

RMI Utility Transition Hub Data Dictionary	
General Overview	<p>The RMI Utility Transition Hub Data Download is a collection of publicly available data, organized and used to calculate key metrics that describe the US utility transition.</p> <p>This data dictionary describes each data file in detail, including definitions, units, data sources, and methodology.</p> <p>For downloadable data, visit https://utilitytransitionhub.rmi.org/data-download/. For interactive data visualizations, visit https://utilitytransitionhub.rmi.org/portal/. For analyses and insights, visit https://utilitytransitionhub.rmi.org/insights/.</p>
Scope	<p>Utilities coverage: all current FERC Form 1 respondents. This includes 375 total companies: 95 vertically integrated utilities 82 wires-only utilities 4 municipal utilities 43 cooperative utilities 24 independent power producers 102 other (or defunct) utilities.</p> <p>Geographical coverage: United States Temporal coverage: 2005-2019 for historical data, and emission target projections to 2050 Temporal resolution: annual data</p>
Limitations to Scope	This data set is not comprehensive of all utilities in the United States. If aggregating data to parent companies, values will be the sum of their regulated subsidiaries, not actual total values for the parent company.
Description of data files	
assets_earnings	Detailed breakdown of utility assets in electric rate base, earnings on these assets, and annual investments (capital additions) by technology.
customers_sales	Number of customers, MWh electricity sales, and revenues by customer type.
debt_equity_returns	Rate base, equity, debt, returns, earnings, interest expense, tax expense, and the rates of return used for earnings and revenue calculations.
emissions_targets	CO2 emissions and projections, as well as electricity generation and projections and comparison to RMI's 1.5C decarbonization pathway for the US electricity sector.
expenditure_bills_burden	Total expenditure, average residential customer energy bill, and average residential customer energy burden for each utility by technology and customer group.
housing_units_income	Number of housing units and income by customer group for each utility.
net_plant_balance	Original cost, accumulated depreciation, and remaining net plant balance of electric plants in service, by FERC classification.
operations_emissions_by_fuel	Generation, fuel consumption, and emissions of CO2, NOx, and SOx for each generator owned by each utility. Within each generator, fuel consumption is differentiated by fuel type.
operations_emissions_by_tech	Capacity, generation, capacity factor, fuel consumption, and emissions of CO2, NOx, and SOx for each generator owned by each utility. Each generator is identified by a single technology.
revenue_by_tech	Revenues for each utility, by technology and component, for each utility.
state_targets	Greenhouse gas (GHG) and renewable portfolio standard (RPS) data by state, including baseline, interim, and final target years.
state_utility_policies	Policy data shown on the "Policy & Regulations" dashboard of the Utility Transition Hub Portal, by state and utility.
utility_information	Utility identifiers such as name, ID numbers from various sources, and utility type. Includes connections from operating companies to parent companies.
utility_state_map	A list of states that each utility owns generation plants in.
Additional information	
Last updated	Released in September 2021.
Planned Additions	(1) update to include 2020 data (October). (2) Plant-level financial data (November/December). (3) Non-owned power generation detail, including purchased power, net metering, and distributed generation (Early 2022).
Contact	For inquiries or suggestions, please contact utilitytransitionhub@rmi.org

data_sources

Data Source	Link
FERC Form 1	https://www.ferc.gov/industries-data/electric/general-information/electric-industry-forms/form-1-electric-utility-annual
PUDL	https://catalystcoop-pudl.readthedocs.io/en/latest/intro.html
EIA860	https://www.eia.gov/electricity/data/eia860/
EIA923	https://www.eia.gov/electricity/data/eia923/
EIA861	https://www.eia.gov/electricity/data/eia861/
EIA176	https://www.eia.gov/naturalgas/ngqs/
EIA SEDS	https://www.eia.gov/state/seds/seds-data-complete.php?sid=US
SEPA Utility Carbon Reduction Tracker	https://sepapower.org/utility-transformation-challenge/utility-carbon-reduction-tracker/
DSIRE	https://www.dsireusa.org/
Yahoo! Finance	https://finance.yahoo.com/
Ballotpedia	https://ballotpedia.org/Main_Page
EPA AMPD	https://ampd.epa.gov/ampd/
DOE LEAD Tool	https://www.energy.gov/eere/sls/maps/lead-tool
Census SAIFE	https://www.census.gov/programs-surveys/saife.html
GLEIF	https://www.gleif.org/en/
rate case data	various
IRPs	various
C2ES	https://www.c2es.org/
NCSL	https://www.ncsl.org/
NREL	https://www.nrel.gov/
US Climate Alliance	http://www.usclimatealliance.org/
state legislation	various

assets_earnings_investments

Data field		Definition	Units	Data Source	Methodology
parent_name		Name of ultimate parent company		RMI	
utility_name		Name of utility		RMI	
respondent_id		Utility ID from FERC		FERC Form 1	
year		Reporting year		FERC Form 1	
asset & sub_asset		RMI's categorization of assets based on the following groupings:		RMI	
	asset	sub_asset			
	steam	steam	FERC classification of "Steam" electric generating plants. This is occasionally reported differently for individual utilities, but typically includes "Conventional Steam Coal" and "Natural Gas Steam Turbine" technologies.		RMI
	nuclear	nuclear	FERC classification of "Nuclear" electric generating plants.		RMI
	hydro	hydro	FERC classification of "Conventional Hydroelectric" and "Hydroelectric Pumped Storage" electric generating plants.		RMI
	renewables	renewables	RMI refinement of FERC classification of "Other" electric generating plants. This category includes wind, solar, geothermal, and waste (municipal solid waste, landfill gas, waste biomass) plants.		RMI
	other_fossil	other_fossil	RMI refinement of FERC classification of "Other" electric generating plants. This category includes several types of gas plants (combined cycle, combustion turbine, internal combustion) all plants that use petroleum liquids for fuel, and other fossil fuel plants not included in the "steam" category.		RMI
	transmission	transmission	FERC classification of "Transmission" plant.		RMI
	distribution	distribution	FERC classification of "Distribution" plant.		RMI
	other	AROs	Asset retirement obligations		RMI
	other	construction_work_in_progress	Construction work in progress		RMI
	other	distribution_arc	Asset retirement costs for distribution plant.		RMI
	other	electric_plant_held_for_future_use	Electric plant held for future use, technology not specified in FERC		RMI
	other	electric_plant_leased_to_others	Electric plant leased to others, technology not specified in FERC		RMI
	other	experimental_plant	Experimental electric plant, technology not specified in FERC		RMI
	other	general_plant	FERC classification of "General" electric plant.		RMI
	other	general_plant_arc	Asset retirement costs for "General" electric plant.		RMI
	other	hydro_arc	Asset retirement costs for "Conventional Hydroelectric" and "Hydroelectric Pumped Storage" electric generating plants.		RMI
	other	intangible_plant	FERC classification of "Intangible" plant.		RMI
	other	net_ADIT	Net Accumulated Deferred Income Tax		RMI
	other	net_regulatory_assets	Net regulatory assets		RMI
					Sum of regulatory assets and regulatory liabilities

Asset values for these categories are remaining net plant balance for plants in service, calculated as original cost (historical capital investment) from the "Electric Plant in Service" table minus accumulated depreciation from the "Accumulated Provision for Depreciation of Electric Utility Plant" table in FERC Form 1.

Asset values for this category are remaining net plant balance for plants in service, calculated as original cost (historical capital investment) minus accumulated depreciation.

Original cost values are taken from plant-level tables in FERC form 1.
Accumulated depreciation values are estimated. RMI assumed that in 2004, accumulated depreciation = 0. Then depreciation in each year is calculated as original_cost * depreciation_rate, with depreciation_rate assumed to be a single constant value for each technology.

Asset values for the FERC classification of "Other" plants are calculated as original cost (historical capital investment) from the "Electric Plant in Service" table minus accumulated depreciation from the "Accumulated Provision for Depreciation of Electric Utility Plant" table in FERC Form 1.

Then, "other_fossil" = "Other" - "renewables"

Asset values for this category are remaining net plant balance for plants in service, calculated as original cost (historical capital investment) from the "Electric Plant in Service" table minus accumulated depreciation from the "Accumulated Provision for Depreciation of Electric Utility Plant" table in FERC Form 1.

	other	net_working_capital	Net working capital - current assets that are expected to be available or due within a year, and that are included in rate base and utility earnings.		RMI	Sum of "current & accrued assets" and "current and accrued liabilities" from the balance sheet, excluding accounts receivable and payable from associated companies, interest and dividends receivable, interest accrued, dividends declared, matured long-term debt and matured interest.
	other	nuclear_arc	Asset retirement costs for nuclear electric power generation plants.**		RMI	
	other	other_deferred_debits_and_credits	Other deferred debits and credits on the balance sheet		RMI	
	other	other_electric_plant	Other electric plant		RMI	
	other	other_fossil_arc	Asset retirement costs for "other fossil" power generation plants.**		RMI	
	other	other_noncurrent_liabilities	Other noncurrent liabilities on the balance sheet		RMI	
	other	regional_transmission_and_market_operation	FERC classification of "Regional Transmission and Market Operation" plant.		RMI	
	other	renewables_arc	Asset retirement costs for renewable energy power plants.**		RMI	
	other	steam_arc	Asset retirement costs for steam electric power generation plants.**		RMI	
	other	transmission_arc	Asset retirement costs for steam electric power generation plants.**		RMI	
asset_value			Asset value	\$	FERC Form 1, RMI	RMI combined the balance sheet and balance sheet detail tables from FERC Form 1 to obtain a detailed breakdown of the balance sheet. RMI then performed a line-by-line assessment of what is or is not included in electric utility rate base, and grouped each line of the balance sheet into asset and sub_asset categories. Values are end of year values.
earnings_value			Earnings in the given year on the asset	\$	FERC Form 1, RMI	earnings_value = asset_value*equity_ratio*ROE (see debt_equity table for equity_ratio and ROE)
investment_value			Investments (capital expenditure) in the given year on the asset.	\$	FERC Form 1, RMI	Directly from the "additions" field in the FERC Form 1 "Electric Plant in Service" table (thus applicable only to electric plants in service)
Additional notes						
*For a detailed description of FERC accounts, see https://www.ecfr.gov/cgi-bin/text-idx?SID=0694fb0720db0c9c2e974d3a661918d5&mc=true&node=pt18.1.101&rgn=div5						
**We include asset retirement costs as a positive component of electric rate base. These ARCs are mostly offset by AROs, which are negative components of electric rate base. Both ARCs and AROs are included in the "other" asset category.						

customers_sales

Data field	Definition	Units	Data Source	Methodology
parent_name	Name of ultimate parent company		RMI	
utility_name	Name of utility		RMI	
respondent_id	Utility ID from FERC		FERC Form 1	
year	Reporting year		FERC Form 1	
customer_type	Type of customer		FERC Form 1	
customers	Number of customer accounts (i.e. number of meters)		FERC Form 1	
sales	Energy sold	MWh	FERC Form 1	
revenues	Revenues from electricity sales	\$	FERC Form 1	
Additional notes				
All data fields in customer_sales collected directly from FERC Form 1.				

debt_equity_returns

Data field	Definition	Units	Data Source	Methodology
parent_name	Name of ultimate parent company		RMI	
utility_name	Name of utility		RMI	
respondent_id	Utility ID from FERC		FERC Form 1	
year	Reporting year		FERC Form 1	
rate_base_actual	Actual rate base (value of capital assets that the utility is allowed to earn a rate of return on)	\$	FERC Form 1, RMI	= sum of all assets from "assets_earnings" data
equity_actual	Actual value of assets owned by shareholders at end of year	\$	FERC Form 1	Total Proprietary Capital from FERC balance sheet
debt_actual	Total long-term debt at end of year	\$	FERC Form 1	Total Long-Term Debt from FERC balance sheet
equity_ratio_actual	Ratio of equity:(equity+debt) at end of year		FERC Form 1, RMI	= equity_actual / (equity_actual + debt_actual)
returns_actual	Returns on rate base	\$	FERC Form 1, RMI	net_electric_operating_income directly from FERC income
earnings_actual	Shareholder earnings	\$	FERC Form 1, RMI	= returns_actual - interest_actual
interest_actual	Interest expense to serve debt	\$	FERC Form 1, RMI	= net_interest_expenses * asset_fraction_electric net_interest_expenses directly from FERC income statement asset_fraction_electric calculated as utility_plant_electric / utility_plant_total from FERC Summary of Utility Plant table
fed_tax_expense_actual	Federal tax expense	\$	FERC Form 1	Sum of taxes on utility operating income and other income and deductions (FERC accounts 409.1 and 409.2)

pre_tax_net_income_actual	Pre-tax net income	\$	FERC Form 1	Sum all components of net income, excluding extraordinary items and tax
ROR_actual	Rate of return on rate base		FERC Form 1, RMI	= returns_actual / rate_base_actual
ROE_actual	Rate of return on equity		FERC Form 1, RMI	= earnings_actual / (rate_base_actual * equity_ratio_actual)
interest_rate_actual	Interest rate		FERC Form 1, RMI	= interest_actual / debt_actual
equity_ratio	Ratio of equity/(equity+debt) used in the RMI Utility Transition Hub Portal		FERC Form 1, rate case data, RMI	use equity ratio from most recent completed rate case when available, and fill in missing data with equity_ratio_actual
ROR	Rate of return on rate base used in the RMI Utility Transition Hub Portal		FERC Form 1, rate case data, RMI	use ROR from most recent completed rate case when available, and fill in with national median ROR when rate case data not available
ROE	Rate of return on equity used in the RMI Utility Transition Hub Portal		FERC Form 1, rate case data, RMI	use ROE from most recent completed rate case when available, and fill in with national median ROE when rate case data not available
interest_rate	Interest rate used in the RMI Utility Transition Hub Portal		FERC Form 1, rate case data, RMI	use interest rate from most recent completed rate case when available, and fill in with national median interest rate when rate case data not available
effective_fed_tax_rate	Effective federal income tax rate		FERC Form 1, RMI	= fed_tax_expense_actual / pre_tax_net_income_actual
equity_authorized	Value of assets owned by shareholders, estimated based on RMI bottoms-up estimate of rate base and equity ratio primarily from rate case data.	\$	FERC Form 1, rate case data, RMI	= rate_base_actual * equity_ratio
debt_authorized	Total long-term debt at end of year, estimated based on RMI bottoms-up estimate of rate base and equity ratio primarily from rate case data.	\$	FERC Form 1, rate case data, RMI	= rate_base_actual - equity_authorized
returns_authorized	Returns on rate base, estimated based on RMI bottoms-up estimate of rate base and rate of return primarily from rate case data.	\$	FERC Form 1, rate case data, RMI	= rate_base_actual * ROR
earnings_authorized	Shareholder earnings, estimated based on RMI bottoms-up estimate of rate base and equity ratio and rate of return on equity primarily from rate case data.	\$	FERC Form 1, rate case data, RMI	= rate_base_actual * equity_ratio * ROE
interest_authorized	Interest expense to serve debt, estimated based on RMI bottoms-up estimate of rate base and equity ratio and rates of return from rate case data.	\$	FERC Form 1, rate case data, RMI	= returns_authorized - earnings_authorized
interest_rate_authorized	Interest rate, estimated based on RMI bottoms-up estimate of rate base and equity ratio and rates of return from rate case data.		FERC Form 1, rate case data, RMI	= interest_authorized / debt_authorized
Additional notes				
RMI applied rate case data values starting in the year after the rate case completion date, and continuing until the next rate case would go into effect.				

emissions_targets

Data field	Definition	Units	Data Source	Methodology
parent_name	Name of ultimate parent company		RMI	
utility_name	Name of utility		RMI	
respondent_id	Utility ID from FERC		FERC Form 1	
year	Year		FERC Form 1	
CO2_historical	Historical scope 1 CO2 emissions from fossil fuel combustion at each utility's owned power plants.	MMT	EIA860, EIA923, EPA AMPD	Fuel consumption from EIA923 (in MMBTU), allocated to each generator in EIA860 (with ownership fractions for each generator from EIA860), multiplied by an emissions factor (metric tons CO2 per MMBTU) from EPA based on fuel type code, aggregated to each utility.
CO2_target	Projected emissions based on publicly stated targets	MMT	EIA860, EIA923, EPA AMPD, SEPA Utility Carbon Reduction Tracker	Projected emissions in target years are calculated based on CO2_historical in the baseline year, multiplied by the fraction of emissions specified by the public target in each target year. Where a baseline year is not specified, we use 2019 as the baseline year. Because fuel consumption data from EIA is incomplete in 2000, when a baseline year of 2000 is specified, we use 2001 as the baseline year.
CO2_target_all_years	Projected emissions based on publicly stated targets	MMT	EIA860, EIA923, EPA AMPD, SEPA Utility Carbon Reduction Tracker	CO2_target, with linear interpolation between target years.
CO2_1point5C	Projected emissions if the utility follows the US national-level electricity emissions trajectory from RMI's 1.5C decarbonization analysis.	MMT	EIA860, EIA923, EPA AMPD, RMI	RMI's 1.5C decarbonization analysis and methodology are available here: https://rmi.org/insight/scaling-us-climate-ambitions/ . In this dataset, we take RMI's US national-level electricity emissions trajectory compared to 2019 levels, and scale the trajectory to each utility based on its 2019 emissions.
generation_historical	Historical net electricity generation from each utility's owned power plants	TWh	EIA860, EIA923	Net electricity generation from EIA923, allocated to each generator in EIA860 (with ownership fractions for each generator from EIA860), aggregated to each utility.
generation_projected	Net electricity generation projected to future years	TWh	EIA860, EIA923, IRPs	= generation(2019)*(1+load_cagr)^(year-2019) load_cagr is the compound annual growth rate of the utility's electricity demand, taken from each utility's IRP or assumed to be zero if an IRP was not available.

generation_1point5C	Projected net electricity generation if the utility follows the US national-level net electricity generation trajectory from RMI's 1.5C decarbonization analysis.	TWh	EIA860, EIA923, RMI	RMI's 1.5C decarbonization analysis and methodology are available here: https://rmi.org/insight/scaling-us-climate-ambitions/ . In this dataset, we take RMI's US national-level electricity net generation compared to 2019 levels, and scale the trajectory to each utility based on its 2019 emissions.
CO2_intensity_historical	Historical CO2 emissions intensity of electricity generation from each utility's owned power plants	metric tons/MWh	EIA860, EIA923, EPA AMPD	= CO2_historical/generation_historical
CO2_intensity_target	Projected CO2 emissions intensity based on publicly stated emissions targets and projected generation from IRPs (only target years)	metric tons/MWh	EIA860, EIA923, EPA AMPD, IRPs, SEPA Utility Carbon Reduction Tracker	= CO2_target/generation_projected
CO2_intensity_target_all_y	Projected CO2 emissions intensity based on publicly stated emissions targets and projected generation from IRPs (all years)	metric tons/MWh	EIA860, EIA923, EPA AMPD, IRPs, SEPA Utility Carbon Reduction Tracker	= CO2_target_all_years/generation_projected
CO2_intensity_1point5C	Projected CO2 emissions intensity if the utility follows the US national-level emissions and net electricity generation trajectories from RMI's 1.5C decarbonization analysis.	metric tons/MWh	EIA860, EIA923, EPA AMPD, RMI	= CO2_1point5C/generation_1point5C
Additional notes				
The RMI Utility Transition Hub Portal also has functionality to normalize each company's historical and target emissions or emissions intensity to 2019 values, which allows for a more even visual comparison between company targets.				

expenditure_bills_burden

Data field	Definition	Units	Data Source	Methodology
parent_name	Name of ultimate parent company		RMI	
utility_name	Name of utility		RMI	
respondent_id	Utility ID from FERC		FERC Form 1	
year	Reporting year		FERC Form 1	
percent_AMI	Fraction of Area Median Income. 100%+ includes all households with income above the area (county) median.		DOE LEAD Tool	
ownership	Classification of home ownership for the selected housing units ("owner" or "renter")		DOE LEAD Tool	
electricity_gas_other	Whether the technology corresponds to "Electricity," "Gas," or "Other Fuel" utility expenses		RMI	
technology	RMI's groupings of technologies		RMI	
steam	FERC classification of "Steam" electric generating plants. This is occasionally reported differently for individual utilities, but typically includes "Conventional Steam Coal" and "Natural Gas Steam Turbine" technologies.		RMI	
other_fossil	RMI refinement of FERC classification of "Other" electric generating plants. This category includes several types of gas plants (combined cycle, combustion turbine, internal combustion) all plants that use petroleum liquids for fuel, and other fossil fuel plants not included in the "steam" category.		RMI	Expenditures for the FERC classification of "Other" plants are taken directly from FERC tables or calculated as described in the "component" methodology below. Then, "other_fossil" = "Other" - "renewables"
nuclear	FERC classification of "Nuclear" electric generating plants.		RMI	
hydro	FERC classification of "Hydraulic" electric generating plants.		RMI	
renewables	RMI refinement of FERC classification of "Other" electric generating plants. This category includes wind, solar, geothermal, and waste (municipal solid waste, landfill gas, waste biomass) plants.		RMI	Expenditures for this category are based on estimates of depreciation and operation & maintenance expenses from plant-level tables in FERC form 1, and returns using capital balances from the assets_earnings table.
transmission	FERC classification of "Transmission" plant.		RMI	
distribution	FERC classification of "Distribution" plant.		RMI	
purchased_power	Purchased power		RMI	
other	Other physical and non-physical assets, including asset retirement obligations, tax assets, regulatory assets, construction work in progress, and other categories described on the assets_earnings tab.		RMI	
adjustment	Balancing item that accounts for the difference between RMI's revenue requirement estimate and actual customer bills.		RMI	
Gas	Expenditures for gas utility service.		RMI	
Other Fuels	Other household energy expenditures, including propane, fuel, and other fuels.		RMI	

component		RMI's categorization of revenue sub components based on the following groupings:		RMI	
	depreciation_expense	Depreciation expense		RMI	
	depreciation_expense_for_asset_retirement	Depreciation expense for asset retirement costs		RMI	
	fuel_expenses	Fuel expenses		RMI	
	maintenance_expenses	Maintenance expenses		RMI	
	non_fuel_operation_expenses	Non fuel operation expenses		RMI	
	purchased_power	Purchased power		RMI	
	returns	Total returns on capital, including both interest expenses and shareholder returns		RMI	<p>= asset_value * ROR_grossed_up</p> <p>asset_value from assets_earnings table, with corresponding technology and asset</p> <p>ROR_grossed_up = ROE/(1-blended_tax_rate)*equity_ratio + ROR - ROE*equity_ratio</p> <p>blended_tax_rate = federal_tax_rate + state_tax_rate*(1-federal_tax_rate)</p> <p>state_tax_rate calculated as a weighted average of state tax rates, based on revenues in each state</p> <p>ROE and ROR from assets_earnings table</p>
	PTC	Production tax credit		RMI	<p>= electricity generation from wind * PTC rate *-1</p> <p>electricity generation from wind taken from operations_emissions_by_tech table</p> <p>applicable only in the renewables technology</p>
expenditure		Annual expenditure for a utility residential customer group on a technology/component.	\$	DOE LEAD Tool, EIA861, EIA176, EIA SEDS, FERC Form 1, RMI	<p>Expenditures by county and household group from DOE LEAD Tool, connected to counties within a utility service territory from EIA861.</p> <p>Expenditures for all household groups scaled such that the sum of expenditures equals total residential customer revenues from EIA861.</p> <p>Expenditures multiplied by the fractional impact of each technology & component on customer bills, based on RMI's revenue requirement calculation using FERC Form 1 (results given in the revenue_by_tech table).</p>
bill		Average (mean) monthly energy bill for residential customers	\$/month/customer	FERC Form 1, EIA861, EIA176, EIA SEDS, RMI	= expenditure/housing_units/12
burden		Average (mean) annual fraction of income spent on energy bills for residential customers	fraction of income	FERC Form 1, EIA861, EIA176, EIA SEDS, RMI	= expenditure/income
Additional notes					
To calculate the total expenditure, bill, or burden for a customer group, add together values of all technology/components.					

housing_units_income

Data field	Definition	Units	Data Source	Methodology
parent_name	Name of ultimate parent company			
utility_name	Name of utility		RMI	
respondent_id	Utility ID from FERC		FERC Form 1	
year	Year			

percent_AMI	Fraction of Area Median Income. 100%+ includes all households with income above the area (county) median.		DOE LEAD Tool	
ownership	Classification of home ownership for the selected housing units ("owner" or "renter")		DOE LEAD Tool	
housing_units	Number of occupied housing units (or households), adjusted to match number of utility customers.		DOE LEAD Tool, EIA861, RMI	Number of housing units from DOE LEAD Tool by county in 2018, connected to counties served by the utility from EIA861 in 2018, scaled uniformly across all counties to match the total number of utility customers in 2018 from EIA861. To extrapolate to other years, number of housing units from DOE LEAD Tool scaled to the number of customers in each year from EIA861.
income	Total annual income for the group of housing units	\$/year	DOE LEAD Tool, US Census SAIFE	Income from DOE LEAD Tool by county in 2018, connected to counties served by the utility from EIA861 in 2018. To extrapolate to other years, income from DOE LEAD Tool scaled based on county-level median income from US Census SAIFE.
Additional notes				
To aggregate bill or burden to multiple utilities (i.e. a parent company or region), (1) aggregate the values in expenditure_bills_burden to that level, (2) aggregate housing_units_income to the same level, (3) combine the two data files, (4) calculate bill and burden using				

net_plant_balance

Data field	Definition	Units	Data Source	Methodology
parent_name	Name of ultimate parent company		RMI	
utility_name	Name of utility		RMI	
respondent_id	Utility ID from FERC		FERC Form 1	
year	Reporting year		FERC Form 1	
FERC_class	FERC technology classification, modified by RMI		FERC Form 1, RMI	All FERC classifications come directly from FERC, except for "other_fossil" and "renewables", which are estimated components of the "other production plant" FERC classification. RMI used the "electric plant in service" and "accumulated provision for depreciation of electric utility plant" tables for the non-modified FERC classifications. To estimate original cost and accumulated depreciation of "renewables," RMI used plant-level FERC data tables. To estimate accumulated depreciation of "renewables," RMI tracked changes to original cost over time, and estimated additions to accumulated depreciation based on depreciation rates.
original_cost	Cumulative historical investment in plant components still in service.		FERC Form 1, RMI	
accum_depr	Accumulated depreciation of plant components still in service.		FERC Form 1, RMI	RMI estimated accumulated depreciation of asset retirement costs based on tracking historical changes to asset retirement costs and adding accumulated depreciation in each year based on depreciation rates. Then, RMI subtracted this estimate of accumulated depreciation of asset retirement costs from total accumulated depreciation to estimate accumulated depreciation of plant in service.
net_plant_balance	Remaining net plant balance of plant components still in service		FERC Form 1, RMI	= original_cost - accum_depr
ARC	Asset retirement costs		FERC Form 1, RMI	
ARC_accum_depr	Accumulated depreciation of asset retirement costs		FERC Form 1, RMI	RMI estimated accumulated depreciation of asset retirement costs based on tracking historical changes to asset retirement costs and adding accumulated depreciation in each year based on depreciation rates
net_ARC	Net remaining asset retirement costs		FERC Form 1, RMI	= ARC - ARC_accum_depr
Additional notes				
This table includes all "electric plant in service" components, which is not comprehensive of a utility's entire balance sheet. For the total balance sheet, see assets_earnings.				

operations_emissions_by_fuel

Data field	Definition	Units	Data Source	Methodology
parent_name	Name of ultimate parent company		RMI	
utility_name	Name of utility		RMI	
respondent_id	Utility ID from FERC		FERC Form 1	
year	Reporting year		EIA 860, EIA 923	
plant_name_eia	Plant name from EIA		EIA 860	
plant_id_eia	Plant ID from EIA (aka ORISPL)		EIA 860	
generator_id	Generator ID from EIA		EIA 860	
state	State that the plant is located in		EIA 860	
city	City that the plant is located in		EIA 860	
county	County that the plant is located in		EIA 860	
latitude	Latitude		EIA 860	
longitude	Longitude		EIA 860	

balancing_authority_code_eia		Code for Balancing Authority that the plant is located in	EIA 860	
balancing_authority_name_eia		Name of Balancing Authority that the plant is located in	EIA 860	
iso_rto_code		Code for Independent System Operator (ISO) or Regional Transmission Operator (RTO) that the plant is connected to		
nerc_region		NERC region that the plant is located in	EIA 860	
owned_or_total		A filter used in the RMI Utility Transition Hub Portal. "Owned" lines are utility-owned power plants. "Total" lines include Purchased Power, Energy Efficiency, and Demand Response.	RMI	
status		Operating status from EIA (end of year)	EIA 860	
	BU	Backup	EIA 860	
	CN	Cancelled	EIA 860	
	IP	Indefinitely postponed	EIA 860	
	L	Regulatory approvals pending	EIA 860	
	OA	Out of Service, expected to return to service in next year	EIA 860	
	OP	Operating	EIA 860	
	OS	Out of Service	EIA 860	
	OT	Other	EIA 860	
	P	Planned	EIA 860	
	RE	Retired	EIA 860	
	SB	Standby	EIA 860	
	T	Regulatory approvals received	EIA 860	
	TS	Construction complete, not yet in operation	EIA 860	
	U	Under construction, <50% complete	EIA 860	
	V	Under construction, >50% complete	EIA 860	
operating_month		Month that the generator began operating	EIA 860	
operating_year		Year that the generator began operating	EIA 860	
retirement_month		Month that the generator retired	EIA 860	
retirement_year		Year that the generator retired	EIA 860	
technology_EIA		Technology description from EIA	EIA 860	
technology_RMI		Technology description from RMI	RMI	technology_RMI is a more coarse technology grouping than technology_EIA, used to connect EIA and FERC datasets.
fuel_type_code		Fuel type code	EIA 923	
	AB	Agricultural By-Products	EIA 923	
	ANT	Anthracite Coal	EIA 923	
	BFG	Blast Furnace Gas	EIA 923	
	BIT	Bituminous Coal	EIA 923	
	BLQ	Black Liquor	EIA 923	
	CBL	Blended Coal	EIA 923	
	DFO	Distillate Fuel Oil	EIA 923	
	GEO	Geothermal	EIA 923	
	JF	Jet Fuel	EIA 923	
	KER	Kerosene	EIA 923	
	LFG	Landfill Gas	EIA 923	
	LIG	Lignite Coal	EIA 923	
	MSB	Biogenic Municipal Solid Waste	EIA 923	
	MSN	Non-biogenic Municipal Solid Waste	EIA 923	
	MSW	Municipal Solid Waste	EIA 923	
	MWH	Electricity used for energy storage	EIA 923	
	NG	Natural Gas	EIA 923	
	NUC	Nuclear	EIA 923	
	OBG	Other Biomass Gas	EIA 923	
	OBL	Other Biomass Liquids	EIA 923	
	OBS	Other Biomass Solids	EIA 923	
	OG	Other Gas	EIA 923	
	OTH	Other Fuel	EIA 923	
	PC	Petroleum Coke	EIA 923	
	PG	Propane Gas	EIA 923	
	PUR	Purchased Steam	EIA 923	
	RC	Refined Coal	EIA 923	
	RFO	Residual Fuel Oil	EIA 923	
	SC	Coal-based Synfuel	EIA 923	
	SGC	Synthesis Gas Derived from Coal	EIA 923	
	SGP	Synthesis Gas Derived from Petroleum Coke	EIA 923	
	SLW	Sludge Waste	EIA 923	
	SUB	Subbituminous Coal	EIA 923	
	SUN	Solar	EIA 923	
	TDF	Tire-Derived Fuel	EIA 923	
	WAT	Water	EIA 923	
	WC	Waste Coal	EIA 923	
	WDL	Wood Waste Liquids	EIA 923	
	WDS	Wood/Wood Waste Solids	EIA 923	
	WH	Waste Heat	EIA 923	
	WND	Wind	EIA 923	
	WO	Waste Oil	EIA 923	
	COAL	Coal	EIA 923	
	OIL	Oil	EIA 923	
	BIO	Biomass	EIA 923	

generation	Net generation	TWh	EIA 860, EIA 923	Generation from EIA923, allocated to each generator in EIA860 based on a priority of: (a) net generation from EIA923 generator-level data (b) net generation from EIA923 prime mover/fuel type data, allocated to all generators with the same prime mover and fuel type based on capacity then multiplied by ownership fraction of each generator by utility.
fuel_consumption	Energy content of fuel consumed	MMBtu	EIA 860, EIA 923	Fuel consumption from EIA923, allocated to each generator in EIA860 based on a priority of: (a) net generation from EIA923 generator-level data (b) net generation from EIA923 prime mover/fuel type data, allocated to all generators with the same prime mover and fuel type based on capacity then multiplied by ownership fraction of each generator by utility.
emissions_CO2	Emissions of carbon dioxide from fossil fuel combustion	MMT	EIA 860, EIA 923, EPA AMPD	= fuel_consumed [mmbtu] * emissions_factor [MMT of CO2/mmbtu] emissions_factor specific to each fuel_type_code
emissions_NOx	Emissions of nitrous oxides from fossil fuel combustion	metric tons	EIA 860, EIA 923, EPA AMPD	plant-level NOx emissions, allocated to each generator based on capacity, then multiplied by ownership fraction of each generator by utility.
emissions_SOx	Emissions of sulphur oxides from fossil fuel combustion	metric tons	EIA 860, EIA 923, EPA AMPD	plant-level SOx emissions, allocated to each generator based on capacity, then multiplied by ownership fraction of each generator by utility.
Additional notes				

operations_emissions_by_tech

Data field	Definition	Units	Data Source	Methodology
parent_name	Name of ultimate parent company		RMI	
utility_name	Name of utility		RMI	
respondent_id	Utility ID from FERC		FERC Form 1	
year	Reporting year		FERC Form 1	
plant_name_eia	Plant name from EIA		EIA 860	
plant_id_eia	Plant ID from EIA (aka ORISPL)		EIA 860	
generator_id	Generator ID from EIA		EIA 860	
state	State that the plant is located in		EIA 860	
city	City that the plant is located in		EIA 860	
county	County that the plant is located in		EIA 860	
latitude	Latitude		EIA 860	
longitude	Longitude		EIA 860	
balancing_authority_code	Code for Balancing Authority that the plant is located in		EIA 860	
balancing_authority_name	Name of Balancing Authority that the plant is located in		EIA 860	
iso_rto_code	Code for Independent System Operator (ISO) or Regional Transmission Operator (RTO) that the plant is connected to			
merc_region	NERC region that the plant is located in		EIA 860	
owned_or_total	A filter used in the RMI Utility Transition Hub Portal. "Owned" lines are utility-owned power plants. "Total" lines include Purchased Power, Energy Efficiency, and Demand Response.		RMI	

status		Operating status from EIA (end of year)		EIA 860	RMI considers "OP", "SB", and "BU" to be operating statuses for end-of-year capacity in the Utility Transition Hub Portal.
	BU	Backup		EIA 860	
	CN	Cancelled		EIA 860	
	IP	Indefinitely postponed		EIA 860	
	L	Regulatory approvals pending		EIA 860	
	OA	Out of Service, expected to return to service in next year		EIA 860	
	OP	Operating		EIA 860	
	OS	Out of Service		EIA 860	
	OT	Other		EIA 860	
	P	Planned		EIA 860	
	RE	Retired		EIA 860	
	SB	Standby		EIA 860	
	T	Regulatory approvals received		EIA 860	
	TS	Construction complete, not yet in operation		EIA 860	
	U	Under construction, <50% complete		EIA 860	
	V	Under construction, >50% complete		EIA 860	
technology_EIA		Technology description from EIA		EIA 860	
technology_RMI		Technology description from RMI		RMI	technology_RMI is a more coarse technology grouping than technology_EIA, used to connect EIA and FERC datasets.
capacity		Nameplate capacity	GW	EIA 860	Generator capacity from EIA860 generators table, multiplied by ownership fraction from EIA860 ownership table.
year_end_capacity		Nameplate capacity at end of year	GW	EIA 860	= capacity if plant is operational at the end of the year
generation		Net generation	TWh	EIA 860, EIA 923	Generation from EIA923, allocated to each generator in EIA860 based on a priority of: (a) net generation from EIA923 generator-level data (b) net generation from EIA923 prime mover/fuel type data, allocated to all generators with the same prime mover and fuel type based on capacity then multiplied by ownership fraction of each generator by utility.
potential_generation		The total potential generation of a generator, if the generator operated at its nameplate capacity at all times.	TWh	EIA 860, RMI	=capacity*number of hours in the year that the plant was online RMI assumed that generators that retire partway through a year are online until the 28th of the month in which they retire RMI assumed that generators that come online partway through a year are online starting on the first of the month in which they start operating
capacity_factor		The ratio of actual energy produced to its hypothetical maximum possible (a "utilization factor")		EIA 860, EIA 923	= generation / potential_generation
fuel_consumption		Energy content of fuel consumed	MMBTU	EIA 860, EIA 923	Fuel consumption from EIA923, allocated to each generator in EIA860 based on a priority of: (a) net generation from EIA923 generator-level data (b) net generation from EIA923 prime mover/fuel type data, allocated to all generators with the same prime mover and fuel type based on capacity then multiplied by ownership fraction of each generator by utility.
emissions_CO2		Emissions of carbon dioxide from fossil fuel combustion	MMT	EIA 860, EIA 923, EPA AMPD	= fuel_consumed [mmbtu] * emissions_factor [MMT of CO2/mmbtu] emissions_factor specific to each fuel_type_code (see operations_emissions_by_fuel for fuel_type_code)

emissions_NOx	Emissions of nitrous oxides from fossil fuel combustion	metric tons	EIA 860, EPA AMPD	plant-level NOx emissions, allocated to each generator based on capacity, then multiplied by ownership fraction of each generator by utility.
emissions_SOx	Emissions of sulphur oxides from fossil fuel combustion	metric tons	EIA 860, EPA AMPD	plant-level SOx emissions, allocated to each generator based on capacity, then multiplied by ownership fraction of each generator by utility.
Additional notes				
If aggregating capacity online at the end of the year as we do in the Utility Transition Hub, use the "year_end_capacity" field instead of the "capacity" field.				

revenue_by_tech

Data field	Definition	Units	Data Source	Methodology
parent_name	Name of ultimate parent company		RMI	
utility_name	Name of utility		RMI	
respondent_id	Utility ID from FERC		FERC Form 1	
year	Year			
technology	RMI's groupings of technologies		RMI	
steam	FERC classification of "Steam" electric generating plants. This is occasionally reported differently for individual utilities, but typically includes "Conventional Steam Coal" and "Natural Gas Steam Turbine" technologies.		RMI	
other_fossil	RMI refinement of FERC classification of "Other" electric generating plants. This category includes several types of gas plants (combined cycle, combustion turbine, internal combustion) all plants that use petroleum liquids for fuel, and other fossil fuel plants not included in the "steam" category.		RMI	Revenues for the FERC classification of "Other" plants are taken directly from FERC tables or calculated as described in the "component" methodology below. Then, "other_fossil" = "Other" - "renewables"
nuclear	FERC classification of "Nuclear" electric generating plants.		RMI	
hydro	FERC classification of "Hydraulic" electric generating plants.		RMI	
renewables	RMI refinement of FERC classification of "Other" electric generating plants. This category includes wind, solar, geothermal, and waste (municipal solid waste, landfill gas, waste biomass) plants.		RMI	Revenues for this category are based on estimates of depreciation and operation & maintenance expenses from plant-level tables in FERC form 1, and returns using capital balances from the assets_earnings table.
transmission	FERC classification of "Transmission" plant.		RMI	
distribution	FERC classification of "Distribution" plant.		RMI	
purchased_power	Purchased power		RMI	
other	Other physical and non-physical assets, including asset retirement obligations, tax assets, regulatory assets, construction work in progress, and other categories described on the assets_earnings tab.		RMI	
adjustment	Balancing item to account for difference between RMI's revenue requirement estimate and actual revenues collected.		RMI	
revenue_sub_component	RMI's categorization of revenue sub components based on the following groupings:		RMI	
depreciation_expense	Depreciation expense		RMI	
depreciation_expense_for_asset_retirement	Depreciation expense for asset retirement costs		RMI	
maintenance_expenses	Maintenance expenses		RMI	
operation_expenses	Operation expenses		RMI	
returns	Total returns on capital, including both interest expenses and shareholder returns		RMI	= asset_value * ROR_grossed_up asset_value from assets_earnings table, with corresponding revenue_component and asset ROR_grossed_up = ROE/(1-blended_tax_rate)*equity_ratio + ROR - ROE*equity_ratio blended_tax_rate = federal_tax_rate + state_tax_rate*(1-federal_tax_rate) state_tax_rate calculated as a weighted average of state tax rates, based on revenues in each state ROE and ROR from assets_earnings table
revenue_residential	revenue from residential customer class	\$	FERC Form 1, EIA 861, RMI	= revenue_total * revenue_residential/revenues_total revenues_residential and revenues_total from customers_sales table

revenue_total	revenue from all customer classes	\$	FERC Form 1, EIA 861, RMI	Most values taken directly from FERC Form 1 income statement and income statement detail tables (others described above). RMI estimated which lines would be included in revenue requirements; thus these values represent what revenues would have been if this year were used as a test year for a revenue requirement calculation.
Additional notes				

state_targets

Data field	Definition	Units	Data Source	Methodology
state	State			
year	Year the target_value of the target_type applies to (e.g. 80% GHG reduction by 2050 for New Jersey)			
year_type	Whether the year_type is a base, interim, or final year associated with the target			
legal_standard	Whether the target was passed through executive or legislative mechanisms		C2ES, NCSL, NREL, US Climate Alliance, DSIRE, state legislation	
enforcement_standard	Whether the target is mandatory or a goal (voluntary)			
target_type	Whether the target_value refers to a greenhouse gas (GHG) reduction or a renewable portfolio standard (RPS)			
target_value	The percentage reduction of GHGs or percentage of renewables required under an RPS			
Additional notes				

state_utility_policies

Data field	Definition	Units	Data Source	Methodology
state	State			
utility_name	Name of utility		RMI	
respondent_id	Utility ID from FERC		FERC Form 1	
securitization_policy	Status of securitization legislation for coal plant retirements			
market_indexing_policy	Status of market indexing legislation		C2ES, NCSL, NREL, US Climate Alliance, DSIRE, state legislation	
revenue_decoupling	Whether or not revenues are disassociated from electricity sales			
governor_party	Political party that the governor belongs to		Ballotpedia	
legislation_majority_party	Political party that controls the state legislature		Ballotpedia	
date_updated	Date data was updated			
Additional notes				
revenue_decoupling is utility-specific. All other data fields are state-specific.				

utility_information

Data field	Definition	Units	Data Source	Methodology
parent_name	Name of ultimate parent company		RMI	
parent_ticker	Ticker symbol, or stock symbol, of the stock for ultimate parent company		Yahoo! Finance	
parent_ISIN	International Securities Identification Number, a code for the securities issued by the ultimate parent company		Yahoo! Finance	
parent_LEI	Legal Entity Identifier of the parent company		GLEIF	
utility_name	Name of utility		RMI	
respondent_id	Utility ID from FERC		FERC Form 1	
utility_id_eia	Utility Code from EIA		EIA	
entity_type_EIA	Entity type from EIA		EIA 861	
utility_type_RMI	Type of utility		RMI	Characterization based on entity_type from EIA861, the types of assets owned by the utility, and the business model of the utility.
Additional notes				
The scope of utilities included in the RMI Utility Transition Hub is comprehensive of FERC Form 1 respondents.				

utility_state_map

Data field	Definition	Units	Data Source	Methodology
respondent_id	Utility ID from FERC		FERC Form 1	
utility_name	Name of utility		RMI	
state	State			
Additional notes				
The scope of utilities included in the RMI Utility Transition Hub is comprehensive of FERC Form 1 respondents.				