Please check to make sure that you are on Mute. Thank you!

4th Annual EmPOWER Air Data Challenge: Overview of the Challenge and Data Sources

U.S. EPA

CLEAN AIR MARKETS DIVISION (CAMD)

MARCH 2, 2022

Overview

What is the EmPOWER Air Data Challenge?

CAMD's Power Sector Emissions Data Overview

Clean Air Status and Trends Network (CASTNET) Data Overview

Long Term Monitoring (LTM) Data Overview

CAMD Allowance Trading Program Data Overview

How to Apply to the EmPOWER Air Data Challenge

What is the EmPOWER Air Data Challenge?

EmPOWER Air Data Challenge

Seeking proposals from researchers at academic institutions or think tanks for innovative projects using one of the following datasets:

- CAMD's Power Sector Emissions Data: emissions, operations, and facility data for over 4,000 fossil fuel-fired electric generating units (EGUs)
- Clean Air Status and Trends Network (CASTNET) Data: environmental monitoring data supporting EPA programs that contains hourly ozone concentrations and weekly gaseous and aerosol concentrations at more than 90 sites
- Long Term Monitoring (LTM) Data: monthly to annual measurements of major water quality parameters at 171 acidified and acid-sensitive lakes and streams in the Northeast and Mid-Atlantic
- CAMD Allowance Trading Program Data: allowance allocations, accounts, holdings, and transactions data related to several cap-and-trade programs operated by EPA

EmPOWER Air Data Challenge

Submissions should advance the knowledge, use, and understanding of CAMD data and related information.

Possible project themes:

- Analyzing data
- Enhancing communications
- Developing technology and data mashups
- Promoting environmental education
- Improving data quality

Benefits of Winning the Challenge

CAMD staff expert assigned to your project to assist with accessing and understanding data, as well as answering technical questions and finding other resources within EPA to assist your team

Receive national recognition for your university or organization, students, and project activities by being featured on the EmPOWER Air Data Challenge webpage

Opportunities to speak and network at conferences, events, and/or webinars

Improve understanding of and solve timely and relevant environmental problems

CAMD's Power Sector Emissions Data Overview

CAMD's Power Sector Emissions Data

CAMD collects its Power Sector Emissions Data to ensure compliance with emissions trading and other air quality programs operated by EPA.

EGUs report data to CAMD if they are affected by one of these programs.

- In general, EPA programs apply to EGUs that burn fossil fuels with a nameplate capacity of greater than 25 MW (with some exceptions).

Data must be submitted to EPA within 30 days of the end of each calendar quarter.

CAMD's Power Sector Emissions Data

Emissions (short tons): hourly SO_2, NO_X, CO_2, Hg

Facility information

- Unit type (e.g., steam turbine, combustion turbine, combined cycle)
- Source category (e.g., electric utility, industrial boiler)
- Owner/operator
- Location (latitude/longitude)

Primary and secondary fuel type, including the begin and end dates of use

CAMD's Power Sector Emissions Data

Emissions control devices and installation dates of those devices

Hourly gross electricity generation (e.g., MWh)

Type of monitoring method, including the begin and end dates of use

Quality assurance (QA) test information used to validate hourly emissions data, such as the date of testing, type of test, and the difference in the readings between the monitor and the reference value

How to Access Power Sector Emissions Data

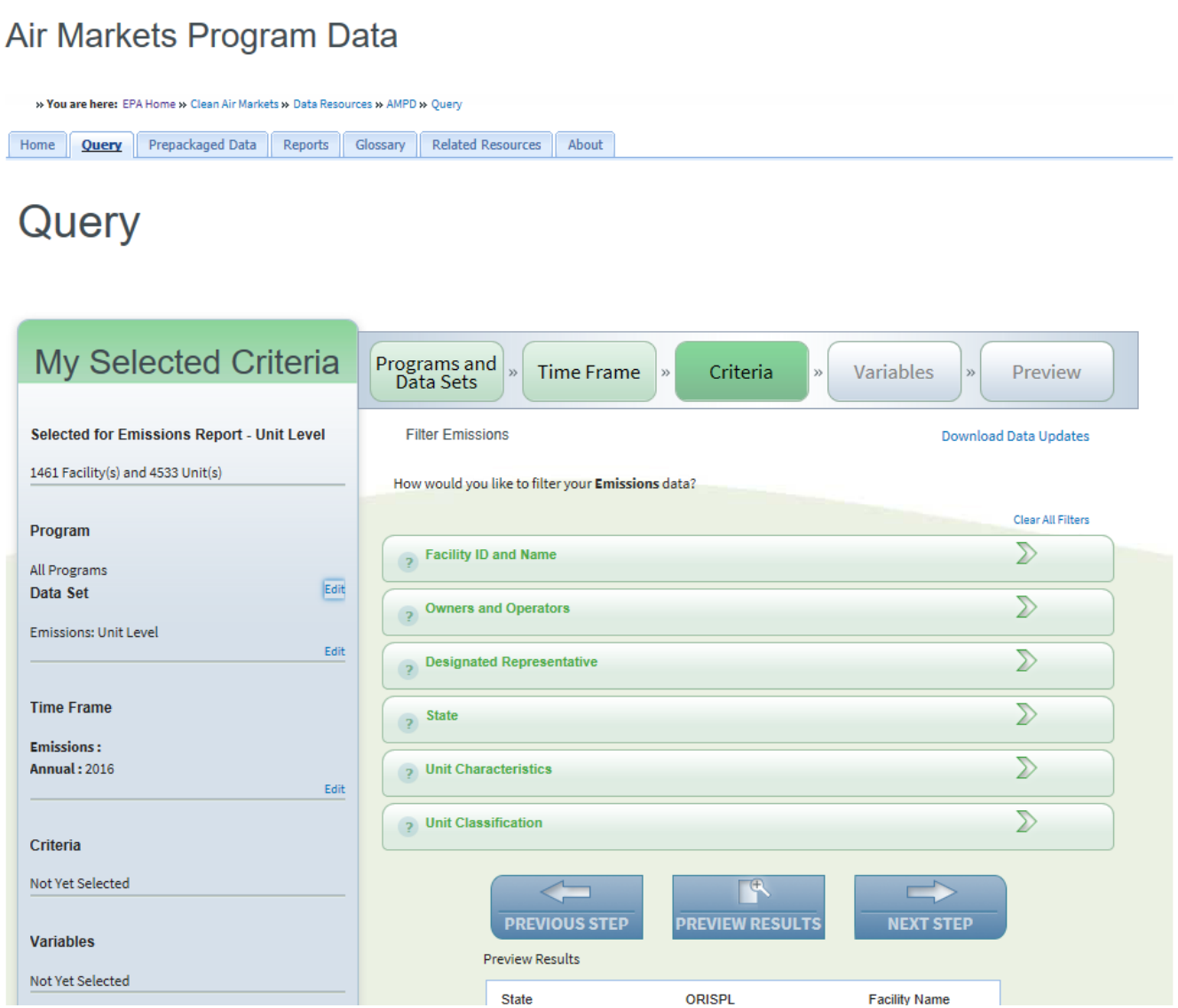
Air Markets Program Data (AMPD)

FTP

Field Audit Checklist Tool (FACT)

FACT Application Programming Interface (API)

Monitoring Plan Viewer



AMPD

Web-based

Create queries to download data

Access emissions, operations, and facility information data; does not allow access to monitoring plan and QA test data

Data back to the 1990s

Note: AMPD only allows the user to pull 30 days of hourly data at a time.

See CAMD's Power Sector Emissions Data Guide for more information.

Index of /DMDHLoad/emissions/hourly/monthly/2018/

[parent directory]

Name	Size	Date Modified
2018al01.zip	755 kB	2/19/19, 7:00:00 PM
2018al02.zip	535 kB	2/19/19, 7:00:00 PM
2018al03.zip	621 kB	2/19/19, 7:00:00 PM
2018al04.zip	626 kB	2/19/19, 7:00:00 PM
2018al05.zip	689 kB	2/19/19, 7:00:00 PM
2018al06.zip	743 kB	2/19/19, 7:00:00 PM
2018al07.zip	789 kB	2/19/19, 7:00:00 PM
2018al08.zip	753 kB	2/19/19, 7:00:00 PM
2018al09.zip	732 kB	2/19/19, 7:00:00 PM
2018al10.zip	647 kB	2/19/19, 7:00:00 PM
2018al11.zip	580 kB	2/19/19, 7:00:00 PM
2018al12.zip	594 kB	2/19/19, 7:00:00 PM
2018ar01.zip	298 kB	11/7/18, 7:00:00 PM
2018ar02.zip	239 kB	11/7/18, 7:00:00 PM
2018ar03.zip	253 kB	11/7/18, 7:00:00 PM
2018ar04.zip	254 kB	11/7/18, 7:00:00 PM
2018ar05.zip	324 kB	11/7/18, 7:00:00 PM
2018ar06.zip	356 kB	11/7/18, 7:00:00 PM
2018ar07.zip	363 kB	11/13/18, 7:00:00 PM
2018ar08.zip	348 kB	11/13/18, 7:00:00 PM
2018ar09.zip	295 kB	11/13/18, 7:00:00 PM
2018ar10.zip	269 kB	2/19/19, 7:00:00 PM
2018ar11.zip	252 kB	2/19/19, 7:00:00 PM
2018ar12.zip	248 kB	2/19/19, 7:00:00 PM
2018az01.zip	578 kB	7/16/18, 8:00:00 PM

FTP

Web-based

Pre-packaged data

Files contain hourly data for all facilities in a state for each month

Good for somewhat advanced users who need large amounts of hourly data

Data back to 1990s

See CAMD's Power Sector Emissions Data Guide for more information.

AMPD WILL BE REPLACED BY CAMPD SPRING 2022.

Visit the Re-engineering FAQs on CAMD's website for more information.

Sign up here to receive CAMPD updates.

Clean Air Status and Trends Network (CASTNET) Data Overview

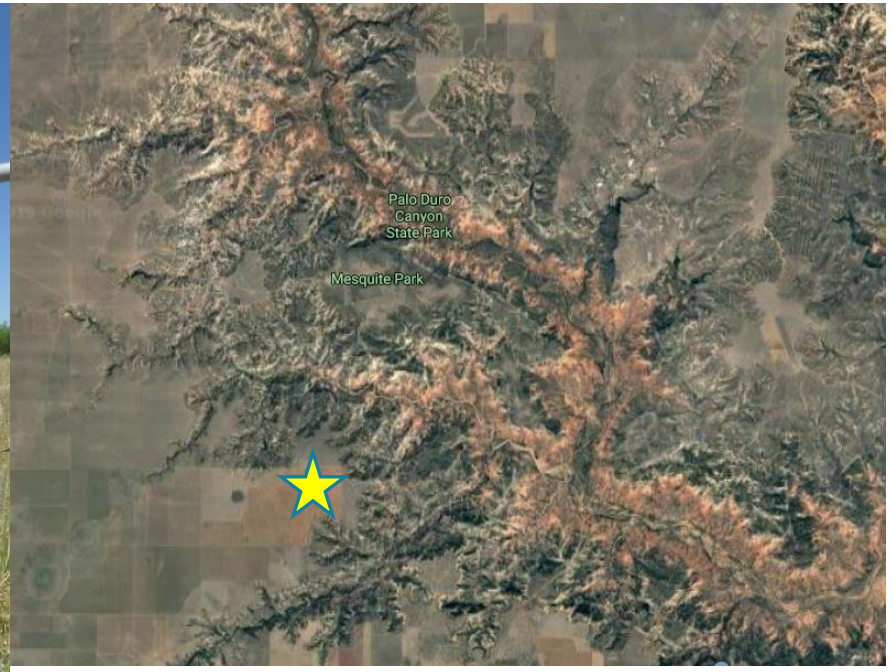
PROVIDES AMBIENT AIR QUALITY DATA FROM 100 MONITORING SITES ACROSS THE U.S. TO ASSESS REGIONAL AIR QUALITY AND DEPOSITION

Overview of the Clean Air Status and Trends Network (CASTNET)

What is CASTNET?

What data are available?

Downloading CASTNET data



Palo Duro Canyon (PAL190), TX is located between the Palo Duro Canyon State Park to the east and agricultural land to the west. The site is operated by Texas A&M Agrilife Research & Extension Center at Amarillo.

CASTNET MONITORING

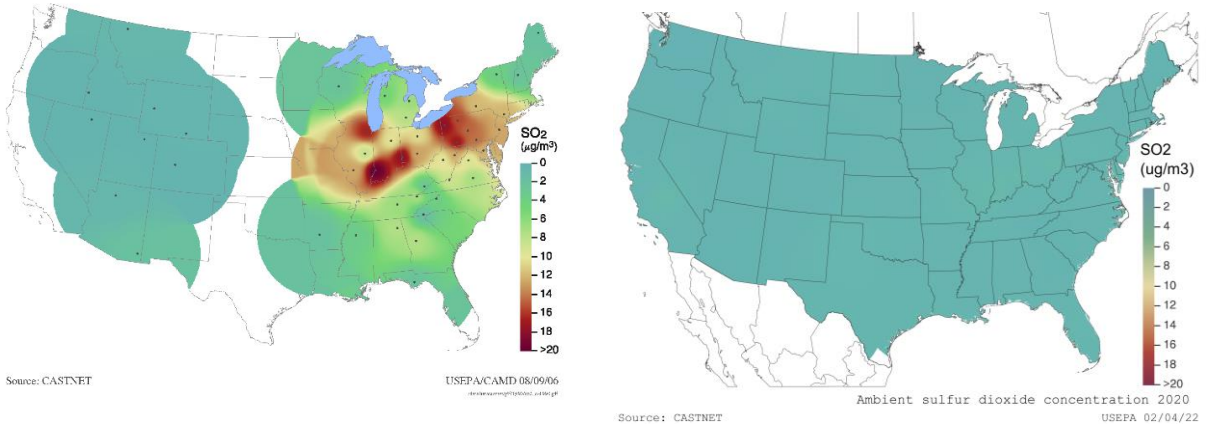
2021 CASTNET Factsheet

CASTNET is managed by EPA's CAMD. Sites are operated by EPA, National Park Service and BLM-WY.

41 sites have operated continuously for 30+ years. Sites are located in rural areas, typically away from emission point sources.

Most sites measure concentrations of sulfur and nitrogen, ozone, and temperature.

Data are used by EPA to assess long-term trends in air quality and deposition, determine NAAQS compliance, evaluate stratospheric ozone intrusion events, and calculate critical load exceedances.



SO_2 CONCENTRATIONS MEASURED AT CASTNET IN 1990 (LEFT) AND 2020 (RIGHT). LARGE REDUCTIONS IN SO_2 CONCENTRATIONS ARE A DIRECT RESULT OF SO_2 EGU EMISSION REDUCTIONS.

CASTNET SITES

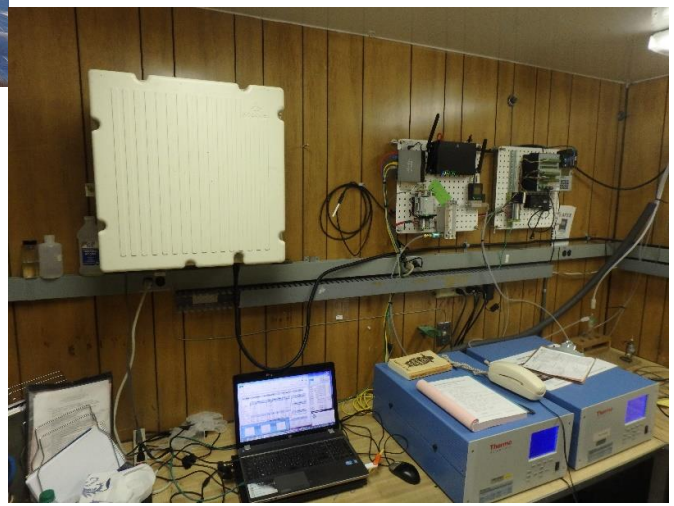
Site operators visit each site every Tuesday morning to change and ship filter packs, perform routine quality assurance checks, and maintain site (i.e. mowing).

A contractor prepares, ships, receives, and analyzes the filters.

Most sites are co-located with the National Atmospheric Deposition Program's National Trends Network (precipitation chemistry) and Ammonia Monitoring Network (ambient ammonia concentrations).

Centennial, WY CASTNET site (CNT169)

TEMPERATURE CONTROLLED SHELTER AND 10M TOWER SHOWN (LEFT) AND O_3 ANALYZER + TRANSFER STANDARD, SITE LAPTOP AND DATA LOGGER/TELEMETRY SHOWN (BELOW)



CASTNET O_3 DATA

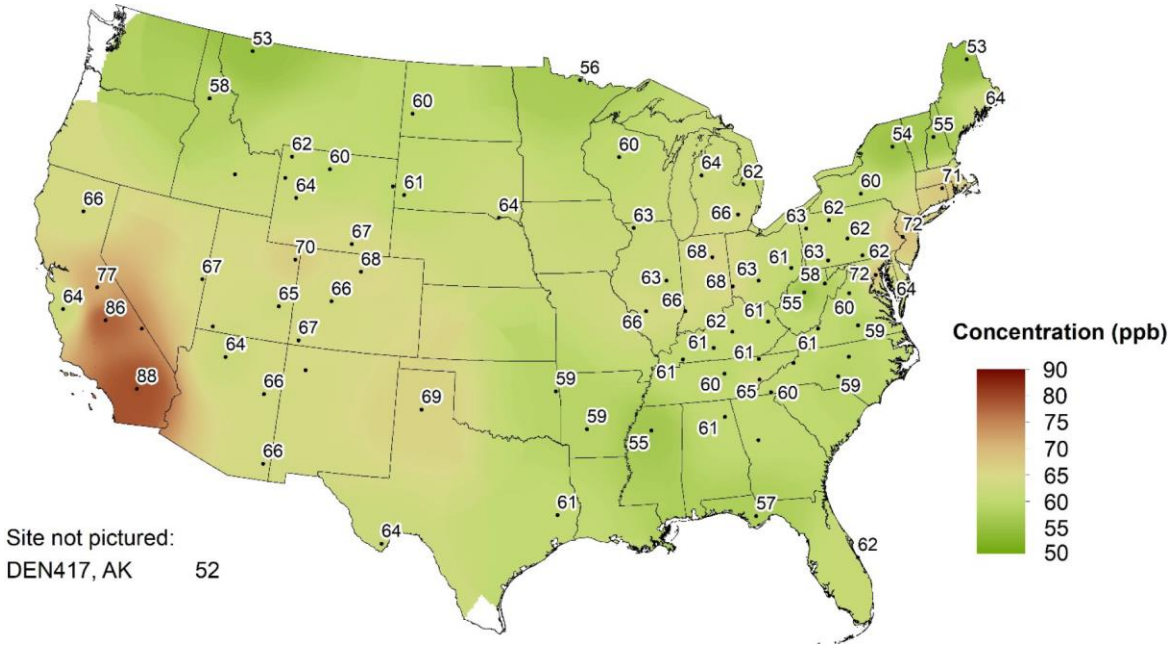
89 sites measure ground-level O_3 hourly average concentrations (ppb)

Nightly quality control checks are run with zero air and transfer standard (NIST traceable) to verify instrument is operating within criteria

Systems are operated following 40 CFR Part 58 regulations to support NAAQS decisions

Raw data are loaded into CAMD's database nightly and posted to the website ~2 days after and validated data posted after ~6 months

CASTNET O_3 concentrations shown as average (2017-2019) 4th highest daily maximum 8-hour average



AREAS WITH THE 3-YEAR AVERAGE OF THE 4TH HIGHEST DAILY MAXIMUM 8-HOUR AVERAGE CONCENTRATIONS GREATER THAN 70 PPB ARE EXCEEDING THE CURRENT STANDARD (2015 O3 NAAQS).

CASTNET FILTER PACK DATA

94 sites collect sulfur and nitrogen measurements with a filter pack

Filter packs are changed weekly (Tuesday – Tuesday)

CASTNET utilizes a 3-stage, open-face filter pack for measuring particles and gases.

- Filter pack is located at 10m.

Concentrations ($\mu g\ m^{-3}$) are calculated as:

MEASURED FLOW RATE * MASS OF ANALYTE

Validated concentration data are posted with flags ~6 months after laboratory analysis

Filters	Analytes
Teflon	SO_4, NO_3, NH_4, Ca, Mg, Na, K, Cl
Nylon	SO_2, HNO_3
Whatman Cellulose	SO_2

DRY AND TOTAL DEPOSITION

DEPOSITION FLUX = CONCENTRATION * DEPOSITION VELOCITY

Total deposition = Wet deposition + dry deposition

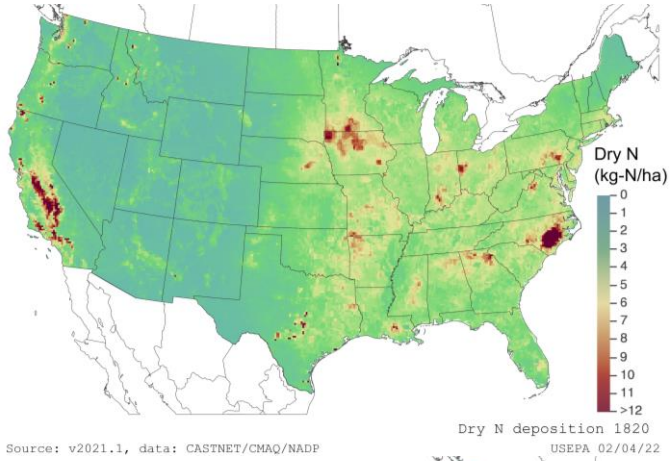
Wet deposition is measured by NADP/NTN

Dry deposition is expensive and labor intensive to measure deposition velocities (impacted by meteorology, vegetation, moisture, bi-directional fluxes)

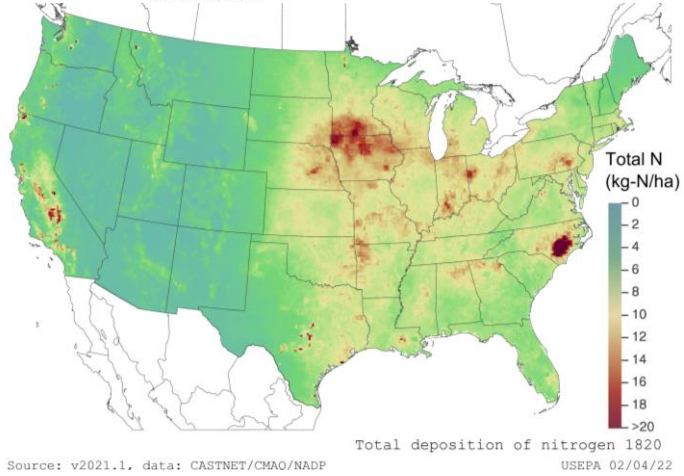
CAMD produces annual deposition gridded surface maps

- calculate dry deposition by combining CASTNET concentrations with modeled output from CMAQ (deposition velocities and concentrations where measurements are not available)
- Dry deposition surfaces are combined with wet deposition surfaces to provide total deposition surfaces

Data for CAMD annual dry and total deposition estimates are provided as gridded ESRI ArcGRID files and images, and as a data table of estimates at CASTNET site locations



Dry (left) and total (below) nitrogen deposition from 2018-2020



CASTNET Website

Data may be downloaded for individual sites or time periods using the query tool

Data may be downloaded for entire period or by year using prepackaged data

- Prepackaged zip files include data, column and table metadata (3 csv files)

Total Deposition Grids

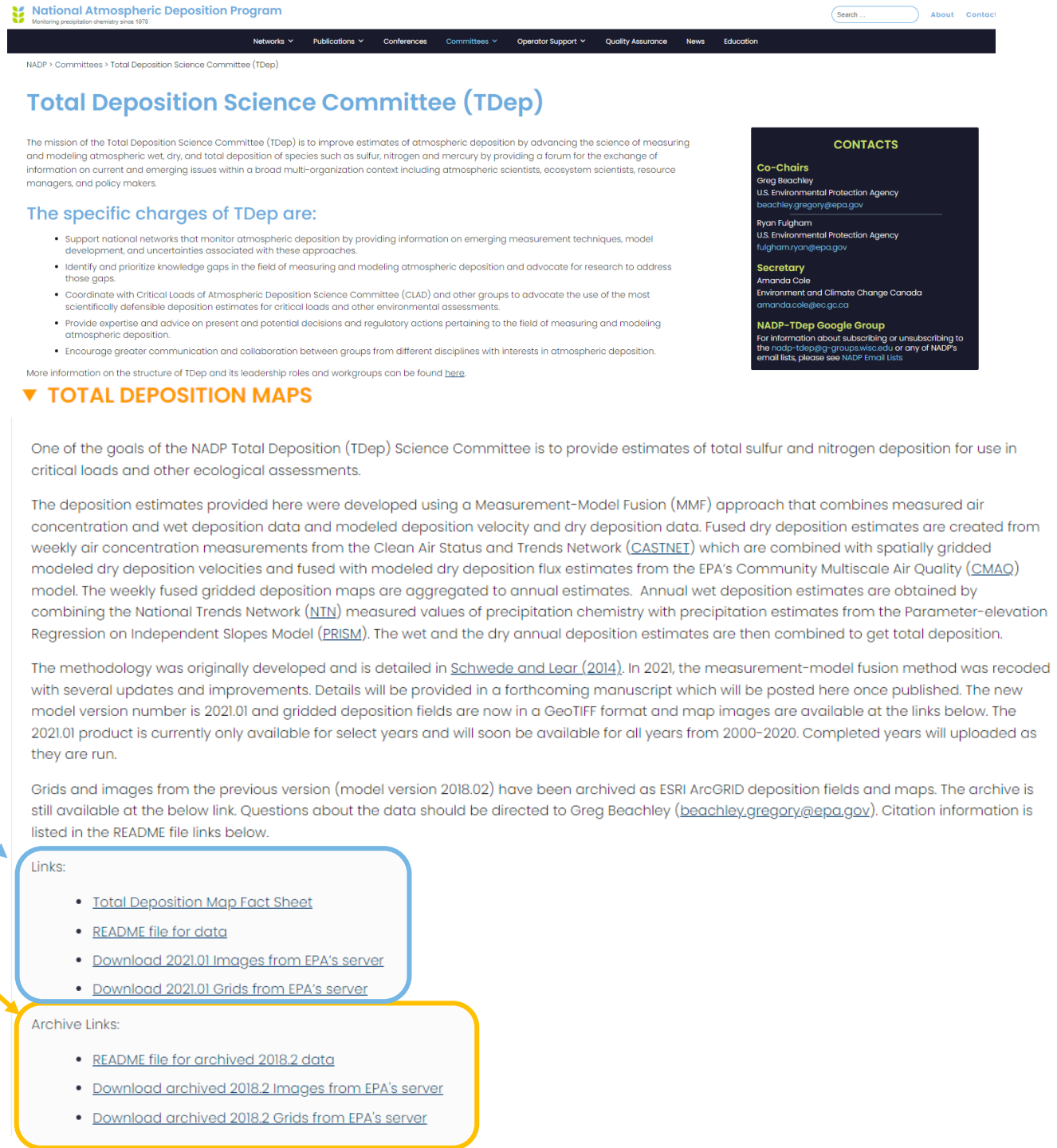
Downloads available from NADP Total Deposition Science Committee website

Total Deposition model is currently being updated.

New version uses CMAQ (v5.3.2) and has many improvements but incomplete years available (2000-2002 and 2017-2020)

Archived version uses an older CMAQ (v5.0.2) but has more years available (2000-2019)

Both versions have documentation information, the grids (.e00 files), and map images of the grids



National Atmospheric Deposition Program
Monitoring precipitation chemistry since 1978

Search ... About Contact

Networks | Publications | Conferences | Committees | Operator Support | Quality Assurance | News | Education

NADP > Committees > Total Deposition Science Committee (TDep)

Total Deposition Science Committee (TDep)

The mission of the Total Deposition Science Committee (TDep) is to improve estimates of atmospheric deposition by advancing the science of measuring and modeling atmospheric wet, dry, and total deposition of species such as sulfur, nitrogen and mercury by providing a forum for the exchange of information on current and emerging issues within a broad multi-organization context including atmospheric scientists, ecosystem scientists, resource managers, and policy makers.

The specific charges of TDep are:

- Support national networks that monitor atmospheric deposition by providing information on emerging measurement techniques, model development, and uncertainties associated with these approaches.
- Identify and prioritize knowledge gaps in the field of measuring and modeling atmospheric deposition and advocate for research to address those gaps.
- Coordinate with Critical Loads of Atmospheric Deposition Science Committee (CLAD) and other groups to advocate the use of the most scientifically defensible deposition estimates for critical loads and other environmental assessments.
- Provide expertise and advice on present and potential decisions and regulatory actions pertaining to the field of measuring and modeling atmospheric deposition.
- Encourage greater communication and collaboration between groups from different disciplines with interests in atmospheric deposition.

More information on the structure of TDep and its leadership roles and workgroups can be found here.

CONTACTS

Co-Chairs
Greg Beachley
U.S. Environmental Protection Agency
beachley.gregory@epa.gov

Ryan Fulgham
U.S. Environmental Protection Agency
fulgham.ryan@epa.gov

Secretary
Amanda Cole
Environment and Climate Change Canada
amanda.cole@ec.gc.ca

NADP-TDep Google Group
For information about subscribing or unsubscribing to the nadp-tdep@g-groups.wisc.edu or any of NADP's email lists, please see NADP Email Lists

▼ TOTAL DEPOSITION MAPS

One of the goals of the NADP Total Deposition (TDep) Science Committee is to provide estimates of total sulfur and nitrogen deposition for use in critical loads and other ecological assessments.

The deposition estimates provided here were developed using a Measurement-Model Fusion (MMF) approach that combines measured air concentration and wet deposition data and modeled deposition velocity and dry deposition data. Fused dry deposition estimates are created from weekly air concentration measurements from the Clean Air Status and Trends Network (CASTNET) which are combined with spatially gridded modeled dry deposition velocities and fused with modeled dry deposition flux estimates from the EPA's Community Multiscale Air Quality (CMAQ) model. The weekly fused gridded deposition maps are aggregated to annual estimates. Annual wet deposition estimates are obtained by combining the National Trends Network (NTN) measured values of precipitation chemistry with precipitation estimates from the Parameter-elevation Regression on Independent Slopes Model (PRISM). The wet and the dry annual deposition estimates are then combined to get total deposition.

The methodology was originally developed and is detailed in Schwede and Lear (2014). In 2021, the measurement-model fusion method was recoded with several updates and improvements. Details will be provided in a forthcoming manuscript which will be posted here once published. The new model version number is 2021.01 and gridded deposition fields are now in a GeoTIFF format and map images are available at the links below. The 2021.01 product is currently only available for select years and will soon be available for all years from 2000-2020. Completed years will uploaded as they are run.

Grids and images from the previous version (model version 2018.02) have been archived as ESRI ArcGRID deposition fields and maps. The archive is still available at the below link. Questions about the data should be directed to Greg Beachley (beachley.gregory@epa.gov). Citation information is listed in the README file links below.

Links:

- Total Deposition Map Fact Sheet
- README file for data
- Download 2021.01 Images from EPA's server
- Download 2021.01 Grids from EPA's server

Archive Links:

- README file for archived 2018.2 data
- Download archived 2018.2 Images from EPA's server
- Download archived 2018.2 Grids from EPA's server

Long Term Monitoring (LTM) Data Overview

PROVIDES WATER QUALITY DATA FROM 170 LAKES AND STREAMS ACROSS THE MID-ATLANTIC AND NORTHEAST

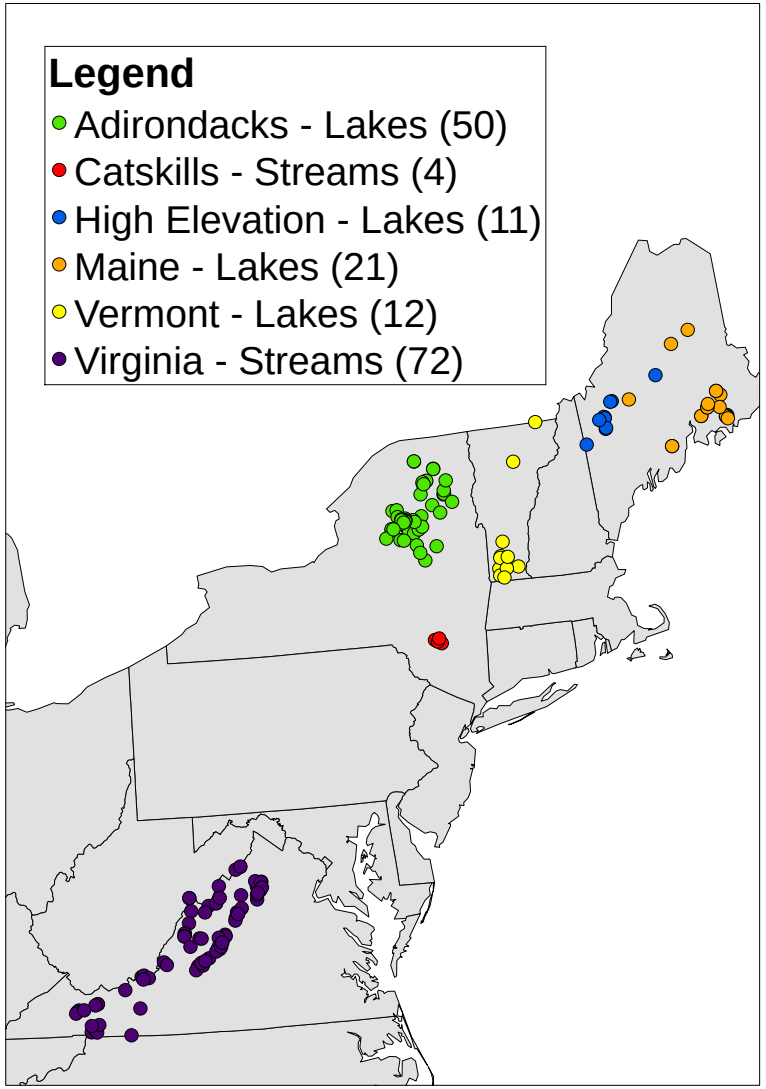
Big Mud Lake, Vermont

What is LTM?

- Network of **remote** lakes and streams sampled 3 – 15 times/year
  - Track changes in surface water chemistry in response to changing air emissions/acid deposition
- Goals:
  - To determine effectiveness of Clean Air Act Amendments (CAAA) in reducing the acidity of surface waters in the following regions:
    - New England
    - Northern Adirondack Mountains
    - Appalachian Plateau
    - Central Appalachians

Sampling at a Virginia stream

Current LTM Network



- 170 locations, approx. 1200 samples annually
- 150+ peer-reviewed publications
- Accomplished cooperatively through our network partners and their labs

Vermont Lakes – 12 lakes , VT Department of Environmental Conservation

Maine/High Elevation Lakes – 32 lakes, US Geological Survey (USGS) and the University of New Hampshire and University of Maine

Adirondack Lakes – 50 lakes, USGS, Adirondacks Lakes Survey Corporation (ALSC), the New York State Department of Environmental Conservation (NYSDEC), & New York Energy and Research Development Authority (NYSERDA)

Catskills Streams – 4 streams, USGS

Ridge and Blue Ridge (VA) Streams –72 streams, Shenandoah National Park and the University of Virginia, many sites on USFS lands

Parameters Sampled

Surface water chemistry

- **NO_3**
- **SO_4^{2-}**
- **NH_4^+**
- **Base Cations (Ca, Mg, Na, K)**
- **Cl^-**
- **Al**
- **PO_4^{2-}**
- **ANC and pH**
- **DOC**

Physical Parameters

- **Water Temperature**
- **Water Color**
- **Water Clarity**
- **Depth**

Biscuit Brook, Catskills, New York

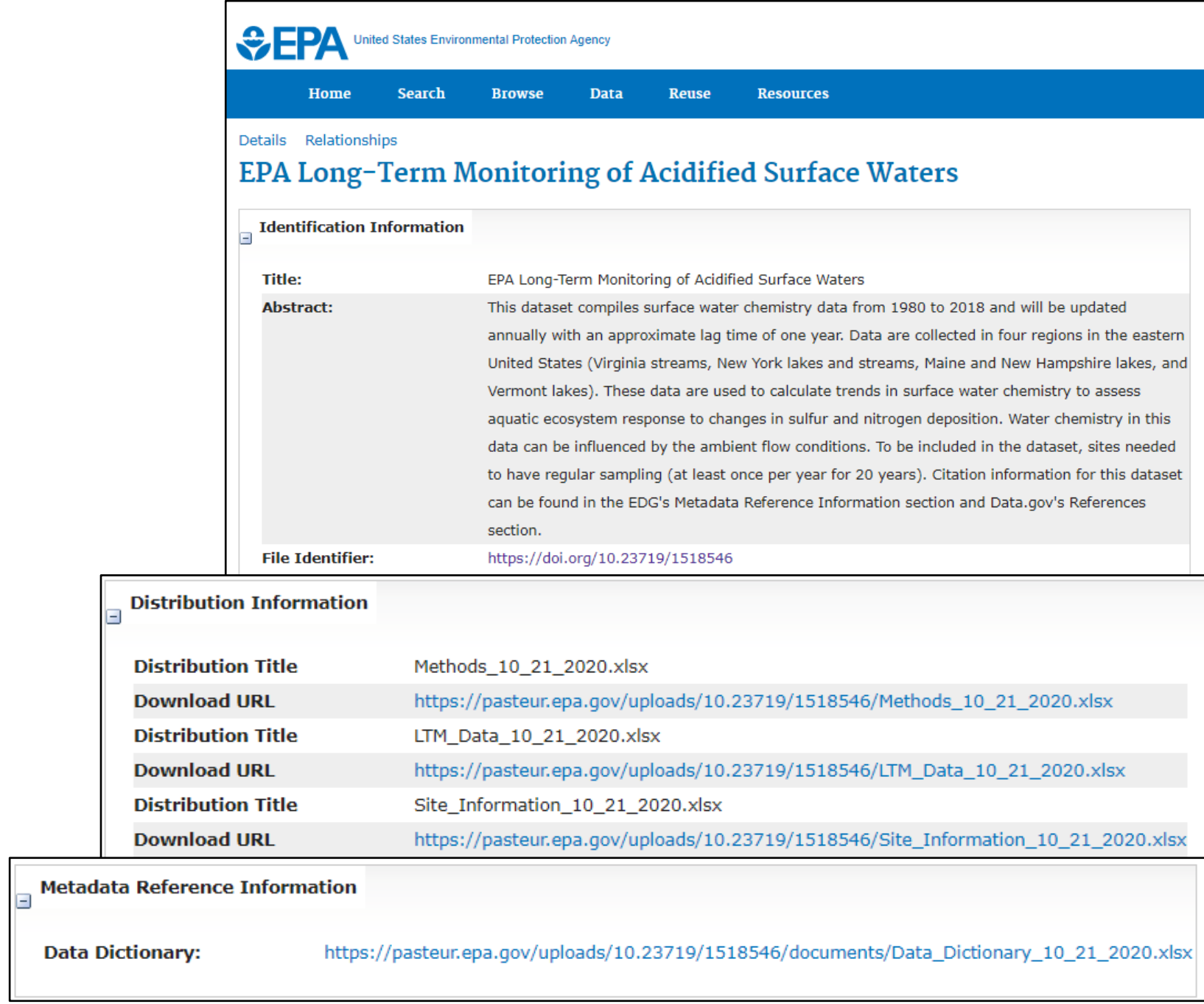
LTM Data Access

Entire dataset (along with methods, site information, and metadata/data dictionary) may be downloaded at:

https://edg.epa.gov/metadata/catalog/search/resource/details.page?uuid=https://doi.org/10.23719/1518546

This link can also be found on the data tab of the LTM website:

https://www.epa.gov/airmarkets/monitoring-surface-water-chemistry

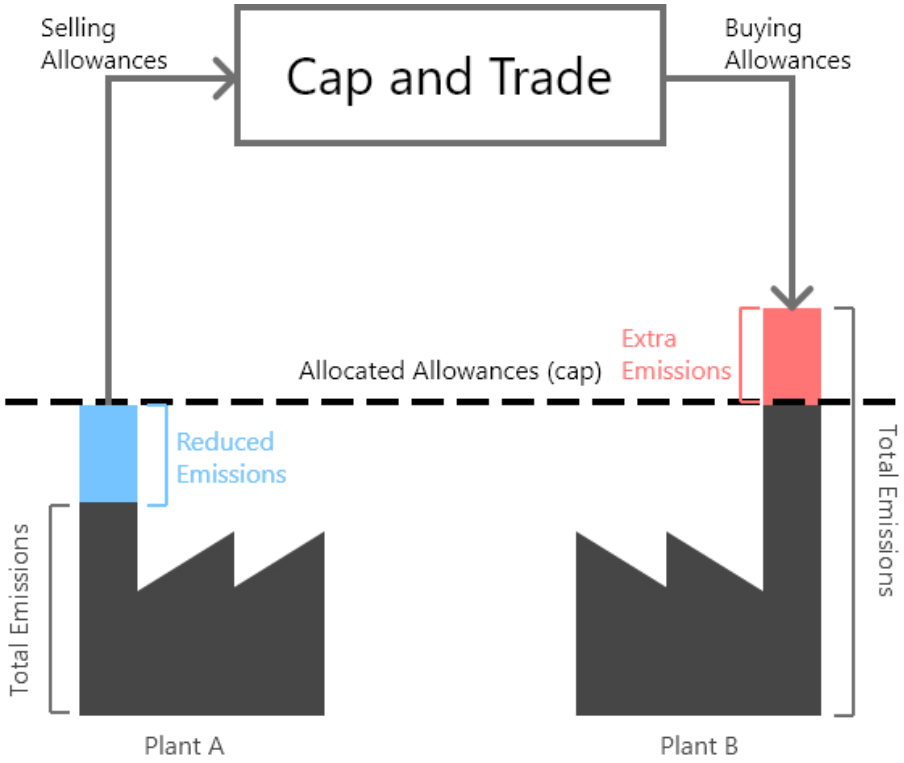


CAMD's Allowance Data Overview

ALL DATA UNDER EPA'S ALLOWANCE TRADING PROGRAMS IS PUBLICLY AVAILABLE IN THE AIR MARKETS PROGRAM DATA (AMPD) PORTAL OR THE FTP SITE.

Allowances & Allowance Trading

- Allowance trading (also referred to as “emissions trading”) is a component of a market-based cap-and-trade program.
  - It reduces emissions by setting a total emissions limit and issuing allowances equal to that limit through allocation processes or auctions.
- An allowance is an authorization to emit a specified amount of a pollutant during a specified control (or compliance) period.
- Participants must hold allowances equal to their reported emissions for a given period.
- In addition to the affected sources required to participate in the trading programs, any individual, corporation, or governing body may participate as well.
- Allowance and emissions data has been used to analyze the effectiveness of cap-and-trade programs.



What is an Allowance?

Program	Program Code	Pollutant Allowance	Control Period
Acid Rain Program SO_2	ARP	1 ton of SO_2	Annual
Cross-State Air Pollution Rule (CSAPR) NOx Ozone Season (Group 1/2/3)	CSOSG1/ CSOSG2/ CSOSG3	1 ton of NO_x	Ozone Season †
CSAPR NO_x Annual	CSNOX	1 ton of NO_x	Annual
CSAPR SO_2 (Group 1/2)	CSSO2G1/ CSSO2G2	1 ton of SO_2	Annual
Texas SO_2	TXSO2	1 ton of SO_2	Annual

† Ozone season under the programs is May 1st through September 30th

- Allowances are program and pollutant specific
- Allowances generally permit the holder to emit one ton of emissions in a specific compliance period, or subsequent compliance period
- Once issued, an allowance may be bought, sold, traded, or banked (held in an account for future use)

Check out more in the Allowance Data Guide found here.
Information on CSAPR is found here.

Allowance Account Types

Account Type	Definition
Facility (Compliance)	• Established only by EPA to hold a participating facility's allowances • Receives initial allocated allowances each control period • Used in compliance
General	• Account openable by any entity for holding and transferring allowances
Reserve	• Special account established by EPA for certain EPA functions such as the allowance allocation, auction or new unit set-asides • Multiple subtypes of this account exist
Surrender	• Special account established by EPA for EPA to retire allowances • Multiple subtypes of this account exist
Other	• A variety of other account types may be encountered in AMPD, but will fall under one of the aforementioned categorizations

Check out more in the Allowance Data Guide found here.

How are allowance identified and tracked?

How are allowances identified?

Program code: identifies the relevant program for that allowance

Vintage year: The earliest year an allowance is available for use in compliance

Serial number: *program-specific and vintage year-specific* unique identifying number for each allowance

How are Allowances Tracked?

CAMD Business System (CBS): an allowance management system for official records on accounts and allowance holdings

- Transferring allowances
- Performing annual compliance tasks

Types of Allowance Transactions

Each transaction has a unique transaction ID and each transaction includes the total number of allowances transferred (transaction total), information about those allowances (i.e., vintage, block grouping [block totals within a transaction]), and accounts involved.

Initial Allocations

- Initial allocations are allowances allocated by EPA to participating sources on an annual basis as specified in rulemaking at the federal or state level.
  - ARP initial allocations are provided to sources 30 years in advance
  - CSAPR initial allocations are provided to sources four years in advance

New Unit Set-Aside (NUSA) Allocations

- Under CSAPR programs only, new unit set-aside allowances are made available to newly affected sources including those located in Indian country.

Types of Allowance Transactions

Auction

- Under the ARP, 250,000 allowances are auctioned off to the highest bidders each year. 125,000 are available for use in the year purchased and the other 125,000 have a vintage year seven years in the future

Private Transfer

- Allowances can be directly acquired from a broker or any entity that holds them, which is classified as a Private Transfer or Private Trade
- EPA publishes data on the number of transactions and allowances traded in each trading program in the progress reports
- Data are also available from analytics firms to track allowance market prices (S&P Global Market Intelligence)

Other Transactions

- AMPD displays additional transaction types for all current and retired programs

Check out more in the Allowance Data Guide found here.

Compliance

All allowance transfers must be submitted by midnight (or the following business day if not a business day) of the control period's Allowance Transfer Deadline.

When compliance is performed (facility level) CAMD will deduct allowances from the respective compliance account reconciling the facility's reported emissions in the control period.

A facility may bank unused allowances for future control periods (banked indefinitely).

If a given facility fails to hold sufficient allowances to cover emissions, there may be either automatic financial and/or allowance surrender penalties.

- ARP Penalty
  - $2,000/ton penalty for excess emissions (adjusted for inflation)
- CSAPR Penalties
  - A source whose emissions exceed the allowances held surrender two times the number of tons of excess emissions
  - If the total emissions from the state's affected units exceed the state's assurance level, then two allowances must be surrendered for each ton of emissions over the assurance level. These allowance surrenders are in addition to every affected source's usual requirement to surrender one allowance for each ton of emissions

What's available in AMPD and FTP?

Account Information – includes historical

- Account and location data (some variables are dependent on account type)

Allowance Details (holdings) – most current

- Account and location data along with **current data on allowance held** (Allowance Vintage Year, Serial Number Start, Serial Number End, and Block Totals)

Transactions

- History of transactions (Transaction ID, Transaction Total, Transaction Type, Transaction Date, Allowance Vintage Year, Serial Number Start, Serial Number End, and Block Totals)

Allowance History

- Transaction history of a serial number

Compliance (per year)

- Year, Allocations, Total Allowances Held in Account at Trading Deadline, Emissions, Deductions, and Excess Emissions

How to Apply to the EmPOWER Air Data Challenge

Who can apply?

Anyone who is affiliated with an accredited college or university, or a research organization (e.g., think tank) is encouraged to apply. Applicants may include, but are not limited to:

- Academic faculty and researchers
- Undergraduate/graduate students with faculty leadership
- Ph.D. candidates
- Post-doctoral researchers
- Research fellows

Who can apply?

Applicants may work as individuals or teams.

If applying as an individual, you must meet one of the criteria listed on the previous slide for the duration of the project.

If applying as a team, then the team leader must meet one of the criteria for the duration of the project, but other team members need not be limited to the list on the previous slide.

Teams may be composed of individuals from more than one institution.

You may absolutely apply again if you were not previously selected as a winner.

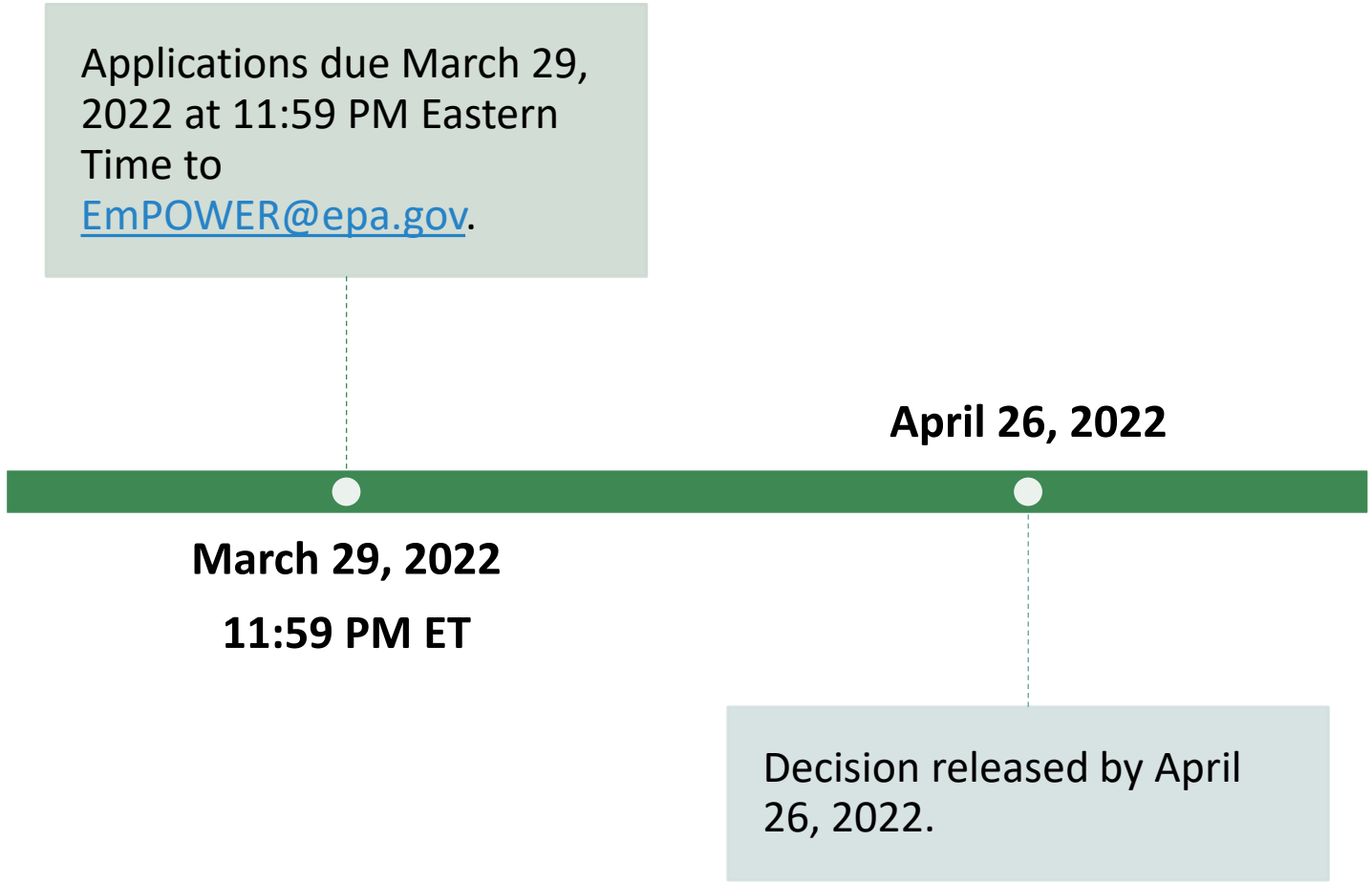
How do I apply?

Submissions should include:

- Application Form (see website)
- Detailed description of the approach of the project and how CAMD data will be used
- Explanation of why the project meets challenge objectives
- A project schedule (2022-2023 academic year)
- Description of the work product(s) and outcome(s)
- Brief bio(s) about applicant(s), including area(s) of expertise

Note: Submissions should not exceed eight pages.

Important Dates



Evaluation Process

- Clarity and Effectiveness of Proposed Approach (40 points)
- Project Outcomes (40 points)
- Applicant Capabilities (20 points)

Application Tips

Make sure all components are included: the complete Application Form and a proposal no longer than eight pages.

Describe a clear plan for incorporating CAMD data (i.e., reference parameters within the dataset, ensure time series is available for parameter).

If incorporating other data sources, cite those sources.

Describe a clear analytical strategy (i.e., if calculating BAU emissions, show how you would calculate).

Include a project schedule.

Questions?

EmPOWER Air Data Challenge FAQs

EmPOWER Air Data Challenge & Power Sector Emissions Data

Justine Huetteman
Huetteman.Justine@epa.gov
(202) 564-6131

CASTNET Data

Greg Beachley
Beachley.Gregory@epa.gov
(202) 343-9621

Melissa Puchalski
Puchalski.Melissa@epa.gov
(202) 343-9882

LTM Data

Scott Riley
Riley.ScottM@epa.gov
(202) 564-6716

Allowance Trading Program Data

Karina Stetsyuk
Stetsyuk.Karina@epa.gov
(202) 564-2823

Thank you!

Remember to turn in your applications to EmPOWER@epa.gov by March 29, 2022 at 11:59 PM ET.

Sign up here to stay in touch with EPA on all things related to the EmPOWER Air Data Challenge!