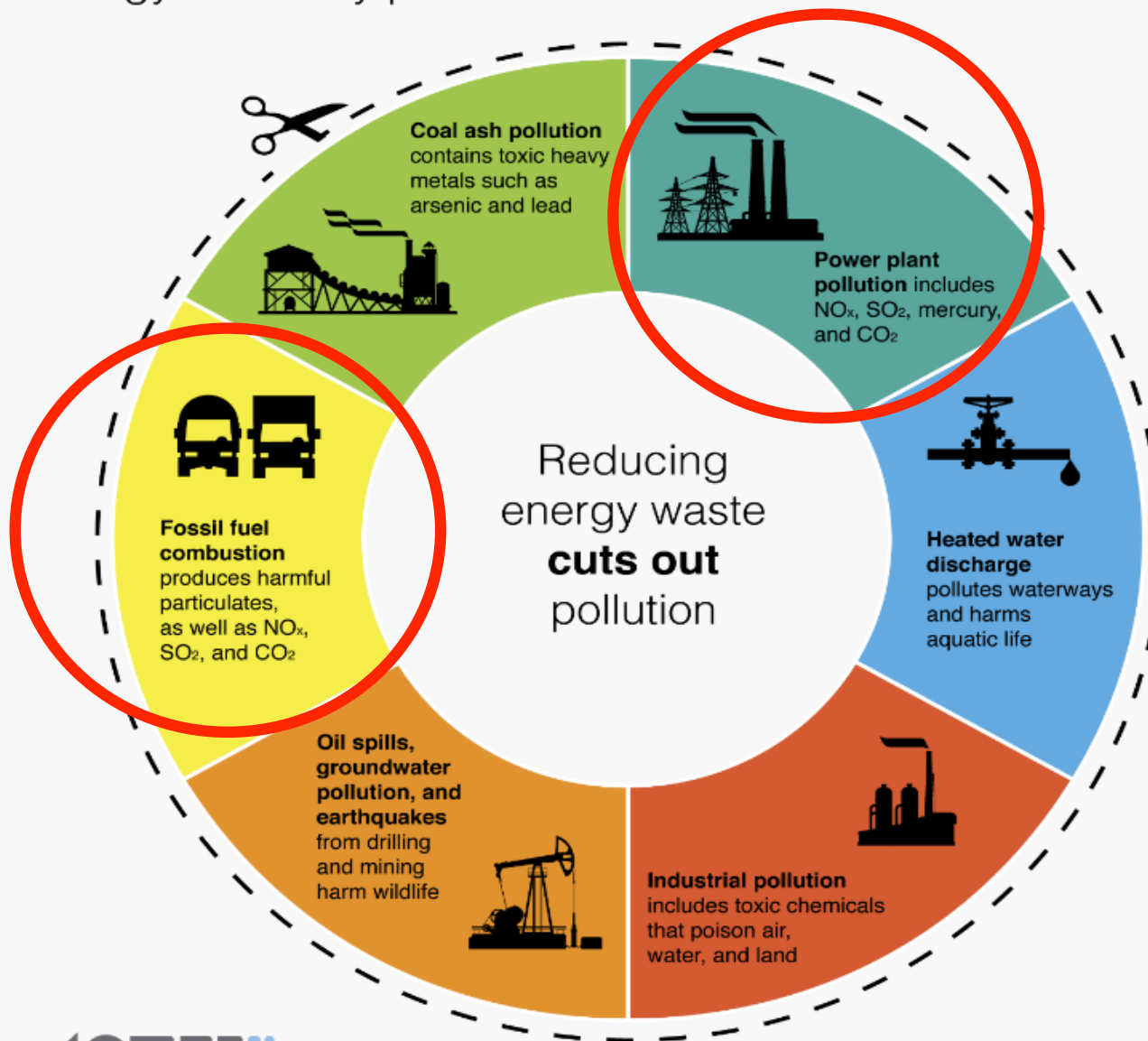
<https://www.cdc.gov/climateandhealth/effects/default.htm>

IEA: Efficiency Indispensable to Achieving Global Climate Targets

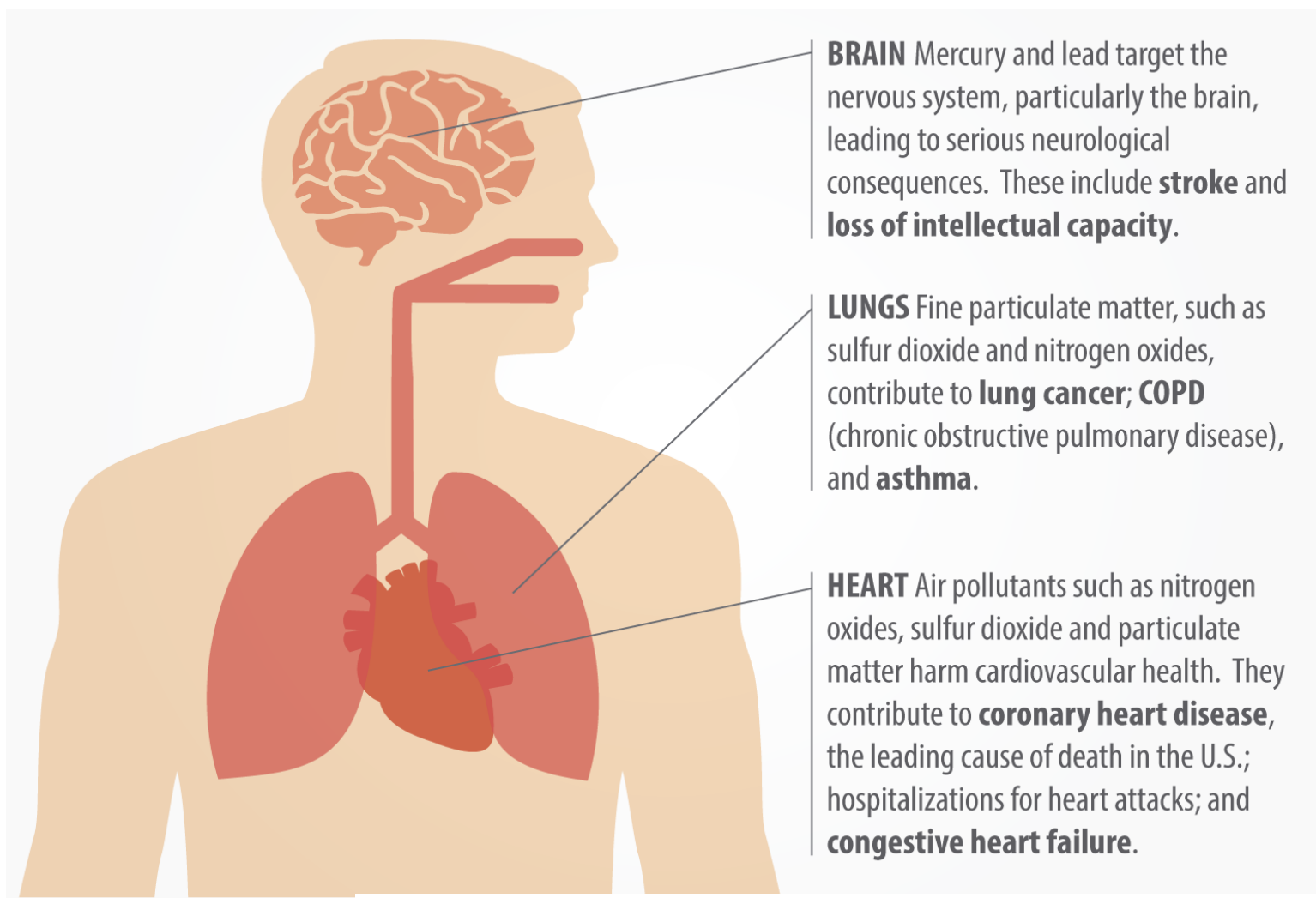
Figure 1.8 Global carbon dioxide (CO₂) emissions reductions in the WEO 2017 New Policies and Sustainable Development Scenarios

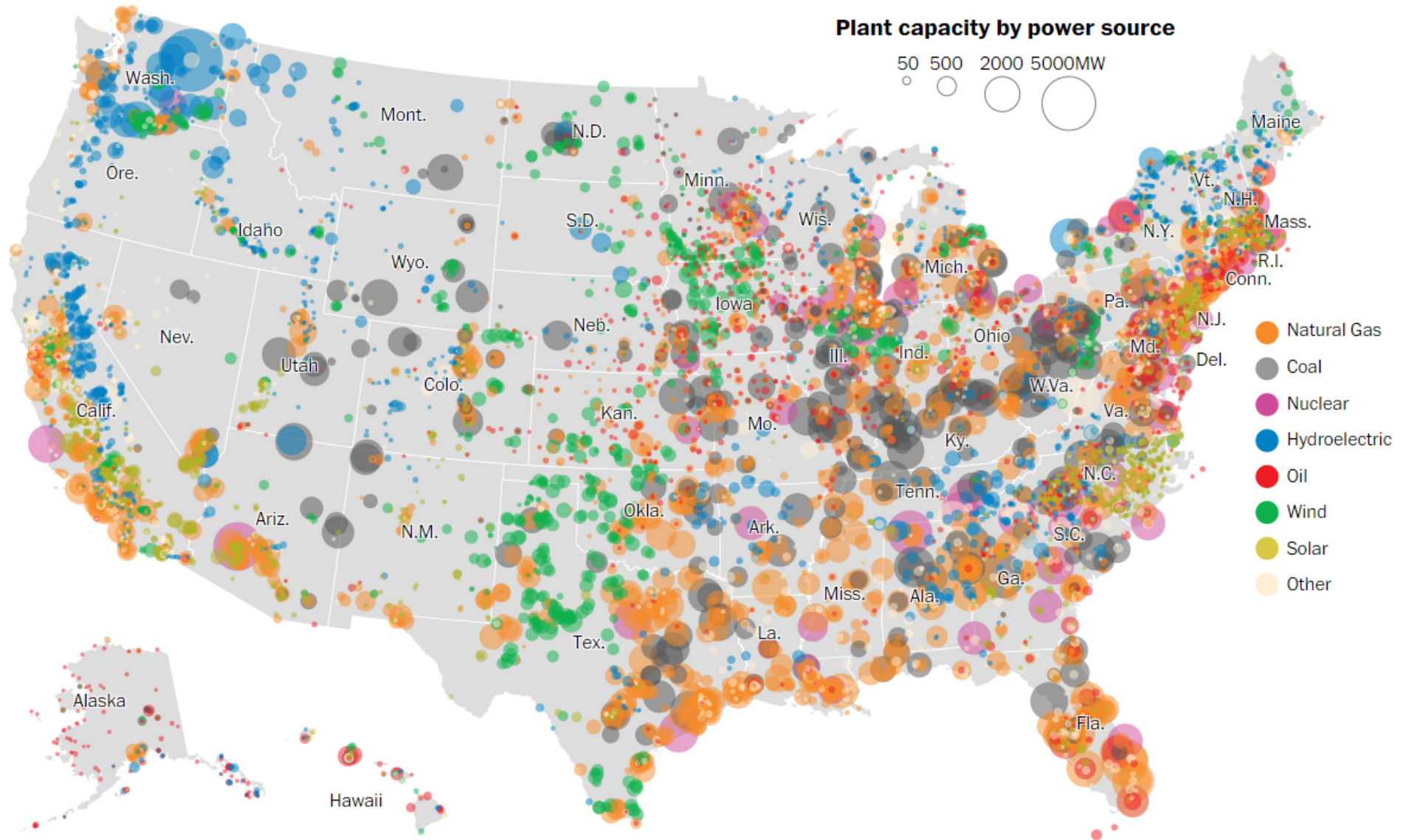


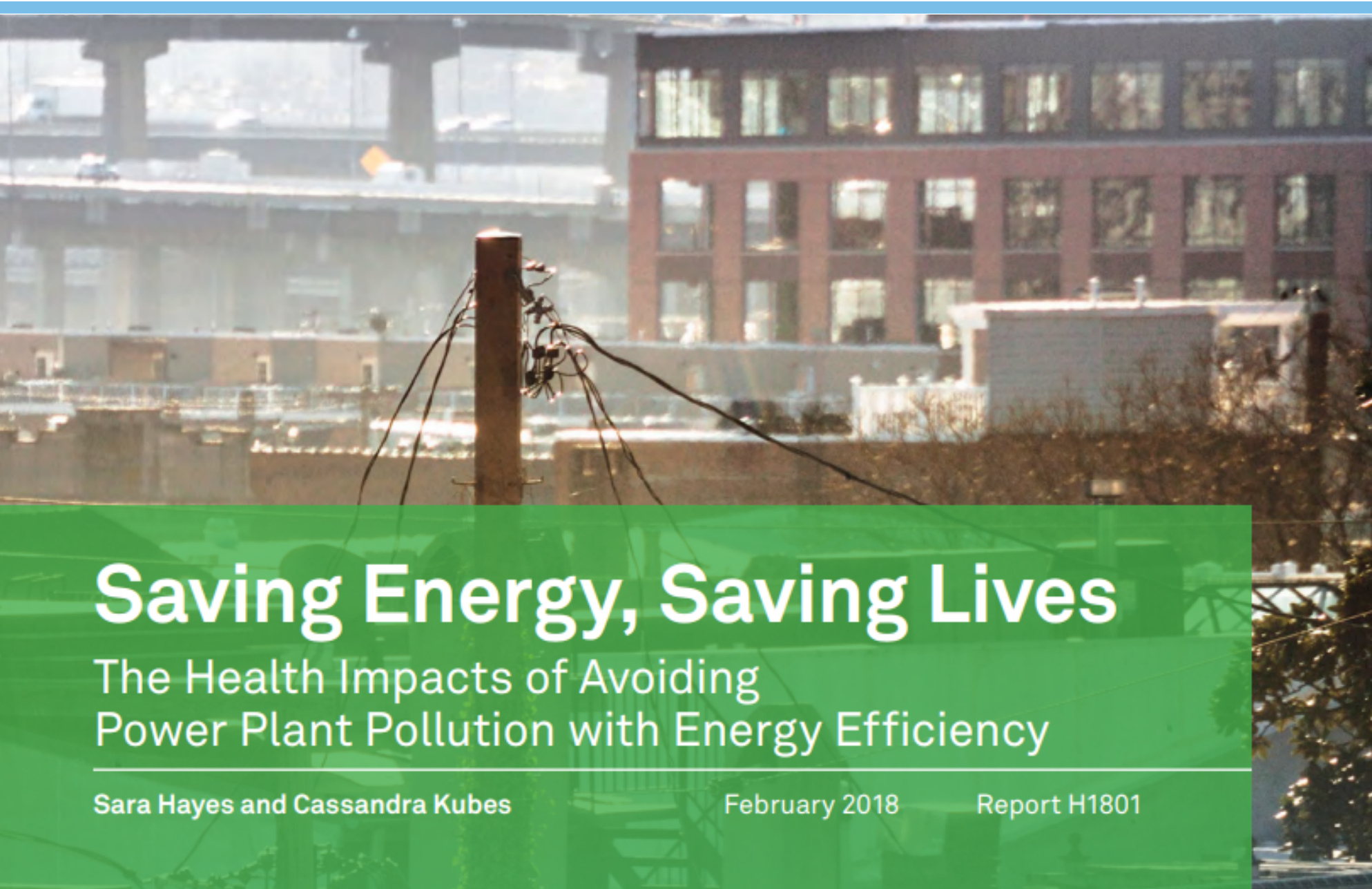
Energy efficiency protects the environment



Health Effects of Fossil Fuel Pollutants







Saving Energy, Saving Lives

The Health Impacts of Avoiding
Power Plant Pollution with Energy Efficiency

Sara Hayes and Cassandra Kubes

February 2018

Report H1801

Methodology

- Applied a 15% reduction in annual electric consumption evenly across the country.
- Estimated emission reductions from power plants using EPA's AVOIDed Emissions and geneRation Tool (AVERT).
- Entered emission reductions for more than 3,000 counties into EPA's CO-Benefits Risk Assessment (COBRA) model to quantify the health harms avoided by our energy efficiency scenario.

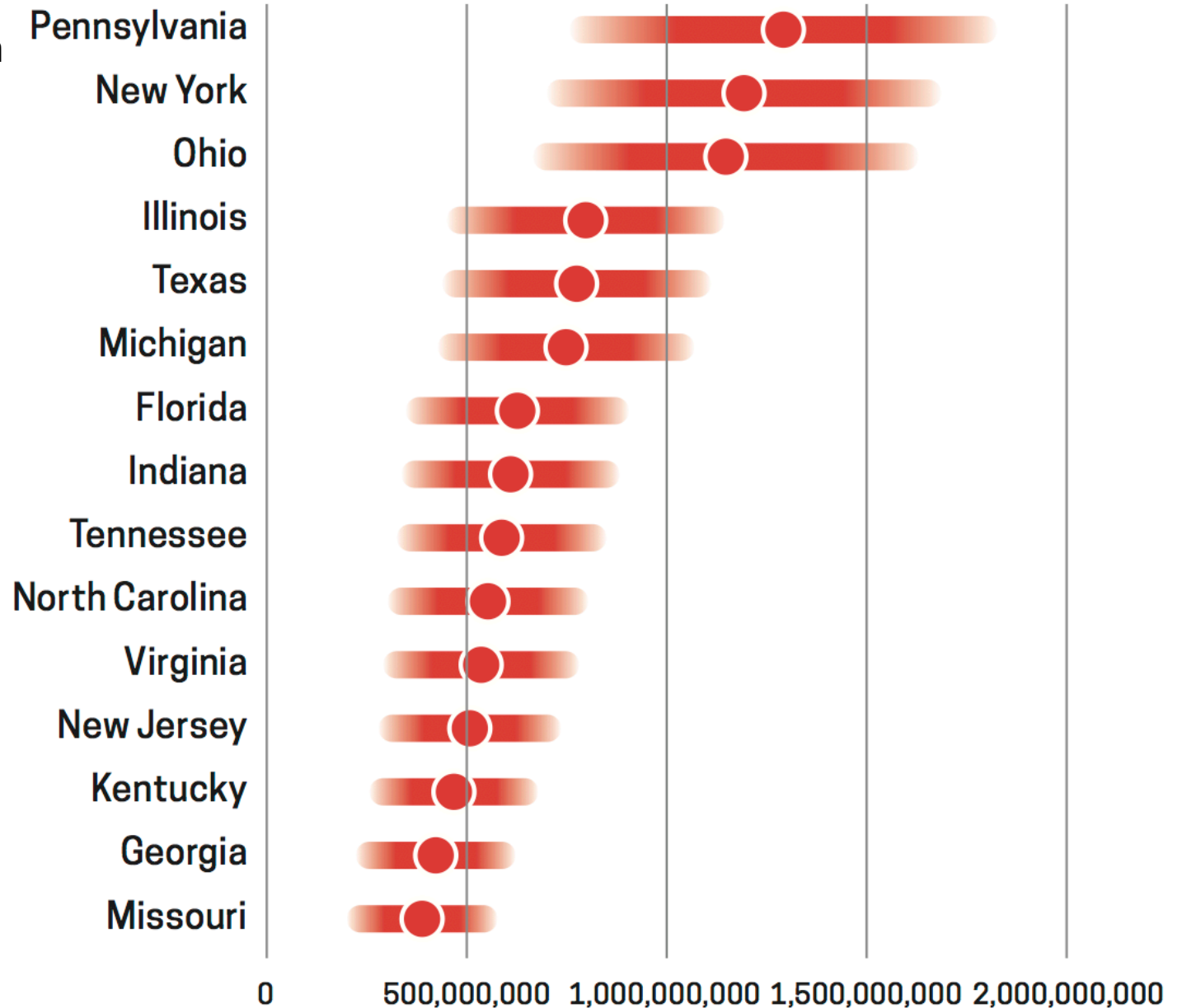
Save Energy. *Protect Health.*

Reducing annual electricity use by **15%** with **ENERGY EFFICIENCY** would reduce air pollution, and...

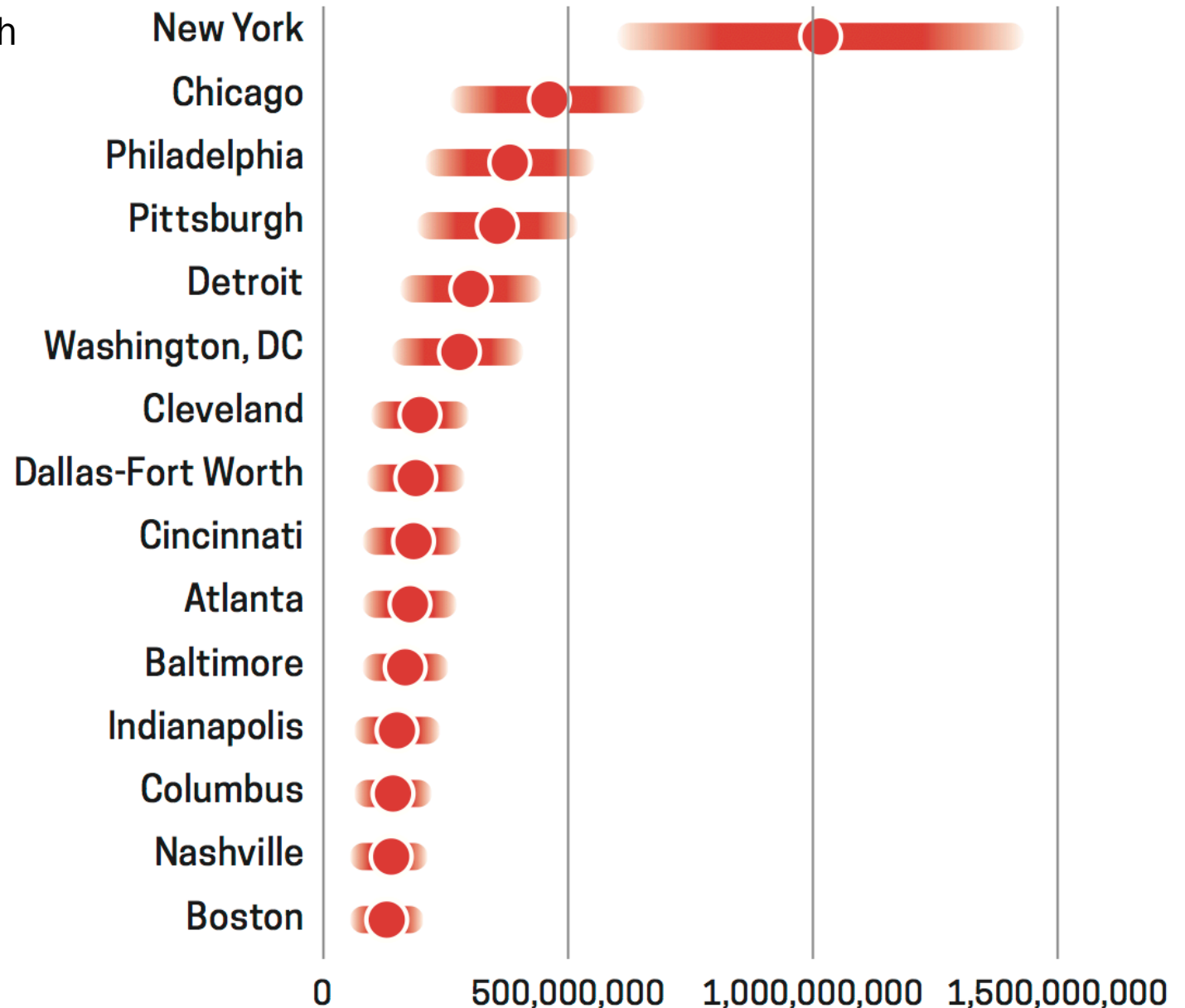
- + Save more than **SIX LIVES** every day
- + Prevent nearly **30,000 ASTHMA EPISODES** each year
- + Save Americans up to **\$20 BILLION** in avoided health harms annually



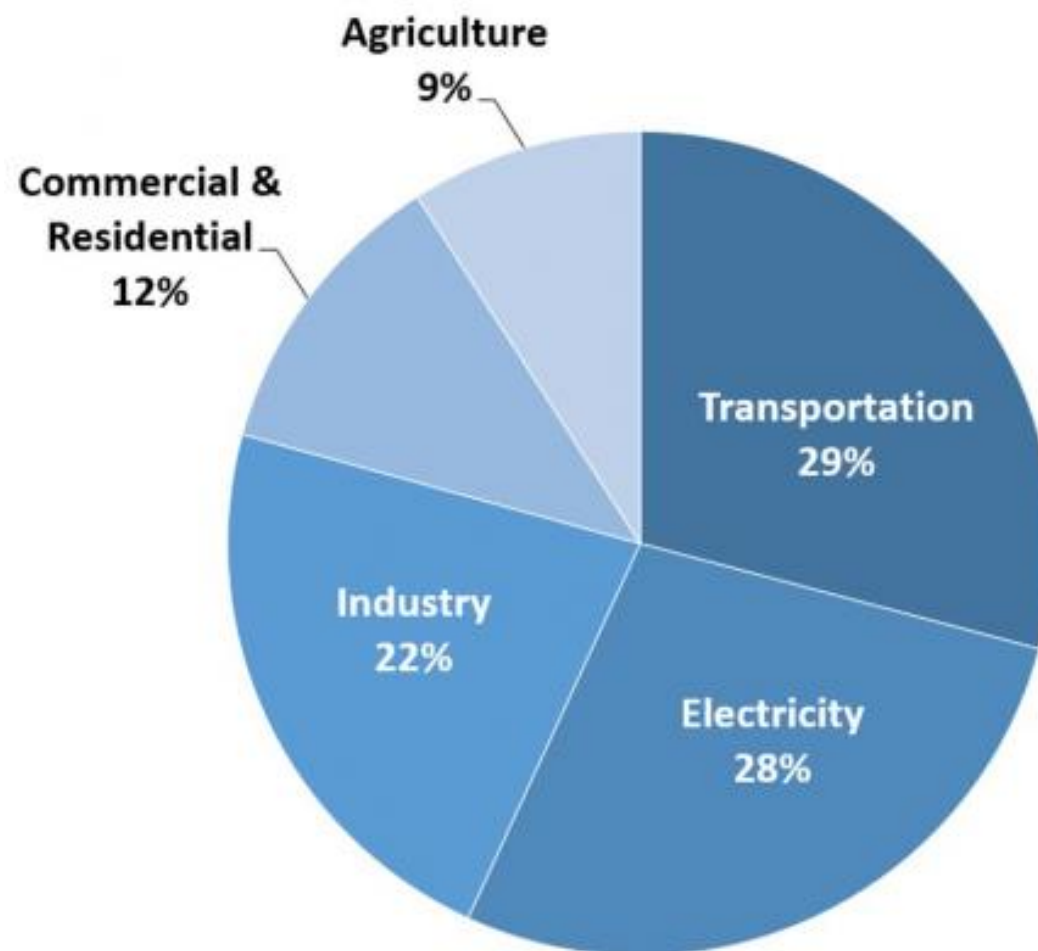
Top 15 states by
avoided annual health
harms, low and high
range (US\$)



Top 15 cities by
avoided annual health
harms, low and high
range (US\$)



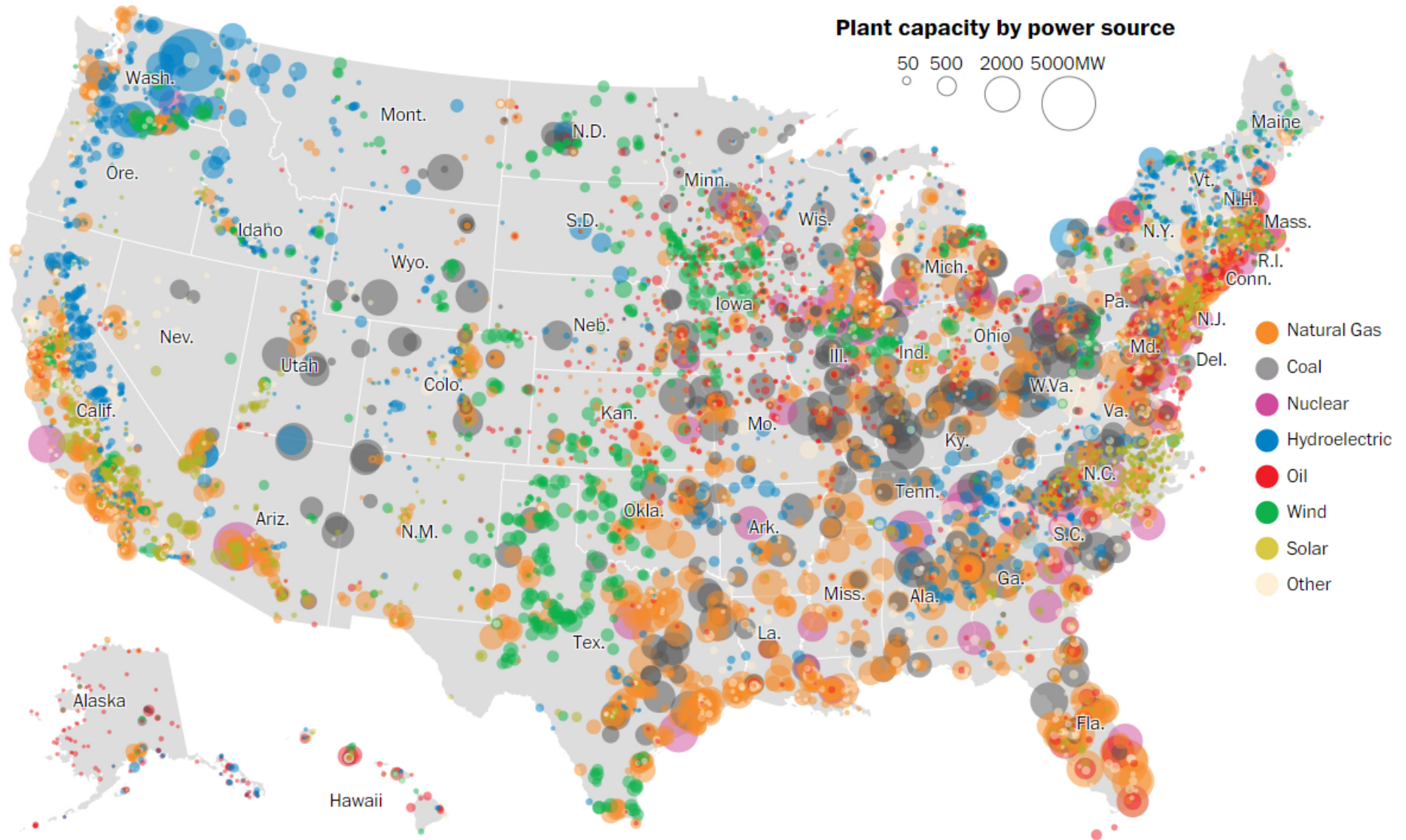
Total US GHG Emissions by Economic Sector in 2017



Electrifying Vehicles

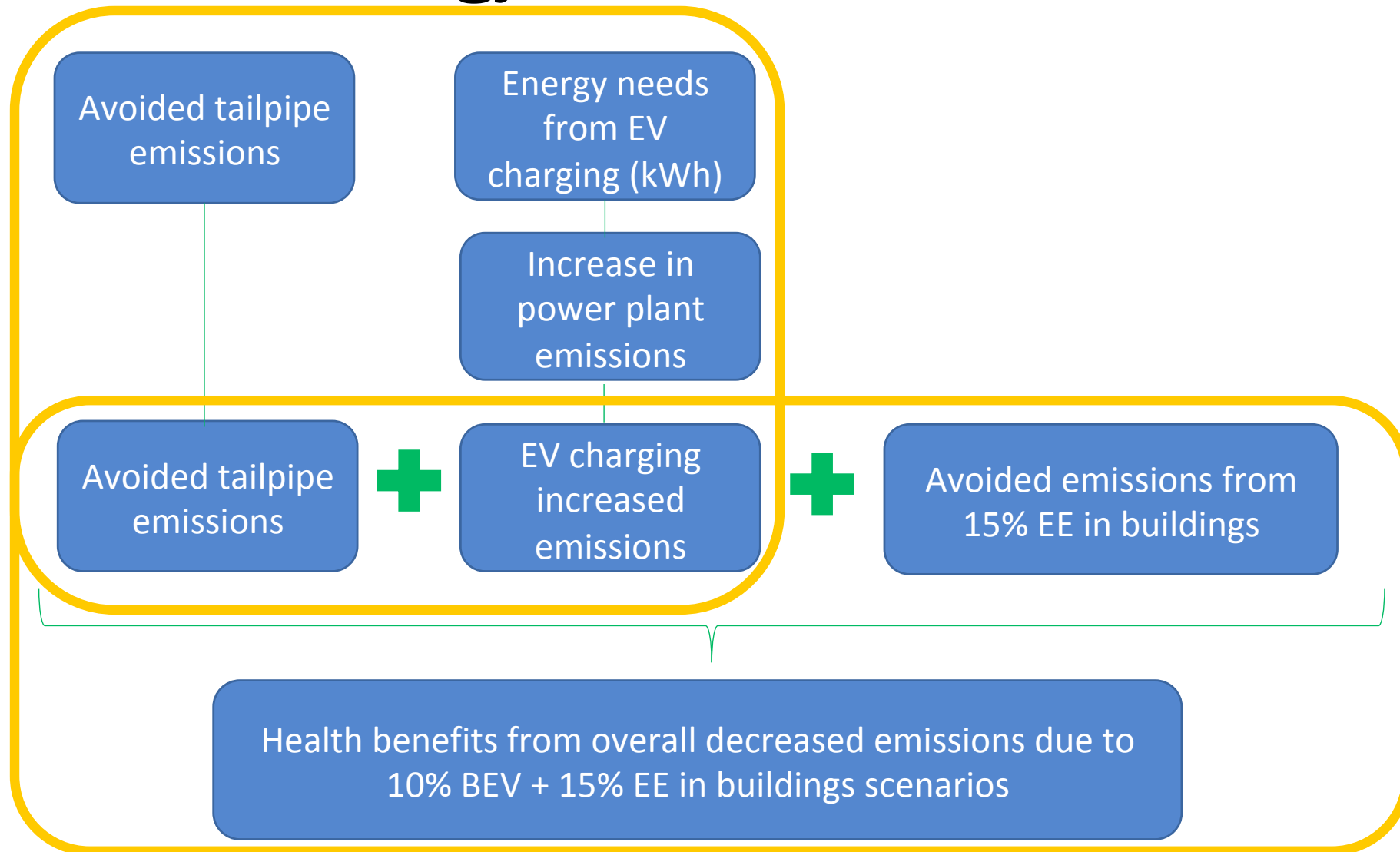
- Vehicle electrification presents an opportunity to reduce emissions and improve public health
- ACEEE performed an analysis to estimate the air pollution and public health impacts from adopting light-duty battery electric vehicles (BEVs) and EE in buildings in the Southeast US
- Factors impacting effects of BEVs on emissions and health





Source: https://www.washingtonpost.com/graphics/national/power-plants/?utm_term=.bd46236fb569

Methodology



Factors Influencing Results

- Results represent impacts over one year
- Charging scenarios can have an impact on power sector emissions
- Fuel mix of the grid
- Applied over baseline year 2017

Results for Southeast US

Phase 1: 10% BEV

- Net decrease in CO₂ emissions
- Slight increase in net emissions for PM_{2.5}, SO₂, and NO_x

Phase 2: 10% BEV + 15% EE in buildings

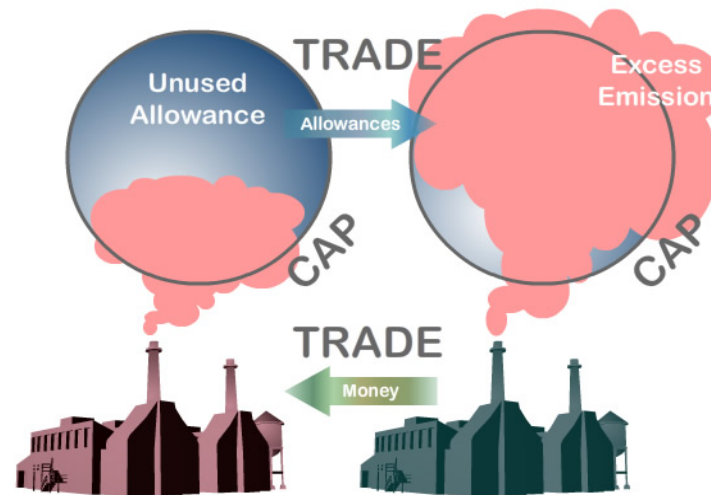
- Overall decrease in annual emissions of PM_{2.5}, SO₂, NO_x, and CO₂ relative to Phase 1
- \$1.0 to \$2.4 billion (USD) in reduced health harms in a single year

Other Considerations

- Look beyond light-duty passenger vehicles to all on-road vehicles
- Maximize benefit of EVs with adopting other EE policies
- Fuel mix of grid is an important consideration
- Site-specific emissions and health impacts

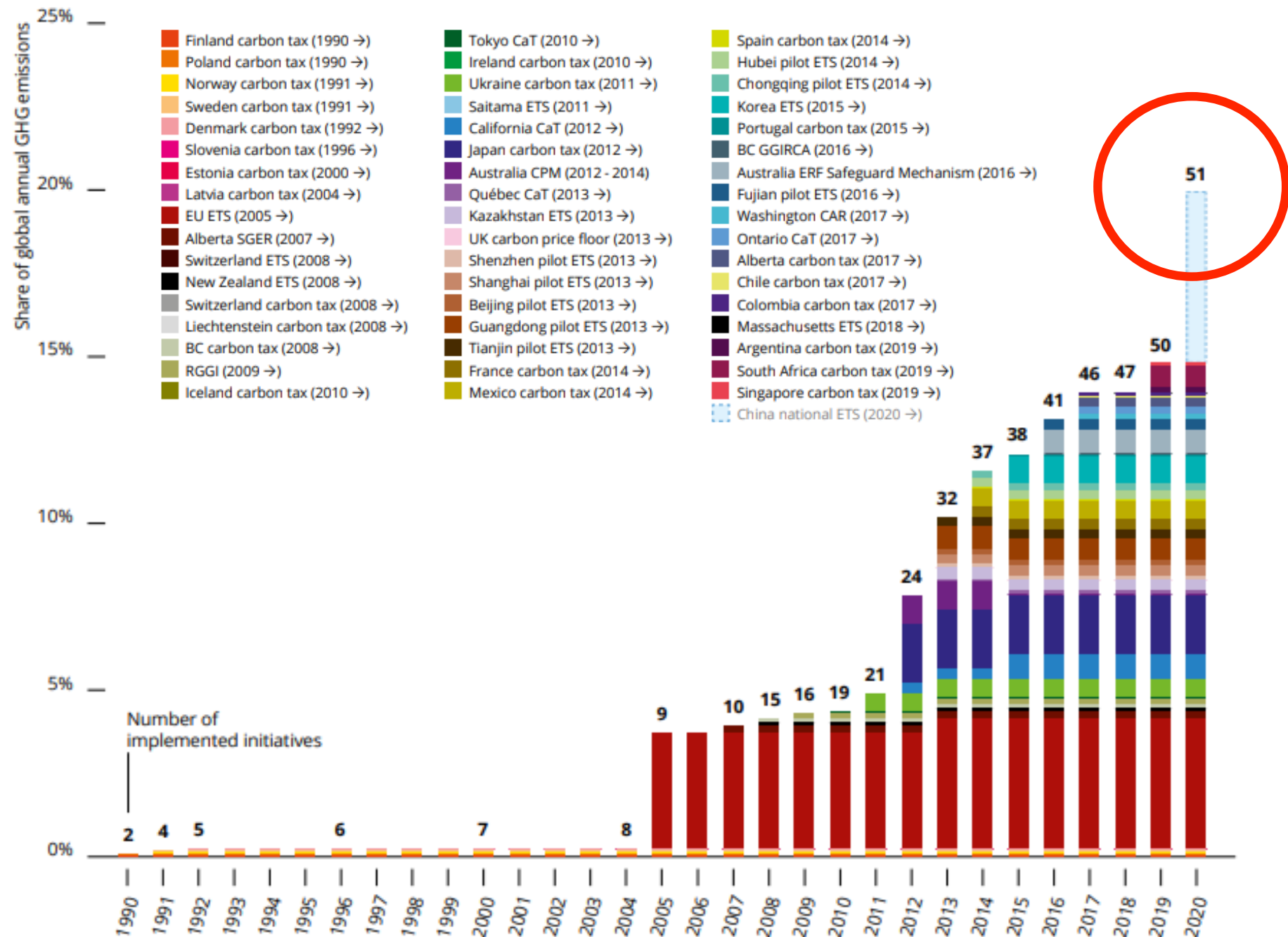
Climate Policy: Pricing GHG Emissions

- Two major approaches in use
 - Carbon tax (sometimes called a fee or levy)
 - Cap and trade system



Regional, national, and subnational carbon pricing initiatives

Source: World Bank 2018



Carbon tax

Pending carbon tax

Cap and trade

Boulder, CO

Washington, DC

 Boulder, CO

Carbon tax

 Pending carbon tax

Cap and trade

 Pending cap and trade

Role of Efficiency in Carbon Pricing

1. Funds from a carbon pricing program can be invested in efficiency
 - Examples: EU ETS, California, RGGI
2. Variety of investment options exist
 - Different sectors and program administrators
3. Complementary policies can further EE progress
 - Energy efficiency resource standards, fuel economy standards, ZEV mandates and incentives, building energy codes, etc.

Concluding Thoughts

- Messaging around climate change affecting public health is gaining momentum
- Opportunity to communicate the health and climate benefits of energy efficiency
- Understanding the health benefits of efficiency can help to motivate leaders to take action on climate change

Thank you

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ACEEE

