

Tools that Quantify Emissions and Health Impacts of Energy Strategies for State and Local Governments

**Presentation to the
Clean Air Act Advisory Committee
September 26, 2018**



EE/RE and State and Local Governments

- State and local governments have implemented and continue to expand energy efficiency and renewable energy (EE/RE) policies and programs.
 - ▶ 26 state EE Resource Standards; 29 state Renewable Portfolio Standards (5 have increased since 2016)
 - ▶ Over 80 cities and counties have committed to 100% renewables; many have EE requirements in building codes, targets for facilities/operations, and community-wide EE goals
- They pursue EE/RE for a variety of reasons
 - ▶ Emissions, energy, economic, public health, sustainability
- Many states and locals want to do more but face barriers
 - ▶ Planning, organizational, quantification

EPA offers capacity building, decision-support resources, and analytic tools



State and Local Energy and Environment Program

Provide tools and information resources about EE, RE and emerging strategies



Help meet their CAA air quality goals



Help S&Ls achieve their emissions, energy, economic and public health goals



Support decision makers



Benefit environment & public health



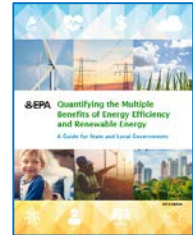
Save time and resources

States and locals request EPA's assistance with assessing emissions impacts of EE/RE

Sample products:

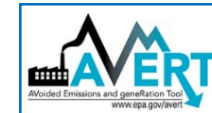
- ***Quantifying the Multiple Benefits of EE and RE: A Resource for States and Localities***

- Straightforward information to support policy makers
- How-to framework: methods, tools, and examples



- ***AVERT (Avoided Emissions and generation Tool)***

- Quantifies the emissions benefits of EE/RE
- Enables analysts to assess contribution of EE/RE to meeting their air and energy goals
- *Newly launched in cloud.gov* to facilitate greater accessibility and to link outputs to COBRA (next slide)



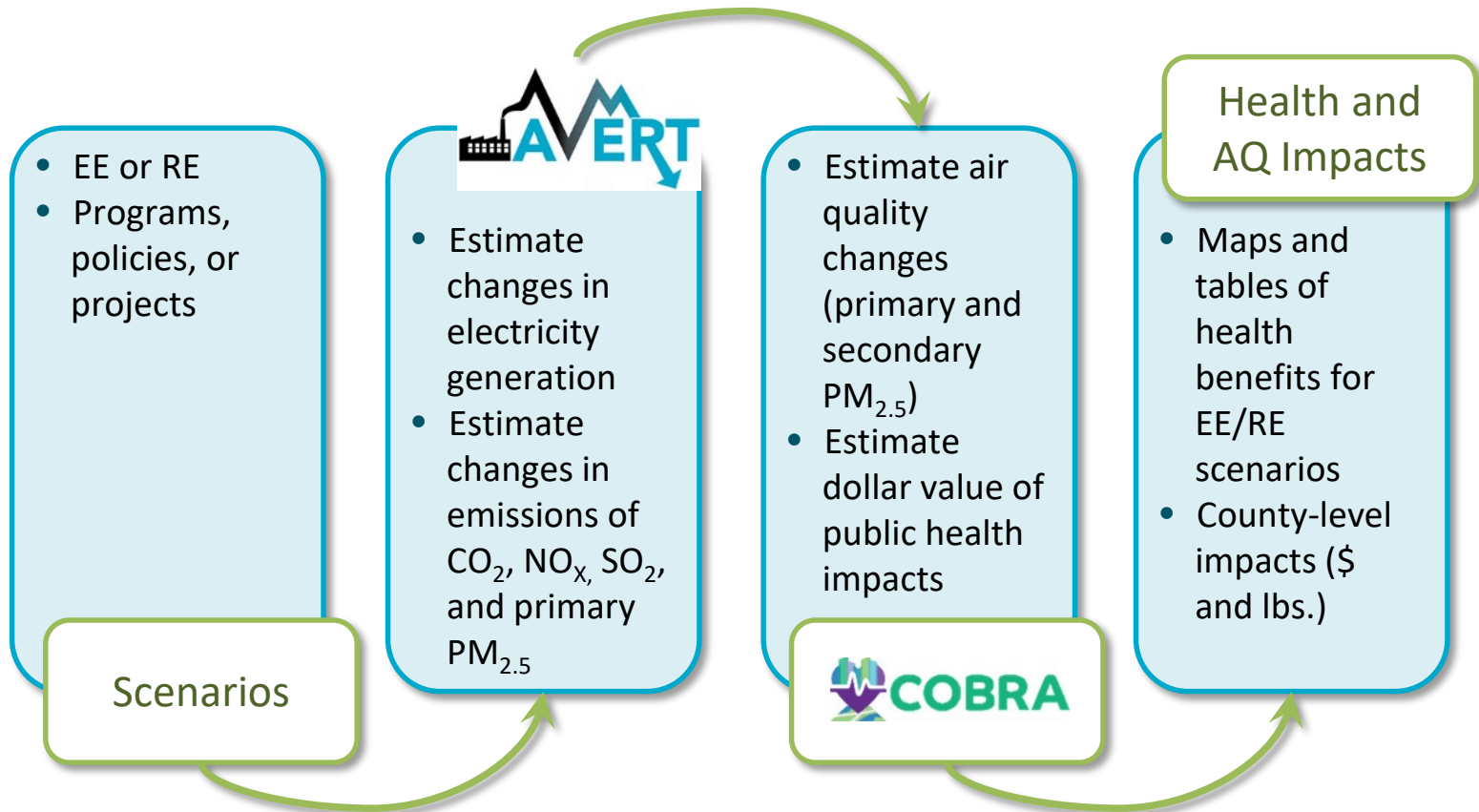
- ***COBRA Health Impacts Screening and Mapping Tool***

- Estimates and maps the air quality and health impacts of EE/RE
- Users can compare economic value of health benefits to program costs
- *Recently updated* to enable AVERT-COBRA emissions-health linkages

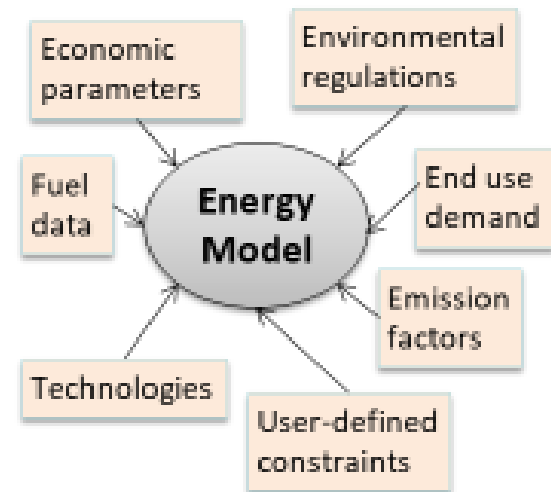
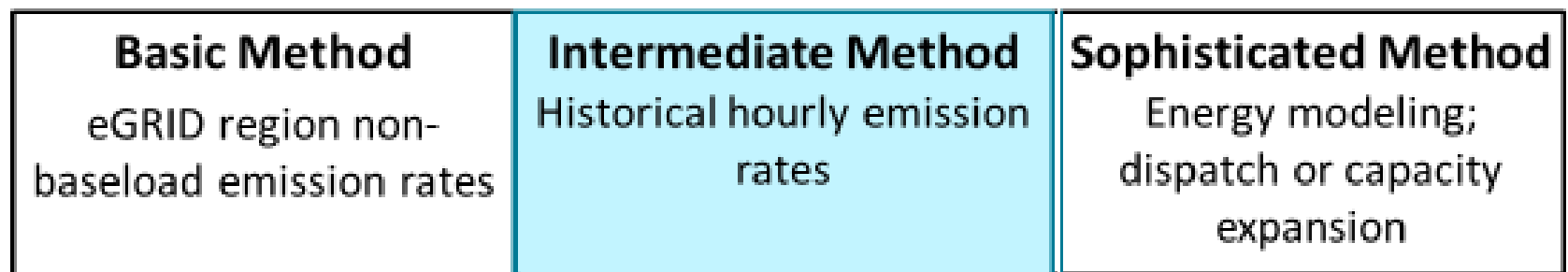


More resources at www.epa.gov/statelocalenergy

Tools and Resources for Quantifying Emissions and Health Impacts of EE/RE



Quantifying Emissions Impacts of EE/RE: Basic to Sophisticated Methods

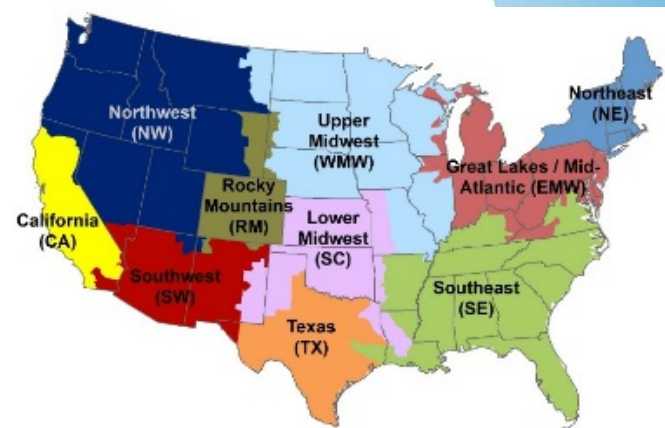


AVERT Overview

AVERT Regions

AVERT was built to:

- Overcome quantification barriers
- Translate EE/RE programs to avoided NO_x, SO₂, PM_{2.5}, and CO₂ emissions impact
- Use publicly available data 2007-2017
- Be user friendly, transparent, and credible



To use:

- Locate your AVERT region
- Obtain energy saved (MWh) for EE programs, or the capacity of wind and solar installation (MW)
 - Multiple options are built into the tool
- Run the model

Tool and training available at
<https://www.epa.gov/avert>

AVERT 2.0: Web-Based Main Module

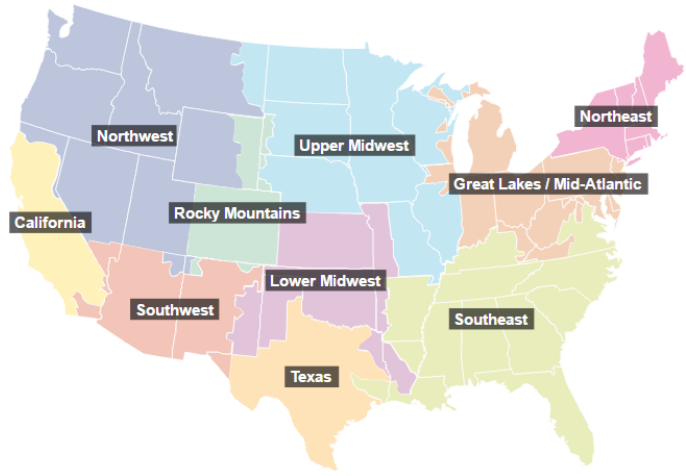
- Users can choose between AVERT's Excel-based version or the web edition
- In 2018, EPA released AVERT's web-based version
 - ▶ Allows users to quickly estimate EE/RE program impacts using current year dataset (2017)
 - ▶ Users can enter standard EE/RE settings
 - ▶ Results are shown in graphical form and savable formats

AVERT Web Edition

Select Region
Set EE/RE Impacts
Get Results

Select Region

AVERT splits the contiguous 48 states into 10 regions. AVERT regions are aggregated based on EPA's eGRID subregions. Select a region for analysis by either using the dropdown menu or clicking the map. Selecting a region loads the power plants operating within each region and region-specific wind and solar capacity data.



The online version of AVERT can run analyses using 2015 emissions and generation data. The Excel version of AVERT (available for download [here](#)) allows analyses for years 2007–2015 or for a future year scenario.

Set EE/RE Impacts ▶

Quantifying Health Impacts with EPA's COBRA¹ Screening Model

USER INPUTS= Change in 2017 or 2025 Emissions
- PM2.5, SO2, NOx, NH3, VOCs



Quantifies Changes in Air Quality
(Specifically, particulate matter)

Calculates Change in Health Outcomes
(Resulting from particulate matter changes)²

Calculates Monetary Value of Health Outcomes

OUTPUTS = Tables and maps of illness cases and deaths avoided as well as the related economic value.

¹COBRA is a peer-reviewed screening model that based on rigorous methods used by EPA health benefits assessments as described in the User Manual.

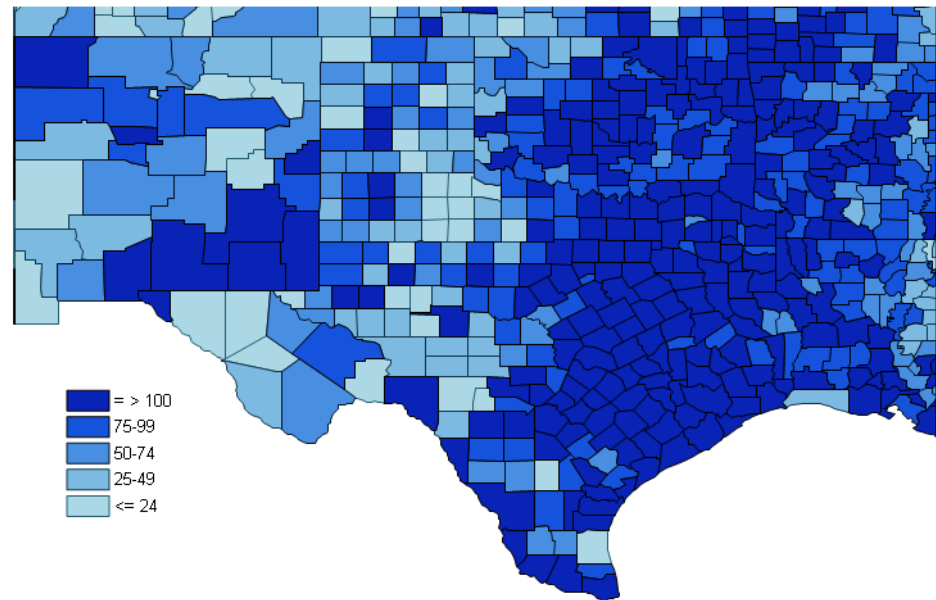
² COBRA estimates only particulate matter-related benefits and may be conservative in that respect.

COBRA Outputs

Health incidences include:

- ▶ Adult Mortality
- ▶ Infant Mortality
- ▶ Non-fatal Heart Attacks
- ▶ Respiratory Hospital Admissions
- ▶ Cardiovascular-related Hospital Admissions
- ▶ Acute Bronchitis
- ▶ Upper Respiratory Symptoms
- ▶ Lower Respiratory Symptoms
- ▶ Asthma Exacerbations (attacks, shortness of breath, & wheezing)
- ▶ Asthma Emergency Room visits
- ▶ Minor Restricted Activity Days
- ▶ Work Loss Days

Number of Asthma Exacerbations Avoided



EPA's CO-Benefits Risk Assessment Health Impact and Screening Model (COBRA) is available at <https://www.epa.gov/COBRA>

For more information



- Find tools and information: www.epa.gov/statelocalenergy
- Register for our newsletters:
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