

October 31, 2017

Advancing Energy Efficiency and Improving Air Quality

2017 ACEEE - EE as a Resource – Phoenix, AZ

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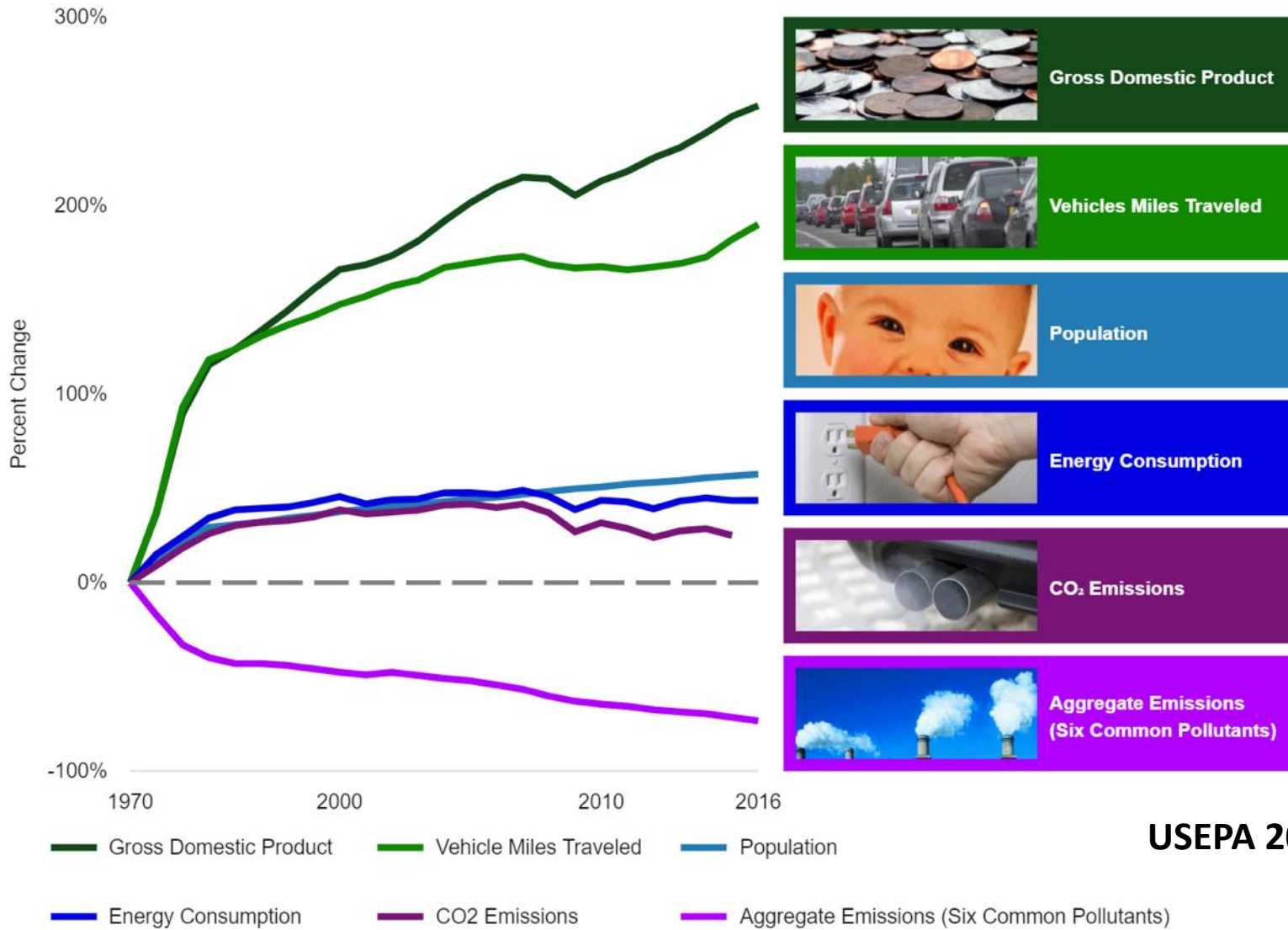
Multiple Benefits of Energy Efficiency



Linking Air Quality and Energy Efficiency

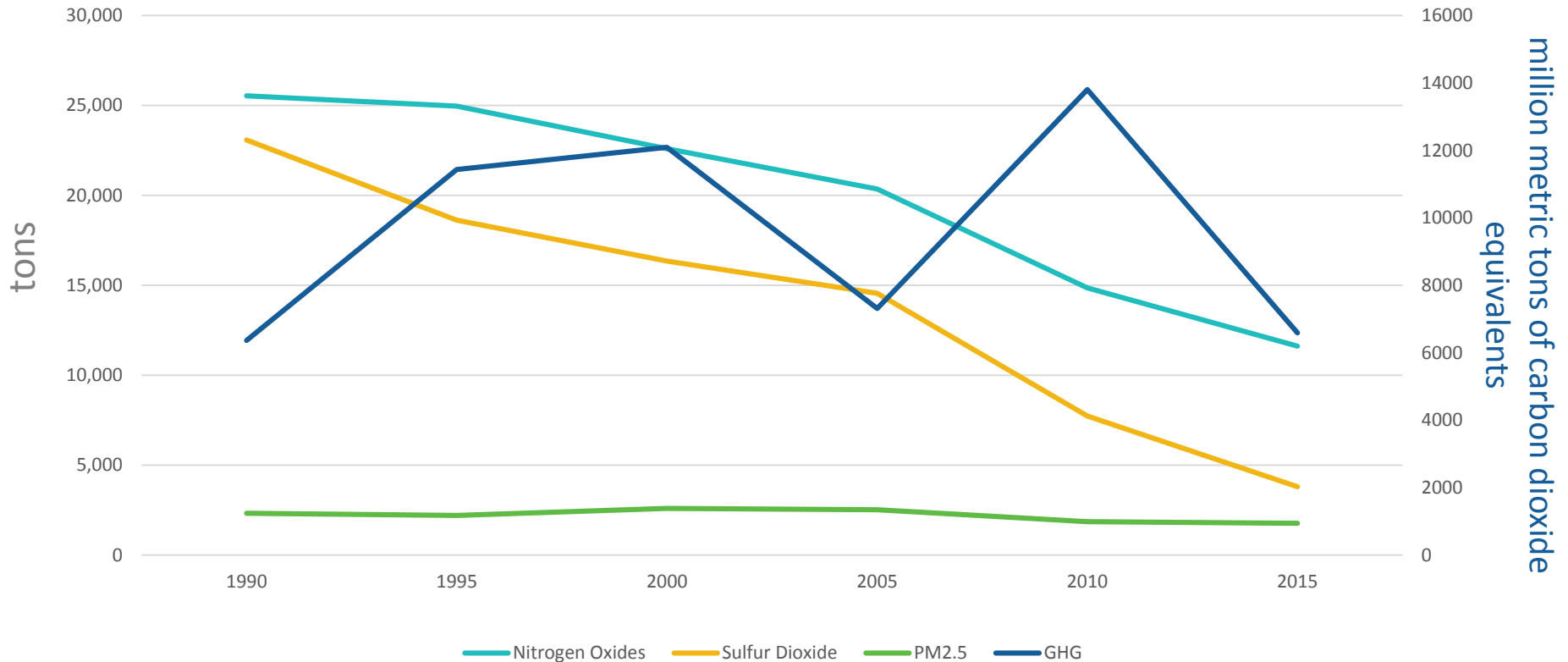
- Why Environmental Regulators care about Energy
- Why Energy Efficiency is an important option for meeting air quality goals
- How can the Two be linked?

Comparison of Growth Areas and Declining Emissions 1970-2016



USEPA 2017

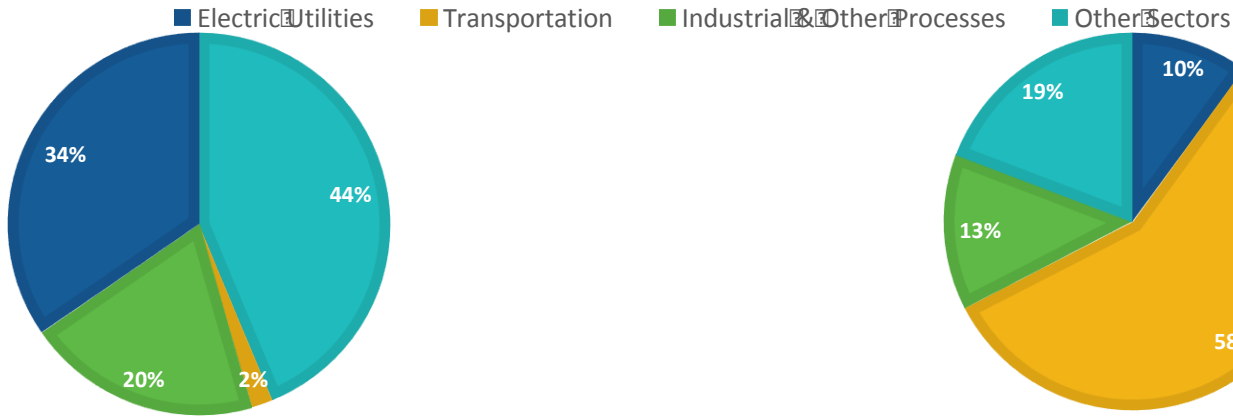
Electric Sector Emissions



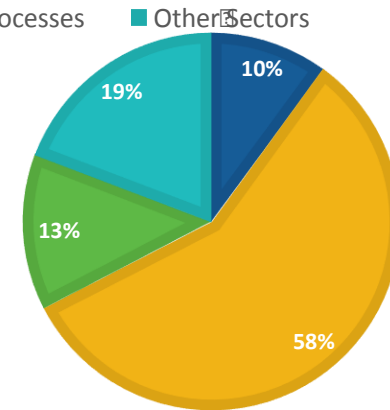
Source: U.S. EPA National Emissions Inventory, 2016

US Emissions Pollutants of Concern

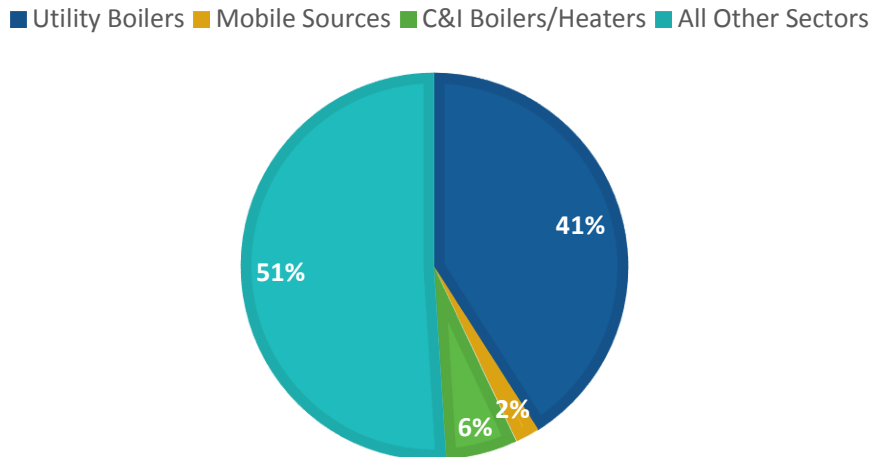
SULFUR DIOXIDE, 2016



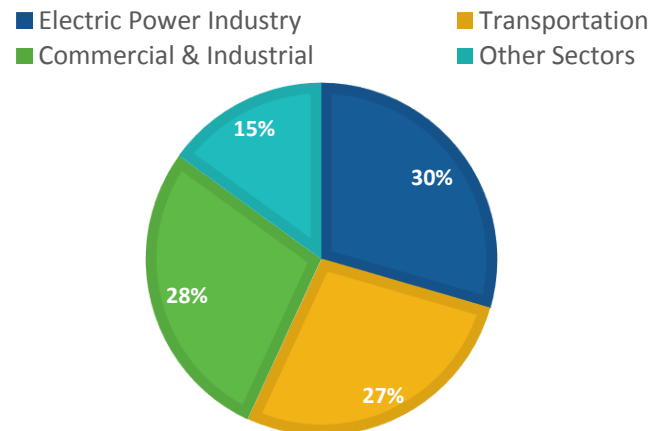
NITROGEN OXIDES, 2016



MERCURY, 2014



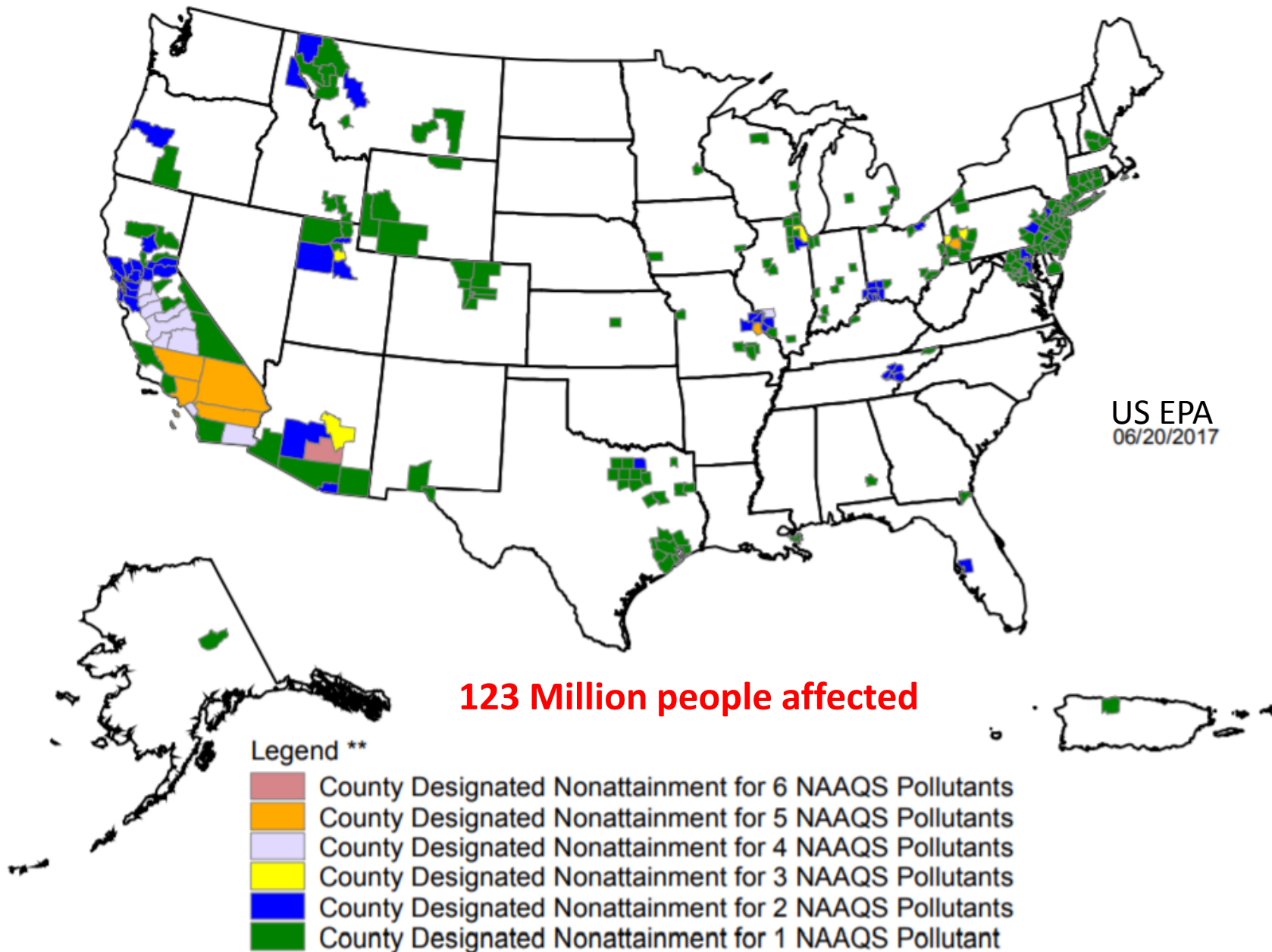
GREENHOUSE GAS, 2015



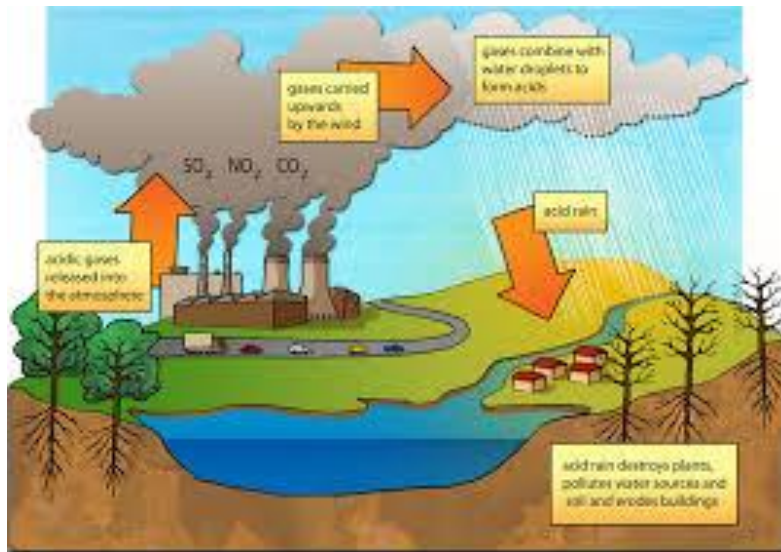
Sources: Sulfur Dioxide, Nitrogen Oxides - U.S. EPA National Emissions Inventory, 2016; Mercury - U.S. EPA 2014; GHG - U.S. EPA 2017

Counties Designated "Nonattainment"

for Clean Air Act's National Ambient Air Quality Standards (NAAQS) *



Nitrogen Oxide Impacts



Source: flickr.com

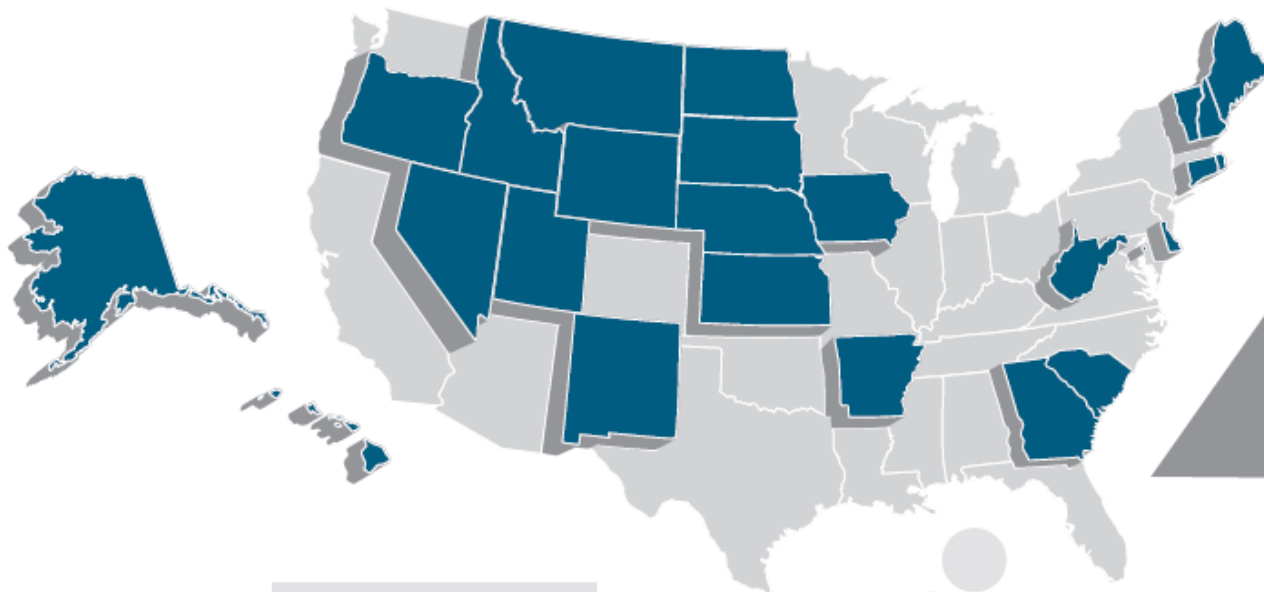
- Acid Rain and Transported Pollution
- Visibility Impairment
- Water Body Eutrophication
- Ground level Ozone (Smog)
- Fine Particle Health Impacts

200,000

Translating Air Quality and Energy Efficiency



The United States has the potential to cost-effectively **reduce** its **electricity** use by **741,000 GWh***



Saving **741,000 GWh** is equivalent to the **electricity** used across all the highlighted states over a full year!†

It's equal to **reducing** the nation's **electricity** needs by about

16%

in 2035

Every state could save with energy efficiency, ranging from

12%–21%

savings per state

Energy efficiency is a **low-cost** option, averaging only

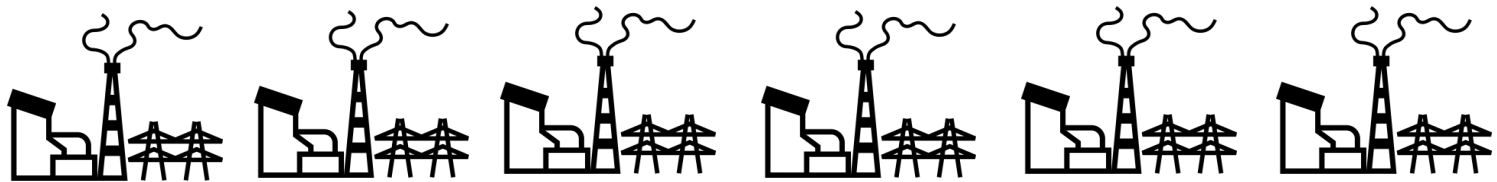
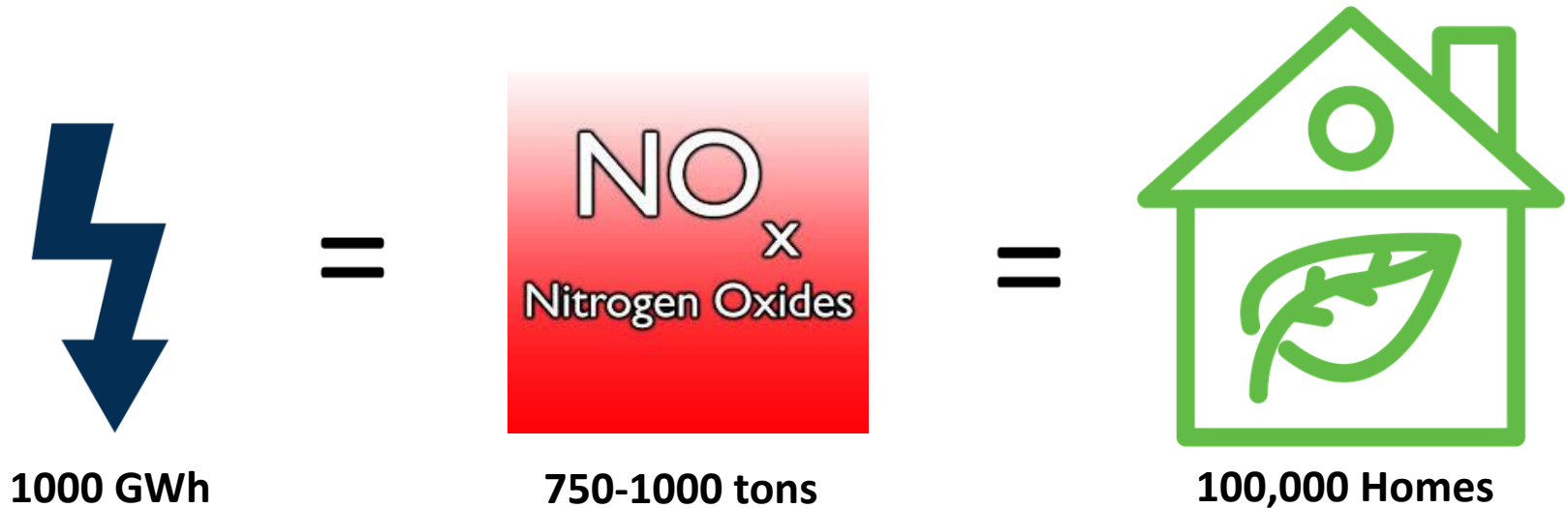
4.6¢
per kWh‡

*from 2016–2035. Electric Power Research Institute, *State Level Electric Energy Efficiency Potential*, 2017.

†2015 data; from U.S. Energy Information Administration, "Retail Sales of Electricity by State by Sector by Provider (EIA-861)," Detailed State Data, 2016.

‡Lawrence Berkeley National Laboratory, "What It Costs to Save Energy," 2017.

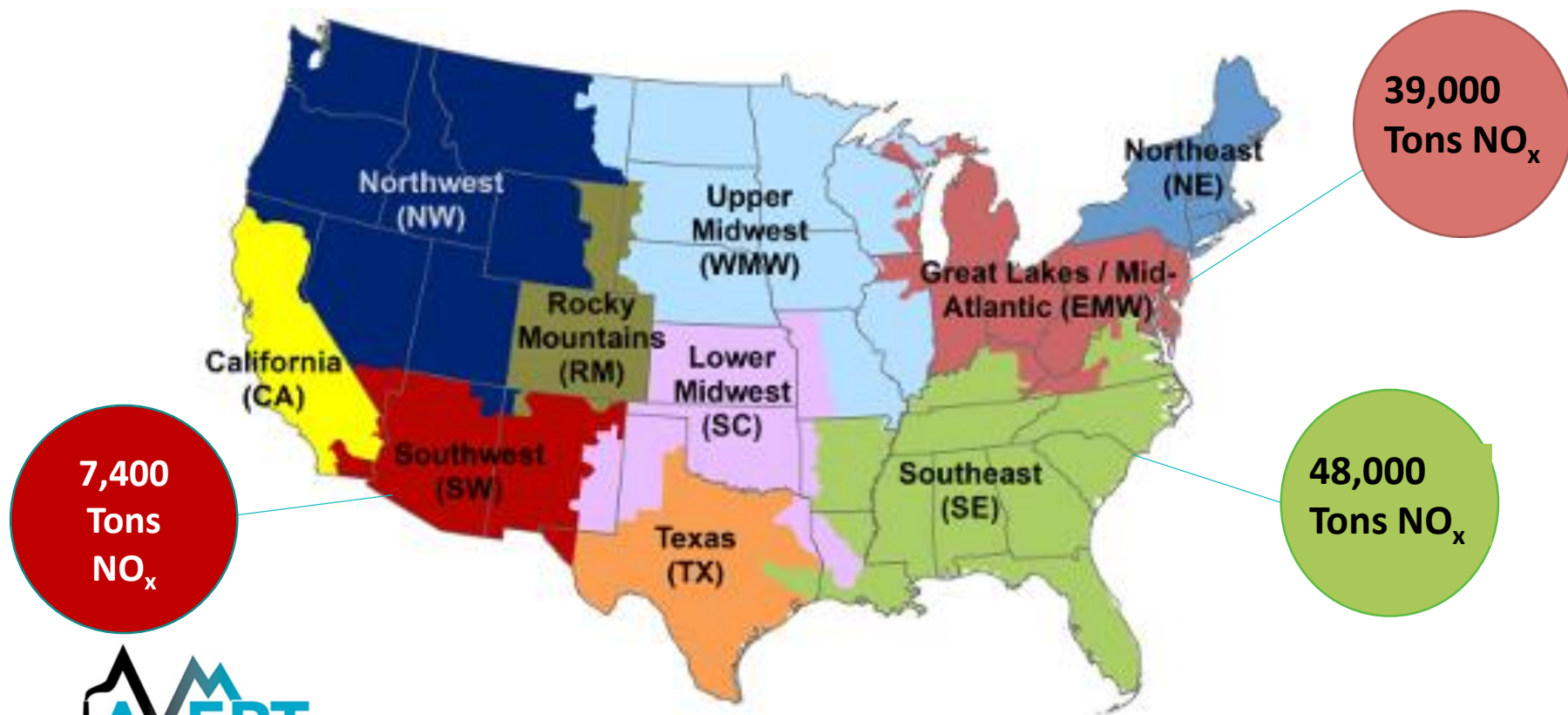
What's 1,000 GWh?



Six 690 MW natural gas combined cycle power plants

Source: RAP Shenot, MassDEP Footprint permit

Air Quality Benefits of DOE's Potential Study - NO_x



Air Quality Benefits of DOE's Potential Study – CO₂



What's 1,000,000 tons of CO₂?



1,700 GWh

=

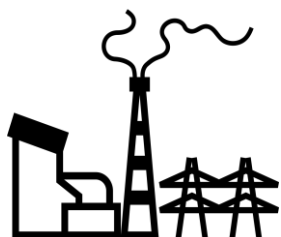


1,000,000 tons

=



136,000 Homes



35% of a 690 MW natural gas combined cycle power plants

Source: EPA GHG calculator, MassDEP Footprint permit

Energy Efficiency Improves Air Quality

- Complying with Public Health Standards
- Complying with Visibility Standards
- Developing Implementation Plans
- Demonstrating “permanent, quantifiable, surplus, enforceable” reductions



Grand Canyon National Park Air Webcam
Yavapai Point, 6/19/17



Yavapai Point, 6/22/15

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Energy Efficiency Benefits Facilities

- Saving Facilities Money during Permitting
- Training Permit Writers to consider Energy Efficiency
- Focusing Commercial and Industrial Energy Efficiency efforts, Tailored to a State's economy

Energy Efficiency's Value can be Modeled

- Jointly Achieving State and Local Environmental and Energy goals
 - RAP's E-Merge Approach
 - Peer to Peer conversations
- Modeling to Demonstrate the Value of Energy Efficiency

Conclusion and a Recommendation

- Significant Air Quality Benefits are available from Energy Efficiency – Greenhouse gas and Criteria pollutants
- Value of Energy Efficiency programs increases
- Air Quality Officials need Encouragement and Translations
- You can help!

Resources

- [Using Energy Efficiency to Advance Air Quality Compliance](#)
- [Quantifying the Air Quality Impacts of Energy Efficiency Policies and Programs](#)
- [Avoided Emissions and geneRation Tool \(AVERT\)](#)

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



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