# The California Air Pollution Mapping Tool

D. Edwards, L. Li, G. Ruiz

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# Background

▶ Over the past 50 years, CARB has established emission inventory programs for criteria pollutants, toxic air contaminants and greenhouse gases

▶ Each program started in different years and had its own specific air quality goals, leading to different reporting frequencies, requirements, and mechanisms

▶ Separate databases have made it difficult to link criteria pollutants, toxic air contaminant and greenhouse gas emissions for a specific facility

▶ Historically, each type of emissions data has been made available to the public through separate web pages

▶ Pollution Mapping Tool is CARB's first step to integrate emissions inventories into one database system

# Pollution Mapping Tool Overview

- Valuable data portal and analytical platform for emissions data collected under various programs

- Enables the public to query, view, and analyze emissions of GHG and criteria air pollutants from large facilities in California.

- Users can find facilities and associated emissions at the state, regional, local and community levels

- Allows comparison of GHG and criteria pollutant emission trends by facility

- Presents emissions data in maps, charts and tabular formats
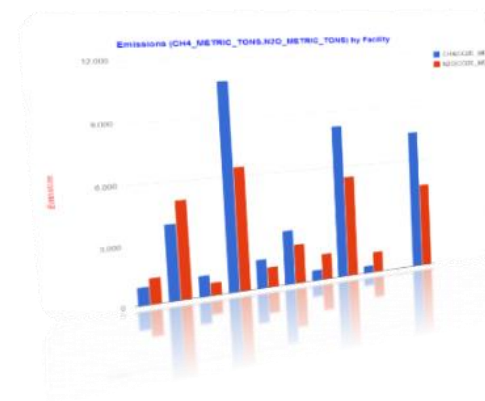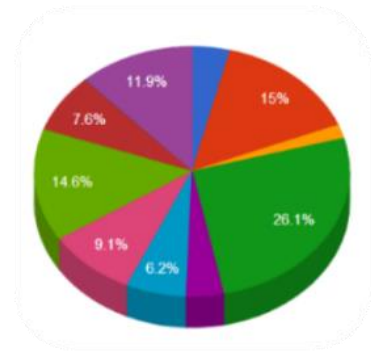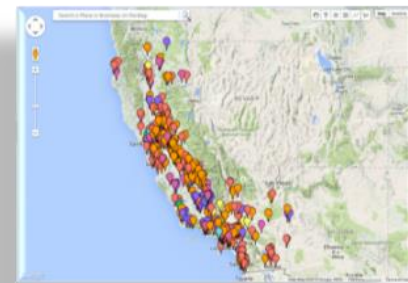
# Data Sources

▶ GHG emissions data are collected by CARB under the authority of the Mandatory Reporting Regulation for Greenhouse Gas Emissions and reported through the California Electronic Greenhouse Gas Reporting Tool (Cal-eGGRT)

▶ Criteria and toxic pollutant emissions are reported by 35 local air districts and uploaded into CARB's California Emission Inventory Development and Reporting System (CEIDARS)

# System Design

- Mapping tool is an online application accessible through web browsers

- Back end is an Oracle database that includes data tables and views for facility information and emissions data, as well as auxiliary crosswalks between data systems

- The application uses a server-side PHP script to query the database and return the data to the client-side web browsers

- Data are processed with functions and procedures written in JavaScript, jQuery, and third party libraries

- Spatial and graphical analyses use Google Maps and Google Charts APIs

# Front End GUI
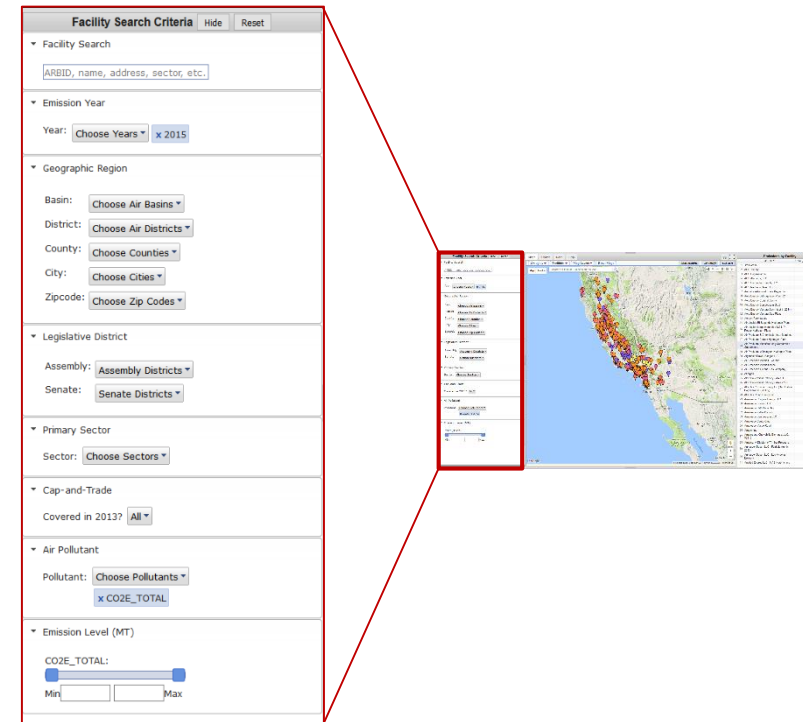
# Facility Search Panel

- Users can specify facility search criteria, such as facility name, geographical location, industrial sector, and participation in cap-and-trade

- Users can also specify pollutants, emission years, and emissions thresholds

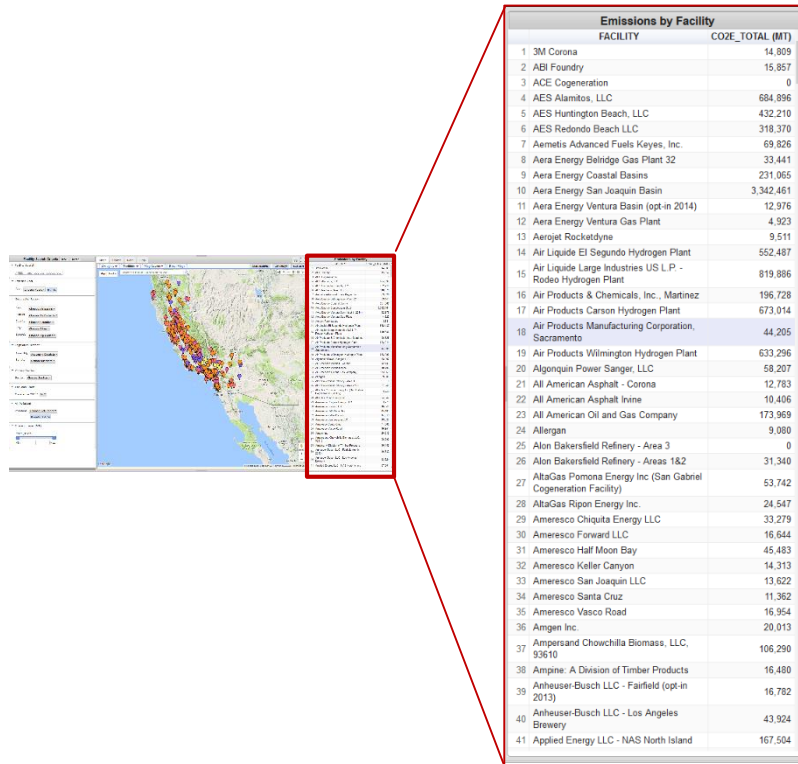- Search options allow high level of customization for emissions datasets, maps, and charts

# Emissions Summary Panel



- Displays list of facilities and associated emissions selected in Facility Search panel

- List can be sorted by facility name or by emissions

# Center Display Panel

▶ Displays data in mapping, graphic, or tabular formats

▶ Allows visualization of facility physical location and graphical analyses of facility emissions data
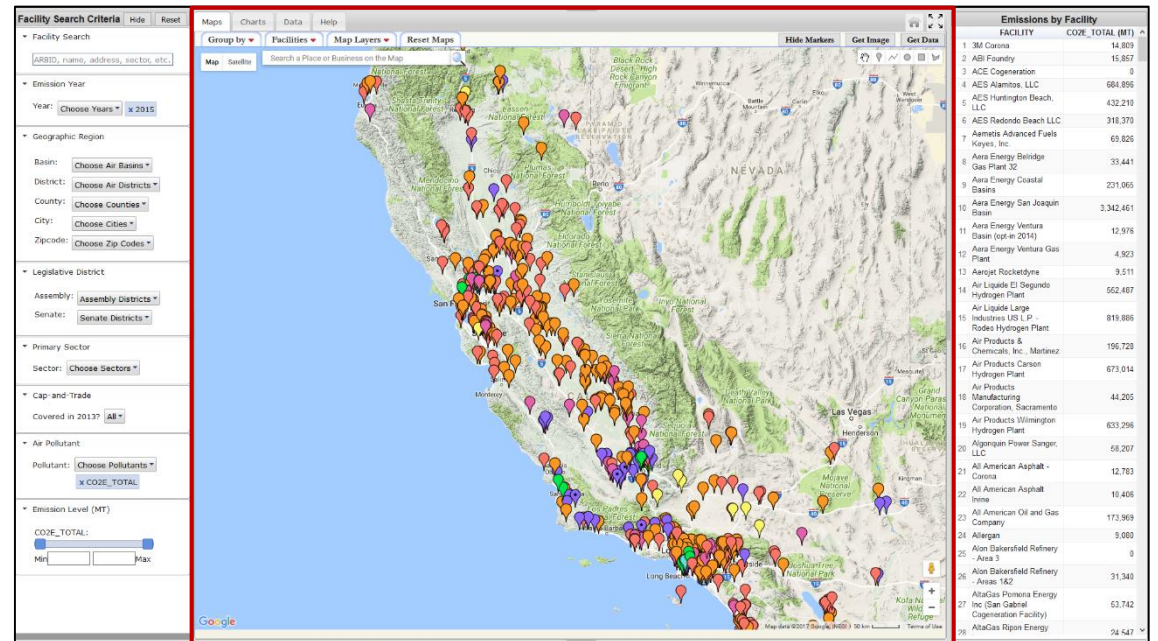
# Maps View

▶ Facilities are displayed by color-coded markers by industrial sector

▶ Clicking on a facility marker opens an information window with tabs for facility information, emissions data, GHG and criteria pollutant trends, and comparison of pollutant trends.

▶ A 'Notes' tab is included if there is any additional information that may be helpful to explain the emissions changes over time.
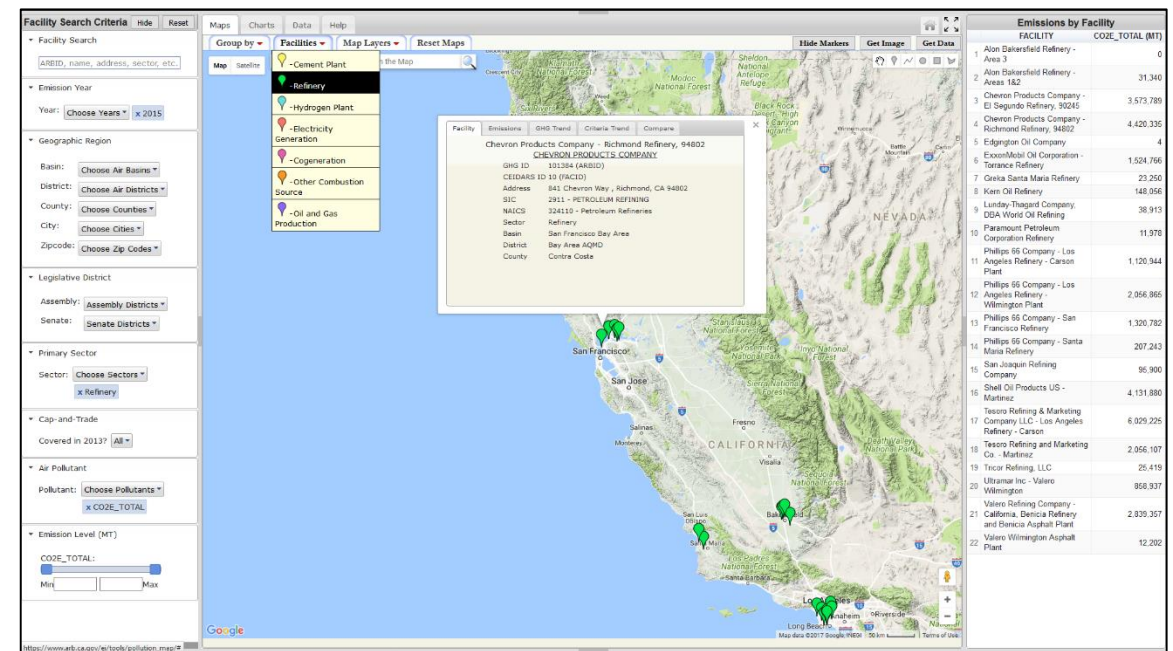
# User-Defined Views

▶ The tool offers spatial calculators to quantify emissions from facilities in user-defined areas using circles, rectangles and polygons

▶ The information window includes coordinates and geometry parameters for the shape, and a list of facilities within the perimeter and their aggregated emissions
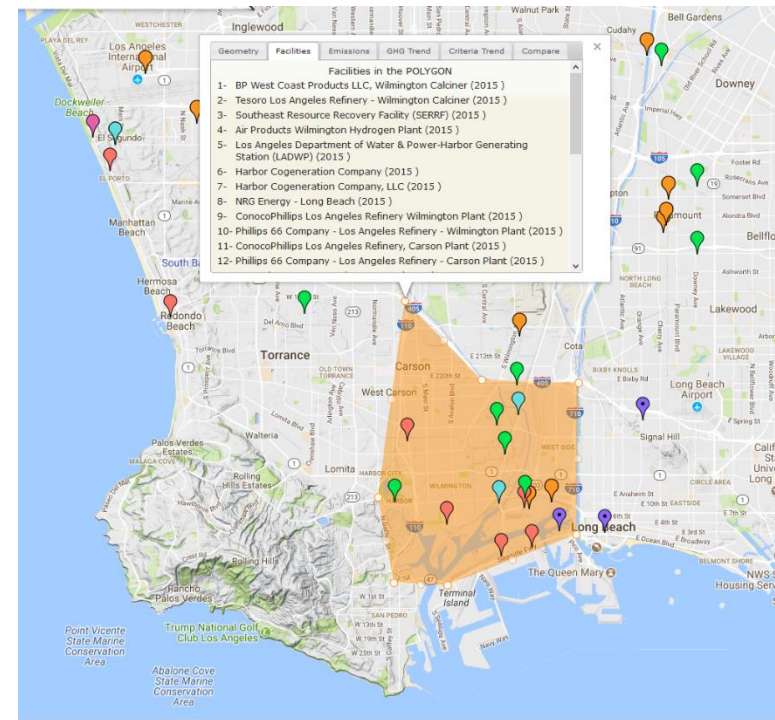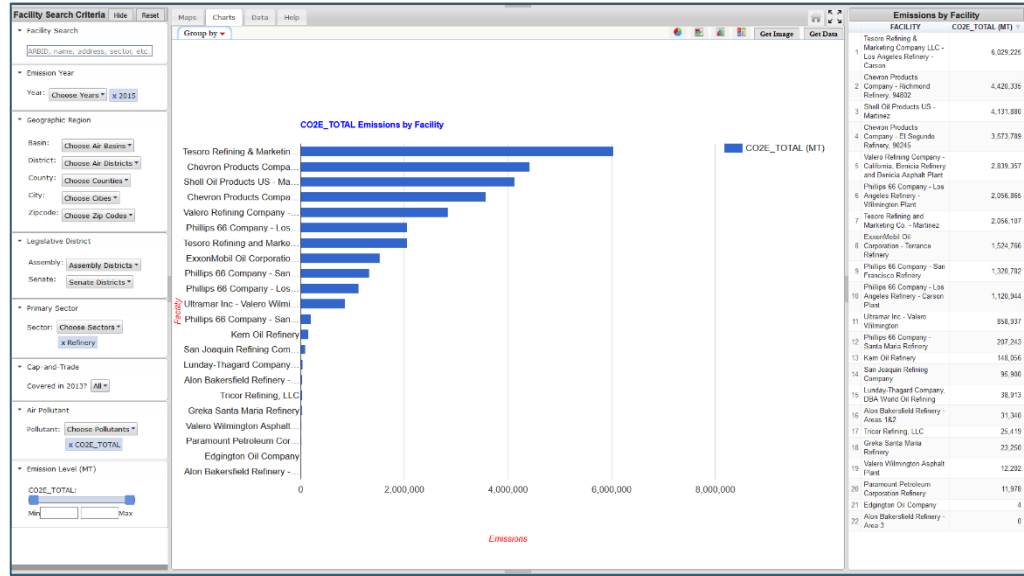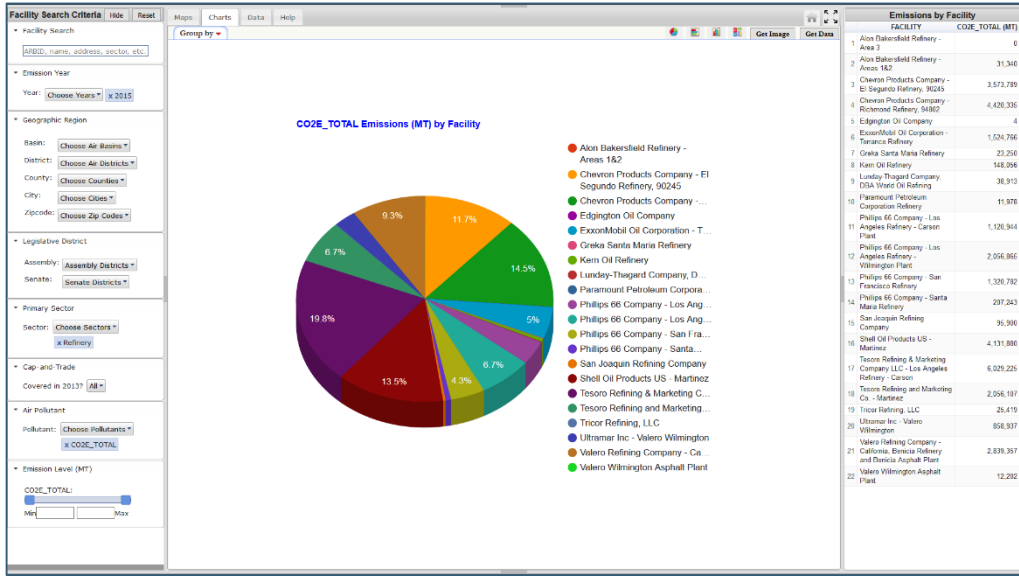
# Map Layers

Map layers available to assist with the spatial analysis of emissions include:

▶ Air Basins

▶ Air Districts

▶ Counties

▶ Zip Codes

▶ Townships

▶ Legislative Districts

▶ CalEnviroScreen 3.0

▶ Oil and Gas Fields and Geological Basins
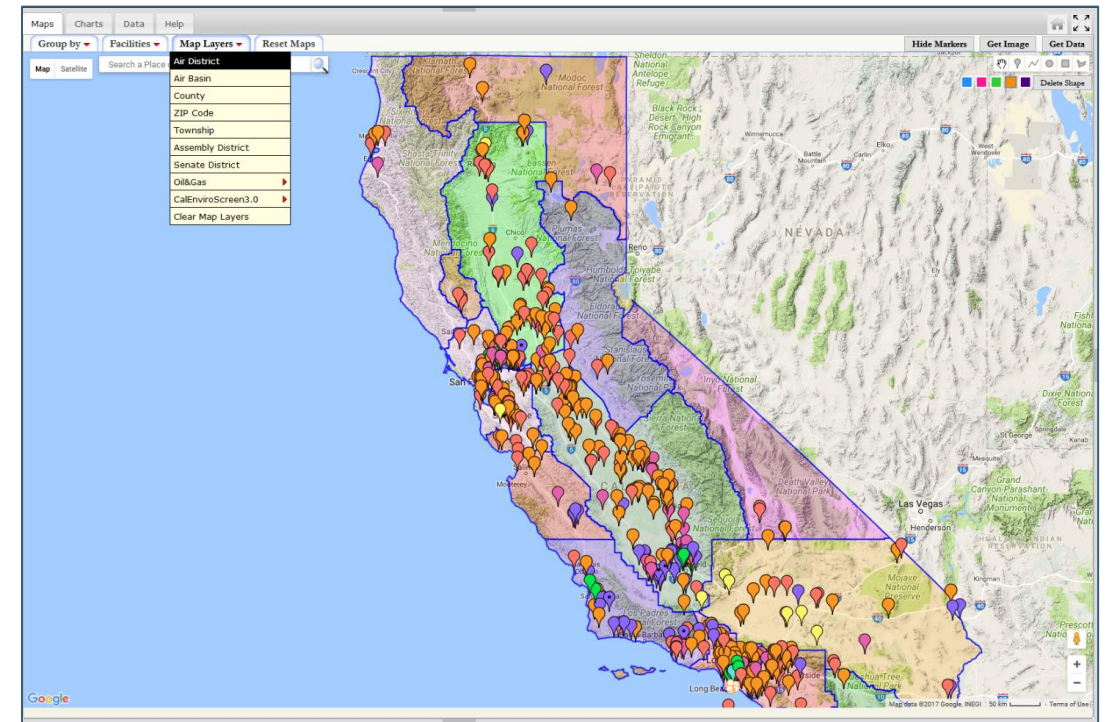
# Graphical Data Views

# Data View

- Data view offers detailed facility information along with emissions in tabular format

- Data can be sorted by any column

- 'Get Data' button allows downloading of data as a csv file

- Facility Search panel dictates data view content

# Applications for Mapping Tool

- Streamlined querying, visualization, and analysis of criteria pollutant and GHG data on one platform

- QA/QC tool for emission inventory (facility geocoordinates, data completeness, emissions outliers, crosschecks between criteria pollutant and GHG trends)

- Community-level assessment of emission sources in support of environmental justice efforts

- Identification of areas suitable for community-oriented air monitoring

# Next Steps

- Incorporate toxic pollutant emissions data by the end of 2017

- Develop expanded visualization tools to improve public engagement

- Create an integrated inventory database system for all pollutants

- Enhance the efficiency of the emission inventory database and data reporting

# Contact Information

**Presenter**
David Edwards, Chief
GHG and Toxics Emission Inventory Branch
California Air Resources Board
916-323-4887
David.Edwards@arb.ca.gov

**Tool Developer**
LinYing Li
Toxics Inventory and Special Projects Section
California Air Resources Board
916-322-1721
Linying.Li@arb.ca.gov