

Building Electrification State Fact Base

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Air Quality

Spreadsheet 1: City-Level PM25 Racial Disparities.csv

- Description
 - Data on differing levels of exposure to PM2.5 (particulate matter) based on racial group for each major city within a state.
- Source
 - <http://advances.sciencemag.org/content/suppl/2021/04/26/7.18.eabf4491.DC1>
- Units
 - PM2.5 ambient concentration (ppm); Percent Difference PM2.5 ambient concentration (ppm)
- Year Range
 - 2014
- Geography
 - Major cities
- Sectors
 - All Sectors, Agriculture, Coal Electric Utility, Commercial Cooking, Construction, Heavy Duty Diesel Vehicle, Industrial, Light Duty Gas Vehicle, Miscellaneous, Non-Coal Electric Utilities, Off-Highway Vehicles and Equipment, Residential (Other), Residential Gas Combustion, Residential Wood Combustion, Road Dust
- Data Fields
 - Exposure Metrics
 - Ambient PM2.5 concentration ppm
 - Ex: all_exp, POC_exp
 - Difference between racial group and total exposure
 - Ex: white_diff, POC_diff
 - Percent difference between racial group and total exposure
 - Ex: white_pctDiff, POC_pctDiff
 - Racial Groups
 - All (baseline), POC, White, Latino, Black, Asian

Spreadsheet 2: Statewide PM25 Racial Disparities.csv

- Description
 - Data on differing levels of exposure to PM2.5 (particulate matter) based on racial group for a given state
- Source
 - <http://advances.sciencemag.org/content/suppl/2021/04/26/7.18.eabf4491.DC1>
- Units
 - PM2.5 ambient concentration (ppm); Percent Difference PM2.5 ambient concentration (ppm)
- Year Range
 - 2014
- Geography

- Major cities
- Sectors
 - All Sectors, Agriculture, Coal Electric Utility, Commercial Cooking, Construction, Heavy Duty Diesel Vehicle, Industrial, Light Duty Gas Vehicle, Miscellaneous, Non-Coal Electric Utilities, Off-Highway Vehicles and Equipment, Residential (Other), Residential Gas Combustion, Residential Wood Combustion, Road Dust
- Data Fields
 - Exposure Metrics
 - Ambient PM2.5 concentration ppm
 - Ex: all_exp, POC_exp
 - Percent difference between racial group and total exposure
 - Ex: white_pctDiff, POC_pctDiff
 - Racial Groups
 - All (baseline), POC, White, Latino, Black, Asian

Spreadsheet 3: EPA NEI County-Level Emissions.csv

- Description
 - Data on Criteria Air Pollutant and GHG Emissions by County
- Source
 - EPA 2017 National Emissions Inventory Data
 - Additional Data Information
 - <https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data#datas>
 - Raw Data Download Link
 - https://gaftp.epa.gov/air/nei/2017/data_summaries/2017v1/2017neiJan_county_tribe_allsector.zip
- Units
 - Tons
- Timeframe
 - 2017
- Geography
 - County-level
- Sectors
 - All Sectors (custom aggregation)
 - EPA NEI Major Sectors (see data description)
- Data Fields
 - GHGs
 - Carbon Dioxide
 - Methane
 - Nitrous Oxide
 - CAPs (Criteria Air Pollutants)
 - Ammonia
 - Carbon Monoxide
 - Nitrogen Oxides

- PM10 Primary (Filtered and Condensed)
- PM2.5 Primary (Filtered and Condensed)
- Sulfur Dioxide
- Volatile Organic Compounds

Spreadsheet 4: EPA NEI State-Level Emissions.csv

- Description
 - Data on Criteria Air Pollutant and GHG Emissions by County
- Source
 - EPA 2017 National Emissions Inventory Data
 - Additional Data Information
 - <https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data#datas>
 - Raw Data Download Link
 - https://gaftp.epa.gov/air/nei/2017/data_summaries/2017v1/2017neiJan_county_tribe_allsector.zip
- Units
 - Tons
- Timeframe
 - 2017
- Geography
 - State totals
- Sectors
 - All Sectors (custom aggregation)
 - EPA NEI Major Sectors (see data description)
- Data Fields
 - GHGs
 - Carbon Dioxide
 - Methane
 - Nitrous Oxide
 - CAPs (Criteria Air Pollutants)
 - Ammonia
 - Carbon Monoxide
 - Nitrogen Oxides
 - PM10 Primary (Filtered and Condensed)
 - PM2.5 Primary (Filtered and Condensed)
 - Sulfur Dioxide
 - Volatile Organic Compounds

Buildings Infrastructure

Spreadsheet 1: All ACS Buildings Data.csv

- Description

- Data on various buildings metrics at the county or state-level
- Source
 - ACS 5-Year Estimates: <https://www.census.gov/programs-surveys/acs/data.html>
- Units
 - Number of Housing Units, Population, Household Size, Median Room Number
- Year Range
 - 2010-2019
- Geography
 - State-Level (file name starts with state name)
 - County-Level (file name starts with "State-Abbreviation By County")
- Data Fields
 - Average household size
 - Renter, Owner
 - Number of Housing Units by Primary Heating Fuel
 - Electric, Fuel Oil, Gas, Propane, Wood
 - Median Number of Rooms
 - Number of Housing Units by Number of Rooms
 - 1, 2, 3, 4, 5, 6, 7, 8, 9+
 - Number of Housing Units by Tenure
 - Owner-occupied
 - Renter-occupied
 - Total Housing Units
 - Total Population
 - Number of Housing Units by Number of Units in Structure
 - Single Unit Attached, Single Unit Detached, 2 Units, 3-4 Units, 5-9 Units, 10-19 Units, 20-49 Units, 50+ Units, Boat/RV/Van/Etc, Mobile Home
 - Year Built
 - Before 1940, 1940-1949, 1950-1959, 1960-1969, 1970-1979, 1980-1989, 1990-1999, 2000-2009, 2010-2013

Spreadsheet 2: Building Heating Fuel.csv

- Description
 - Data on number of occupied housing units by primary heating fuel at the county or state-level
- Source
 - ACS 5-Year Estimates: <https://www.census.gov/programs-surveys/acs/data.html>
- Units
 - Number of Housing Units
- Year Range
 - 2010-2019
- Geography
 - State-Level (file name starts with state name)
 - County-Level (file name starts with "State-Abbreviation By County")

- Data Fields
 - Number of Housing Units by Primary Heating Fuel
 - Electric
 - Fuel Oil
 - Gas
 - Propane
 - Wood

Spreadsheet 3: Building Rooms.csv

- Description
 - Data on number of occupied housing units by number of rooms at the county or state-level
- Source
 - ACS 5-Year Estimates: <https://www.census.gov/programs-surveys/acs/data.html>
- Units
 - Number of Housing Units
- Year Range
 - 2010-2019
- Geography
 - State-Level (file name starts with state name)
 - County-Level (file name starts with "State-Abbreviation By County")
- Data Fields
 - Number of Housing Units by Number of Rooms
 - 1 room
 - 2 rooms
 - 3 rooms
 - 4 rooms
 - 5 rooms
 - 6 rooms
 - 7 rooms
 - 8 rooms
 - 9+ rooms
 - Median Number of Rooms

Spreadsheet 4: Building Tenure.csv

- Description
 - Data on housing units by building tenure at the county or state-level
- Source
 - ACS 5-Year Estimates: <https://www.census.gov/programs-surveys/acs/data.html>
- Units
 - Number of Housing Units, Average Household Size
- Year Range
 - 2010-2019

- Geography
 - State-Level (file name starts with state name)
 - County-Level (file name starts with “State-Abbreviation By County”)
- Data Fields
 - Number of Housing Units by Tenure
 - Owner-Occupied
 - Renter-occupied
 - Average size of household by owner type (number of persons living in each household)
 - Owner-Occupied
 - Renter-Occupied

Spreadsheet 5: Building Type.csv

- Description
 - Data on number of different types of housing units at the county or state-level
- Source
 - ACS 5-Year Estimates: <https://www.census.gov/programs-surveys/acs/data.html>
- Units
 - Number of Housing Units
- Year Range
 - 2010-2019
- Geography
 - State-Level (file name starts with state name)
 - County-Level (file name starts with “State-Abbreviation By County”)
- Data Fields
 - Number of Housing Units by Units in Structure
 - Single Family Attached
 - Single Family Detached
 - 2 Units
 - 3-4 Units
 - 5-9 Units
 - 10-19 Units
 - 20-49 Units
 - 50+ Units
 - Mobile Home
 - Boat/RV/Van

Spreadsheet 6: Building Vintage.csv

- Description
 - Data on the age (year-built) of housing units at the county or state-level
- Source
 - ACS 5-Year Estimates: <https://www.census.gov/programs-surveys/acs/data.html>
- Units

- Number of Occupied Housing Units, Average Household Size
- Year Range
 - 2010-2019
- Geography
 - State-Level (file name starts with state name)
 - County-Level (file name starts with “State-Abbreviation By County”)
- Data Fields
 - Number of Occupied Housing Units by Year Built
 - Before 1940
 - 1940-1949
 - 1950-1959
 - 1960-1969
 - 1970-1979
 - 1980-1989
 - 1990-1999
 - 2000-2010
 - 2010-2013
 - 2014-Present

CO2 Emissions

Spreadsheet 1: EIA CO2 Emissions Data.csv

- Description
 - Data on CO2 emissions by fuel, sector, and for natural gas industry
- Source
 - <https://www.eia.gov/opendata/>
- Units
 - MMT CO2
- Year Range
 - 1980 - Current
- Data Fields
 - All Sectors Emissions from Coal (MMT CO2)
 - All Sectors Emissions from Natural Gas (MMT CO2)
 - All Sectors Emissions from Petroleum (MMT CO2)
 - Emissions from Residential Buildings Sector (MMT CO2)
 - Emissions from Commercial Buildings Sector (MMT CO2)
 - Emissions from Industrial Sector (MMT CO2)
 - Emissions from Transportation Sector (MMT CO2)
 - Electric Power Emissions from Natural Gas (MMT CO2)
 - Residential Buildings Emissions from Natural Gas (MMT CO2)
 - Commercial Buildings Emissions from Natural Gas (MMT CO2)
 - Industrial Emissions from Natural Gas (MMT CO2)

Energy Economics

Spreadsheet 1: Electricity and Natural Gas Prices.csv

- Description
 - Data on electricity and natural gas prices with adjustments for inflation
- Source
 - <https://www.eia.gov/opendata/>
 - <https://fred.stlouisfed.org/series/CPIAUCSL>
- Units
 - \$/TCF, \$/MMBTU
- Year Range
 - 2000 - Current
- Data Fields
 - Natural Gas Prices (\$/TCF)
 - Citygate Price
 - Citygate Price (Inflation Adjusted)
 - Residential Consumer Price
 - Residential Consumer Price (Inflation Adjusted)
 - Commercial Consumer Price
 - Commercial Consumer Price (Inflation Adjusted)
 - Electricity Prices (\$/MMBTU)
 - Residential Sector Price
 - Residential Sector Price (Inflation Adjusted)
 - Commercial Sector Price
 - Commercial Sector Price (Inflation Adjusted)
 - Inflation-Adjustment Factors (CPI)

Spreadsheet 2: Household Incomes.csv

- Description
 - Data on electricity and natural gas prices with adjustments for inflation
- Source
 - ACS 5-Year Estimates: <https://www.census.gov/programs-surveys/acs/data.html>
- Units
 - Number of Households (note will not sum to actual total housing units)
- Year Range
 - 2000 - Current
- Data Fields
 - Median Household Income (Inflation-Adjusted US dollars)
 - Total Households Reporting Income (*Household Income: Total:*)
 - Household Income by Number of Units Reported (Inflation-Adjusted)
 - Less than \$10,000
 - \$10,000 - \$14,999
 - \$15,000 - \$19,999

- \$20,000 - \$24,999
- \$25,000 - \$29,999
- \$30,000 - \$34,999
- \$35,000 - \$39,999
- \$40,000 - \$44,999
- \$45,000 - \$49,999
- \$50,000 - \$59,999
- \$60,000 - \$74,999
- \$75,000 - \$99,999
- \$100,000 - \$124,999
- \$125,000 - \$149,999
- \$150,000 - \$199,999
- \$200,000 or more

Energy Use

Spreadsheet 1: Energy Consumption Data.csv

- Description
 - Data on energy consumption by fuel, sector, and for natural gas industry
- Source
 - <https://www.eia.gov/opendata/>
- Units
 - Million Cubic Feet,
- Year Range
 - 1980 - Current
- Data Fields
 - Natural Gas Delivered to Residential Sector (Mcf)
 - Natural Gas Delivered to Commercial Sector (Mcf)
 - Natural Gas Industrial Sector Consumption (Mcf)
 - Natural Gas Electric Power Sector Consumption (Mcf)

Equity

Spreadsheet 1: NREL LEAD Summary.csv

- Description
 - Data on energy burden and expenditures by high-level building classifications for a given state, such as year-built, household income, or primary heating fuel.
- Source
 - Raw Data:
 - <https://data.openei.org/submissions/573>
 - Data Description:

- <https://www.energy.gov/eere/slsc/low-income-energy-affordability-data-lead-tool>
- Units
 - USD \$, % of Income, Number of Household Units
- Geography
 - State-Level Aggregates
- Year Range
 - 2016 (And cross-tabulations from 2018)
- Building Characteristics
 - Tenure
 - Owner
 - Renter
 - Year Built
 - Before 1940
 - 1940-59
 - 1960-79
 - 1980-99
 - 2000-09
 - 2010+
 - Building Type
 - 1 Attached
 - 1 Detached
 - Mobile/Trailer
 - 2 Unit
 - 3-4 Unit
 - 5-9 Unit
 - 10-19 Unit
 - 20-49 Unit
 - 50+ Unit
 - Boat/RV/Van
 - Primary Heating Fuel
 - Bottled Gas (Propane or liquified petroleum gas (LPG) space heating)
 - Electricity
 - Other
 - Solar
 - Utility Gas
 - Wood
 - Coal
 - None
 - Fuel Oil
 - Household Income as a Percent of the Federal Poverty Line (2015)
 - 0-100%
 - 100-150%
 - 150-200%

- 200-400%
 - 400%+
- Data Fields
 - Number of Household Units by Building Classification
 - Household Income
 - Annual Household Electricity Payments
 - Annual Household Gas Payments
 - Annual Household Fuel Oil Payments
 - Energy Burden (% income spend on energy)

Spreadsheet 2: NREL LEAD Detailed.csv

- Description
 - Data on energy burden and expenditures for the cross-section of various building classifications for a given state by tenure, year-built, building type, primary heating fuel, and household income as % of the federal poverty line.
- Source
 - Raw Data:
 - <https://data.openei.org/submissions/573>
 - Data Description:
 - <https://www.energy.gov/eere/slsc/low-income-energy-affordability-data-lead-tool>
- Units
 - USD \$, % of Income, Number of Household Units
- Geography
 - State-Level Aggregates
- Year Range
 - 2016 (And cross-tabulations from 2018)
- Building Characteristics
 - Cross-Sections of the 5 building metrics (full details available NREL LEAD Summary.csv overview)
- Data Fields
 - Number of Household Units by Building Classification
 - Household Income
 - Annual Household Electricity Payments
 - Annual Household Gas Payments
 - Annual Household Fuel Oil Payments
 - Energy Burden (% income spend on energy)

Spreadsheet 3: NREL LEAD Energy Expenditures by Tract.csv

- Description
 - Data on energy burden and expenditures for different fuel types for each census tract within a state.
- Source

- Raw Data:
 - <https://data.openei.org/submissions/573>
- Data Description:
 - <https://www.energy.gov/eere/slsc/low-income-energy-affordability-data-lead-tool>
- Units
 - USD \$, % of Income, Number of Household Units
- Geography
 - Census Tract-Level
- Year Range
 - 2016 (And cross-tabulations from 2018)
- Data Fields
 - Number of Household Units
 - Household Income
 - Annual Household Total Energy Expenditures
 - Annual Household Electricity Payments
 - Annual Household Gas Payments
 - Annual Household Fuel Oil Payments
 - Energy Burden (% income spend on energy)

Natural Gas

Spreadsheet 1: EIA Natural Gas Data.csv

- Description
 - Data on energy burden and expenditures for different fuel types for each census tract within a state.
- Source
 - <https://www.eia.gov/opendata/>
- Units
 - Mcf, \$/Tcf, MMTCO₂
- Geography
 - State-Level
- Year Range
 - 1970-Current
- Data Fields
 - Consumption (Mcf)
 - Residential Sector
 - Commercial Sector
 - Electric Power Sector
 - Industrial Sector
 - Emissions (MMTCO₂)
 - Residential Sector
 - Commercial Sector

- Industrial Sector
- Price (\$/Tcf)
 - Residential Sector
 - Commercial Sector