EIA Electricity Data Overview & Electricity Initiative Discussion

For
National Governors Association
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Overview of EIA

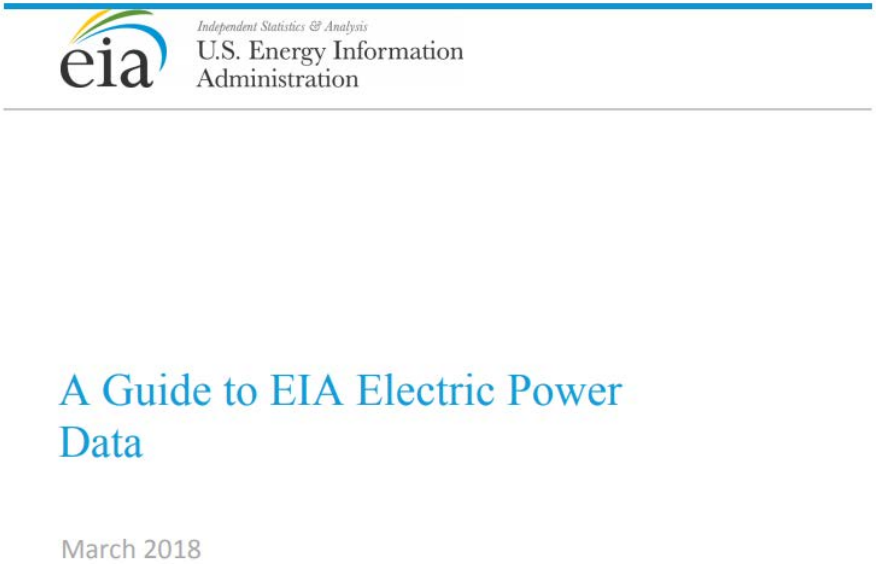
- Mission: Collect, analyze, disseminate independent and impartial energy information
- Purpose: Promote sound policymaking, efficient markets, and public understanding of energy
- By law: data, analysis, and forecasts are independent of approval by any other officials
- Extensive resource: 750K files, 200K+ web pages, 57 active surveys (10 electric power), 43 publications

EIA's Electricity Data

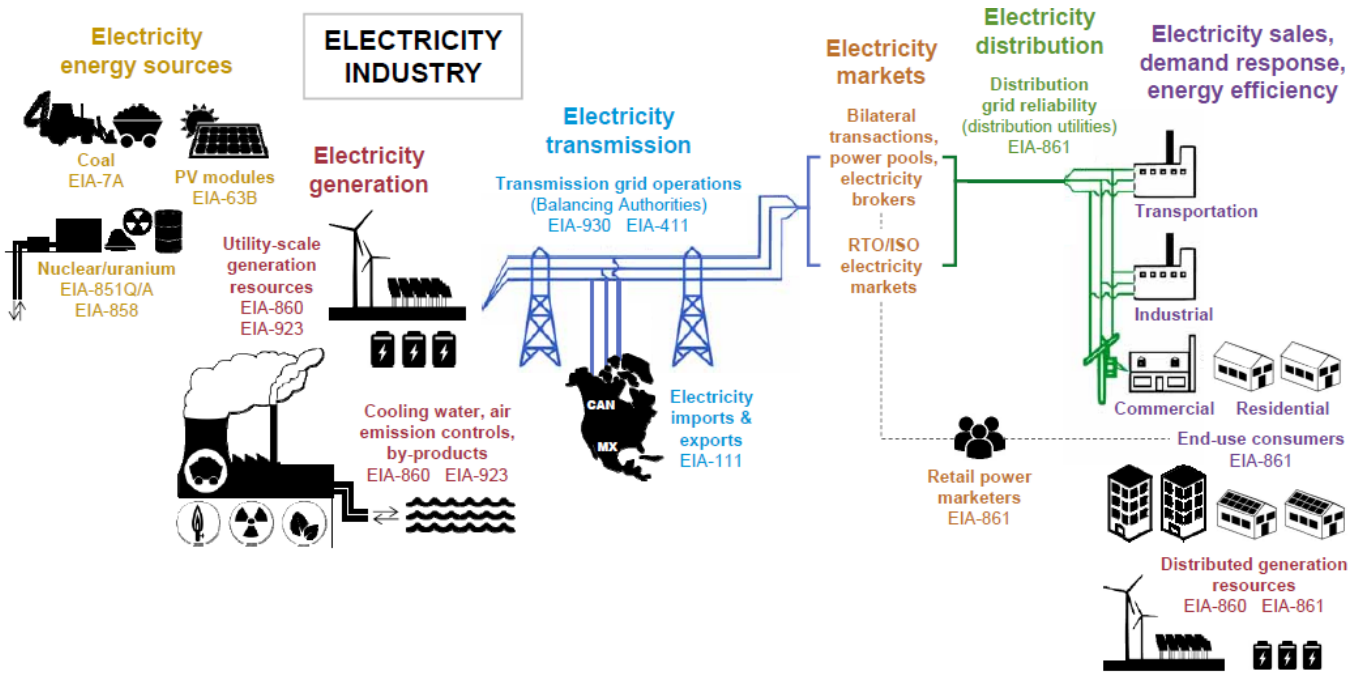
- Almost all EIA electricity data is public
- Monthly data provides preliminary indicators. Annual preliminary data is published in late summer and finalized in the fall for the previous data year
- The most detailed data is available in survey files
- Select data is aggregated and organized into summary tables by topic and state for ease of use

Electricity Data Guide

The Guide is a helpful reference and overview of EIA's electricity surveys
https://www.eia.gov/electricity/data/guide/pdf/guide.pdf



EIA electricity data covers the industry from end to end



Power Plant Characteristics: EIA-860

- Monthly Preliminary Monthly Electric Generator Inventory
  https://www.eia.gov/electricity/data/eia860M/

- Annual EIA-860 detailed data files include details on:
  https://www.eia.gov/electricity/data/eia860/
  - Solar, wind, battery storage generators
  - Dual-fuel and fuel-switching generators
  - Environmental equipment

Power Plant Operations: EIA-923

- Monthly preliminary data and estimates

- Annual EIA-923 detailed data files include details on: https://www.eia.gov/electricity/data/eia923/
  - Net generation
  - Fuel consumption
  - Fuel delivery and stocks
  - Fuel costs
  - Environmental data

U.S. Department of Energy, The Energy Information Administration (EIA)
EIA-923 Monthly Generation and Fuel Consumption Time Series File, 2017 Final
Sources: EIA-923 and EIA-860 Reports

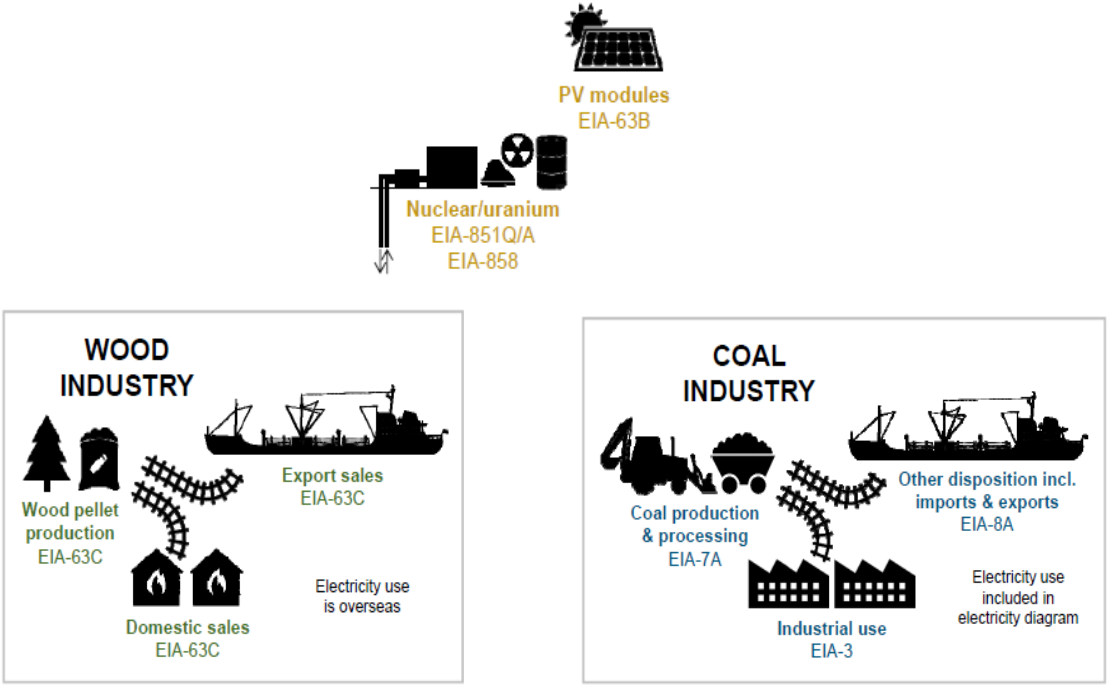
Plant Id	Combined Heat And Power Plant	Nuclear Unit Id	Plant Name	Operator Name	Operator Id	Plant State	Census Region	NERC Region	Reserved	NAICS Code	EIA Sector Number	Sector Name	Reported Prime Mover	Reported Fuel Type Code
2	N		Bankhead Dam	Alabama Power Co	195	AL	ESC	SERC		22	1	Electric Utility	HY	WAT
3	N		Barry	Alabama Power Co	195	AL	ESC	SERC		22	1	Electric Utility	CA	NG
3	N		Barry	Alabama Power Co	195	AL	ESC	SERC		22	1	Electric Utility	CT	NG
3	N		Barry	Alabama Power Co	195	AL	ESC	SERC		22	1	Electric Utility	ST	BIT
3	N		Barry	Alabama Power Co	195	AL	ESC	SERC		22	1	Electric Utility	ST	NG
4	N		Walter Bouldin Dam	Alabama Power Co	195	AL	ESC	SERC		22	1	Electric Utility	HY	WAT
7	Y		Gadsden	Alabama Power Co	195	AL	ESC	SERC		22	1	Electric Utility	ST	BIT
7	Y		Gadsden	Alabama Power Co	195	AL	ESC	SERC		22	1	Electric Utility	ST	NG

Retail Sales, Reliability, Net Metering: EIA-861

- Monthly EIA-861M preliminary data and estimates on: https://www.eia.gov/electricity/data/eia861m/
  - retail sales
  - net metering, non-net metered distributed resources
  - small scale PV capacity and generation

- Annual EIA-861 detailed data files include details on: https://www.eia.gov/electricity/data/eia861/
  - Retail sales
  - Net metering and non-net metered distributed resources
  - Demand response
  - Advanced meters
  - Advanced meters
  - Energy efficiency programs
  - Service territory by county
  - Reliability metrics (SAIDI and SAIFI)

Fuel and industry specific surveys

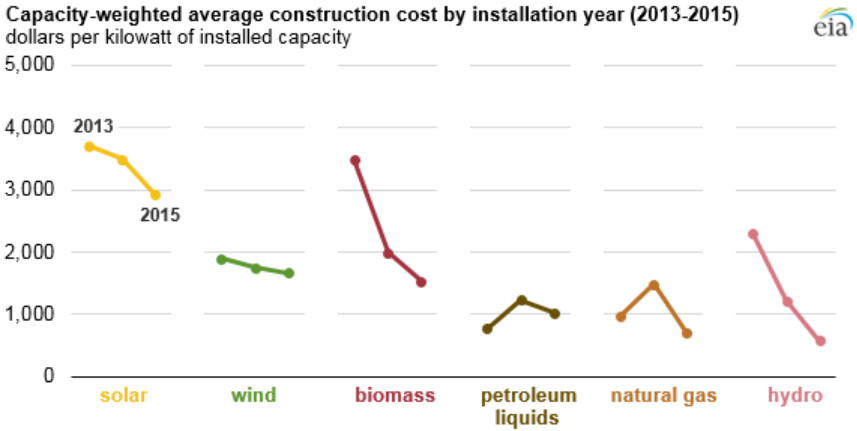


Detailed data: Emissions, cooling water, construction costs

- Emissions by power plant and region
  https://www.eia.gov/electricity/data/emissions/

- Thermoelectric cooling water data
  https://www.eia.gov/electricity/data/water/

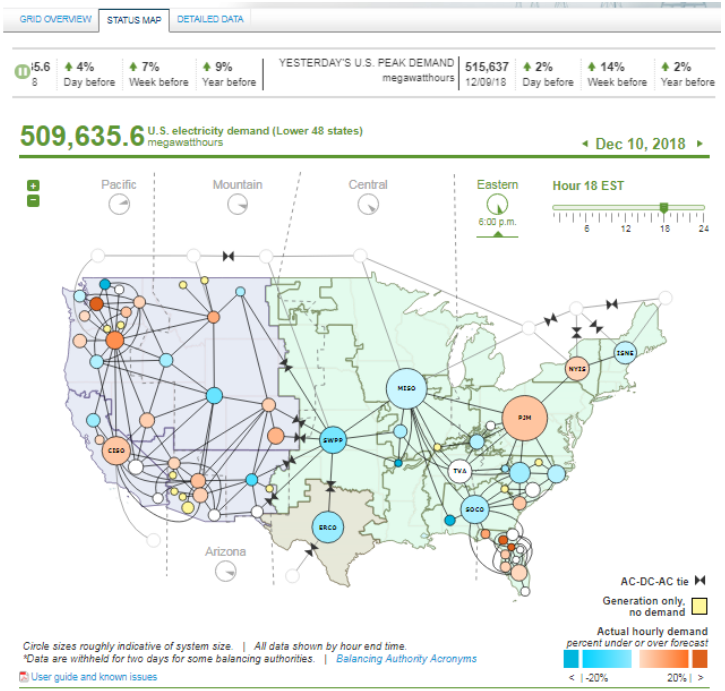
- Power plant construction costs
  https://www.eia.gov/electricity/generatorcosts/

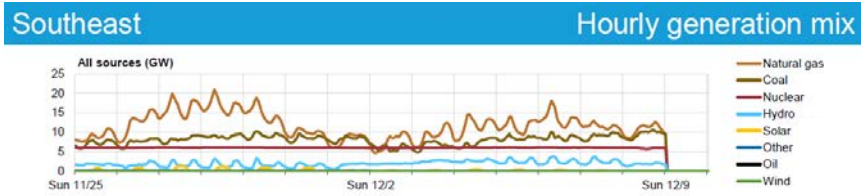


Source: https://www.eia.gov/todayinenergy/detail.php?id=31912

U.S. Electric System Operations

- Hourly data collected from 66 balancing authorities
- Daily updates include hourly:
  - Load forecast
  - Total load & load by subregion (select BAs)
  - Total net generation & net generation by energy source
  - Total interchange & interchange with BA pairs





Aggregated Electricity Data Publications

- Electric Power Annual (EPA), available back to 1994
  https://www.eia.gov/electricity/annual/

- State Electricity Profiles, annual data available back to 1990
  https://www.eia.gov/electricity/state/

- Electric Power Monthly (EPM), available back to June 1996 (containing March 1996 data)
  https://www.eia.gov/electricity/monthly/

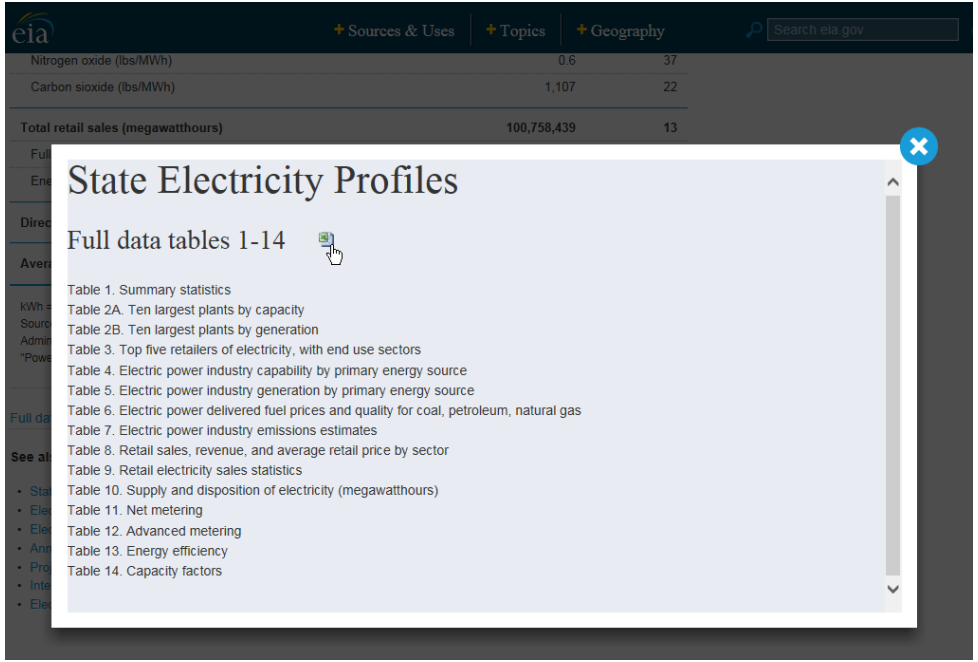
- Electricity Monthly Update (EMU), available back to February 2005 (containing December 2004 data)
  https://www.eia.gov/electricity/monthly/update/

State Electricity Profiles

State Electricity Profiles

Data for 2016 | **Release Date:** January 25, 2018 | **Next Release:** December 2018

Name	Average retail price (cents/kWh)	Net summer capacity (MW)	Net generation (MWh)	Total retail sales (MWh)
Alabama	9.56	29,077	142,385,098	88,225,141
Alaska	17.93	2,742	6,335,034	6,123,202
Arizona	10.33	28,476	108,763,449	78,237,828
Arkansas	8.13	14,711	60,445,059	46,188,438
California	15.23	76,537	196,963,215	256,846,635
Colorado	9.83	16,078	54,418,480	54,802,037
Connecticut	17.24	8,810	36,496,560	28,931,087
Delaware	11.09	3,409	8,731,261	11,258,438
District of Columbia	11.73	21	76,474	11,394,003
Florida	9.91	58,432	238,262,150	235,721,822

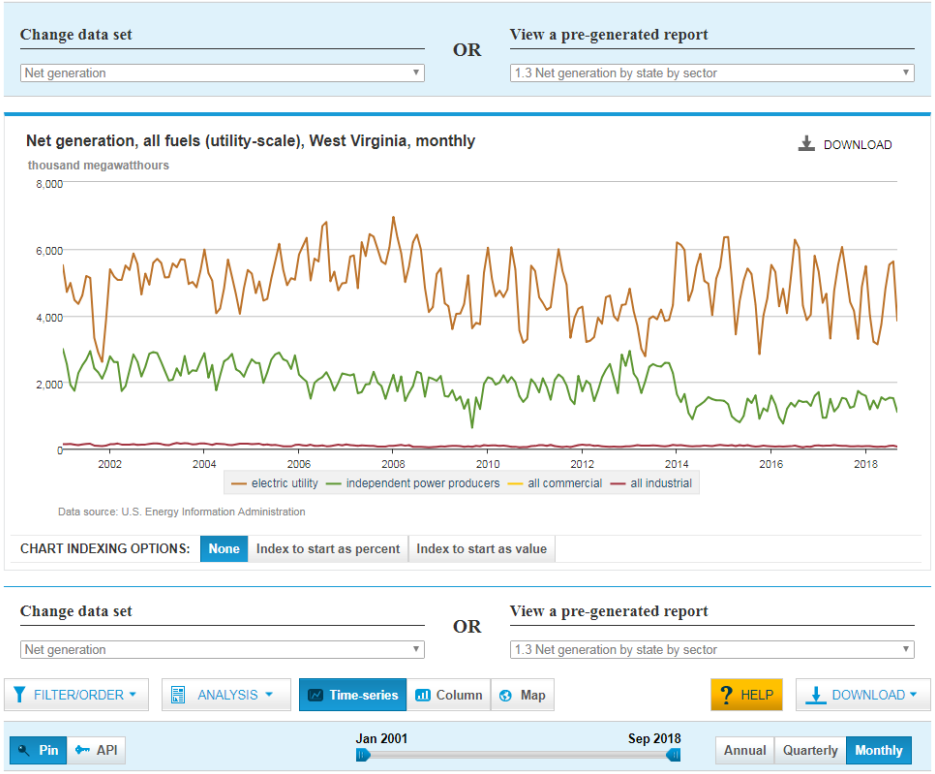


https://www.eia.gov/electricity/state/

Electricity Data Browser and EIA's API

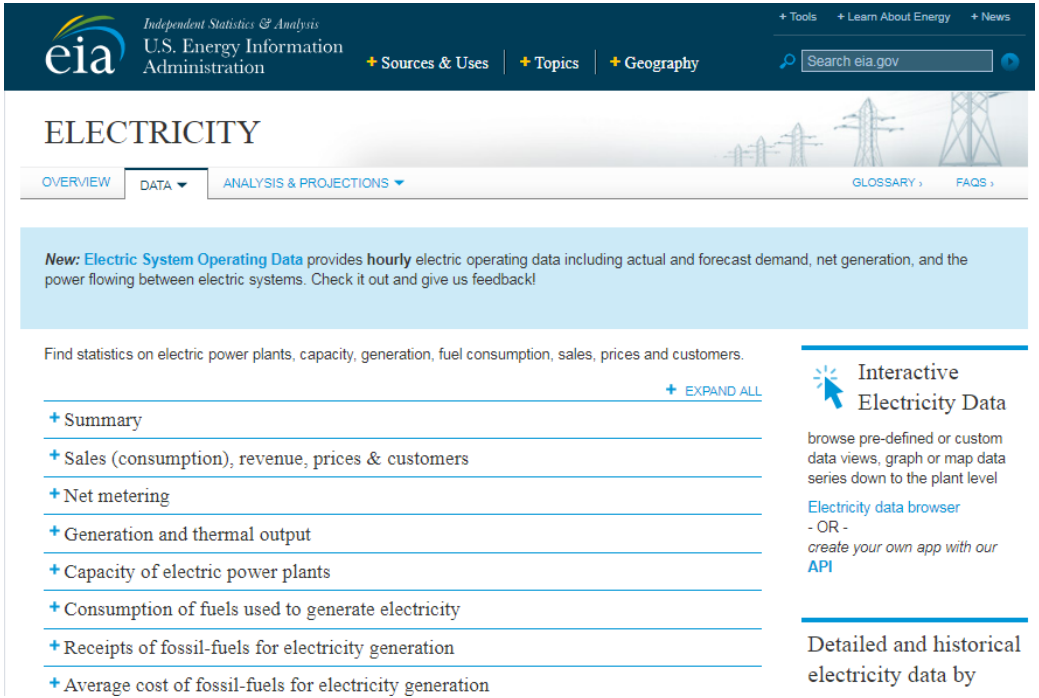
- https://www.eia.gov/electricity/data/browser/
- https://www.eia.gov/opendata/
- Data available includes:
  - Net electricity generation
  - Fuel consumption
  - Fuel stocks and costs
  - Retail sales of electricity
  - Revenue from retail sales
  - Estimated average retail price

Electricity Data Browser



Summary tables

http://www.eia.gov/electricity/data.php



State data, across states

https://www.eia.gov/electricity/data/state/

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Detailed State Data

Final annual data for 2017
Release Date: October 12, 2018
Next Release Date: November 2019

Annual data		format
1990 - 2017	Net Generation by State by Type of Producer by Energy Source (EIA-906, EIA-920, and EIA-923)[1]	XLS
1990 - 2017	Fossil Fuel Consumption for Electricity Generation by Year, Industry Type and State (EIA-906, EIA-920, and EIA-923)[2]	XLS
1990 - 2017	Existing Nameplate and Net Summer Capacity by Energy Source, Producer Type and State (EIA-860)[1, 3]	XLS
2018 - 2022	Proposed Nameplate and Net Summer Capacity by Year, Energy Source, and State (EIA-860)[1]	XLS
1990 - 2017	U.S. Electric Power Industry Estimated Emissions by State (EIA-767, EIA-906, EIA-920, and EIA-923)[4]	XLS
1990 - 2017	Average Price by State by Provider (EIA-861)[5]	XLS

Electric Power Monthly with data for September 2018
Release Date: November 30, 2018
Next Release Date: end of December 2018

Monthly data from Electric Power Monthly		format
2001 - Present	Net Generation by State by Type of Producer by Energy Source[1]	XLS
2001 - Present	Fossil Fuel Consumption for Electricity Generation by Year, Industry Type and State[2]	XLS

See also:

Spot and index wholesale electricity prices

Daily spot prices
https://www.eia.gov/todayinenergy/prices.php

Select Spot Prices for Delivery Today

Region	Natural Gas ($/million Btu) Price	Natural Gas Percent Change*	Electricity ($/MWh) Price	Electricity Percent Change*	Spark Spread ($/MWh)
New England	6.94	-17.6	70.55	+2.5	21.97
New York City	5.41	-0.8	57.03	+7.5	19.16
Mid-Atlantic	5.13	+3.9	48.50	-2.5	12.61
Midwest	4.37	+1.5	43.53	-2.1	12.94
Louisiana	4.54	+0.6	38.75	+7.6	7.01
Houston	4.40	-0.6	32.75	-20.1	1.93
Southwest	3.91	-1.5	31.25	-31.7	3.89
Southern CA	5.67	-0.6	61.01	-7.3	21.36
Northern CA	5.76	-1.2	67.47	-2.3	27.18
Northwest	5.50	-25.9	49.67	-19.2	11.17

Wholesale electricity on-peak index prices
https://www.eia.gov/electricity/wholesale/

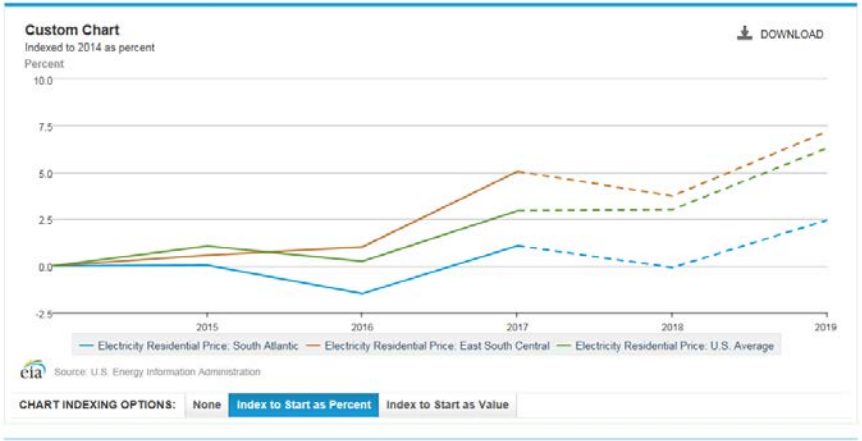
Selected hubs and wholesale daily spot price names

Region	Electricity Hub Name	ICE Electricity Product Name
New England	Mass Hub	Nepool MH DA LMP Peak (from 2001)
PJM	PJM West	PJM WH Real Time Peak (from 2001)
Midwest	Indiana Hub	Indiana Hub RT Peak (from 2006)
Texas	ERCOT North	ERCOT North 345KV Peak (from 2014)
Northwest	Mid-C	Mid C Peak (from 2001)
Northern California	NP-15	NP15 EZ Gen DA LMP Peak (from 2009)
Southwest	Palo Verde	Palo Verde Peak (from 2001)
Southern California	SP-15	SP15 Gen DA LMP Peak (from 2009) SP-15 Peak (2001 to 2009)

Electricity projections

- **Long-term projections:**
  Annual Energy Outlook (AEO)
  https://www.eia.gov/outlooks/aeo/

- **Short-term projections:**
  Short-term Energy Outlook (STEO)
  https://www.eia.gov/outlooks/steo/
  Data browser for select data elements
  https://www.eia.gov/outlooks/steo/data/browser/



Introducing EIA's Strategic Electricity Initiative

- Built upon key EIA strengths: Clear authority to collect data, energy expertise, objective and broad focus

- Goal is to enhance EIA's electricity data and analysis products by:
  - Understanding the needs of EIA's current audiences
  - Identifying underserved and potential audiences and their needs
  - Improving existing and creating new products and services
  - Generally raising the profile of the electric power program

Examples of customer needs that EIA could address

- More current data – weekly, daily, and hourly, rather than monthly and annual
- Easier access to RTO/ISO (regional transmission organization/independent system operator) data
- More accessible state-level data
- Easier assembly of EIA data for non-state groupings (e.g. BAs, RTOs, NERC regions)
- More and better electric power-related data during emergencies (e.g., hurricanes)
- More information on:
  - Distributed energy resources and storage
  - Electricity rates/tariffs
  - Transmission system infrastructure and operations

Current efforts to enhance EIA's electricity program

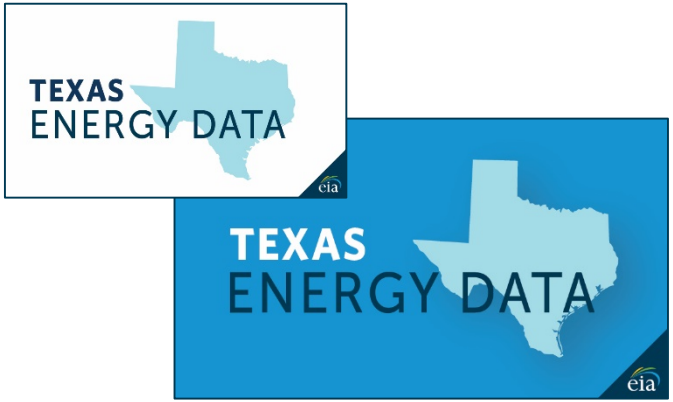
- Hourly balancing authority operating data enhanced with generation by fuel – *implementation underway*
- State Energy Portal enhanced with electricity data dashboards – *implementation underway*
- Regional dashboards: a southern California (Aliso Canyon) dashboard is in operation https://www.eia.gov/special/disruptions/socal/ – *New England dashboard implementation underway*
- Electric Power Weekly: a power market overview report, roughly equivalent to EIA's petroleum and natural gas weeklies – *initial product scoping & development underway*
- RTO portal: a "one-stop-shop" website for RTO data essentials & wholesale market primers – *initial product scoping & development underway*
- Energy disruptions/emergency response data – *early discussions about standardizing current ad hoc efforts related to electricity disruptions*

Your thoughts, reactions, comments

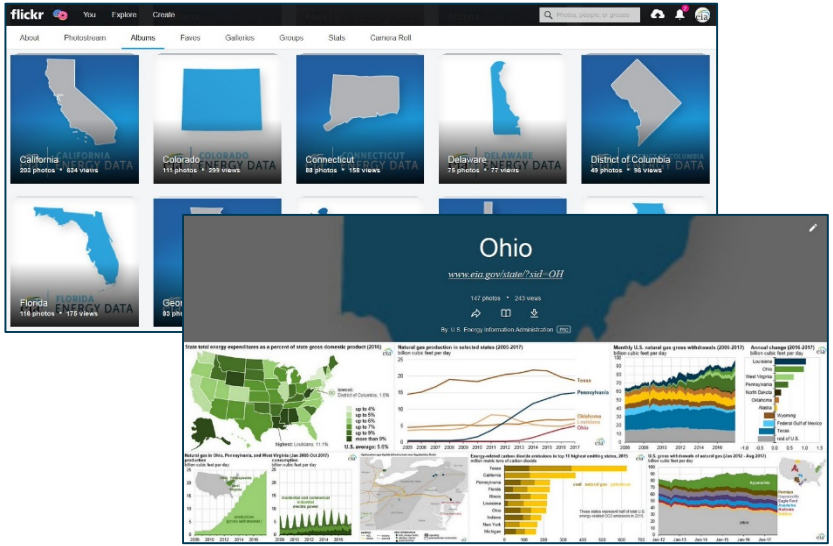
- Do you have any feedback or suggestions for existing or potential new EIA products?
- Are there any electricity questions that frequently come up in your work or from your constituents? What data or analysis do you wish you had?
- What industry developments or topics are you or your constituents most concerned about?
- Do you have suggestions for how EIA may increase or improve its communication & outreach to you and your colleagues?

Additional tools to make EIA state data more accessible

We can create a customized banner or badge for your website and work with you to link it to your state's EIA State Energy Profile.



EIA maintains Flickr albums with charts and graphs for all 50 states.
https://www.flickr.com/photos/eiagov/



For more information

EIA Electricity Data & Analysis | www.eia.gov/electricity

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