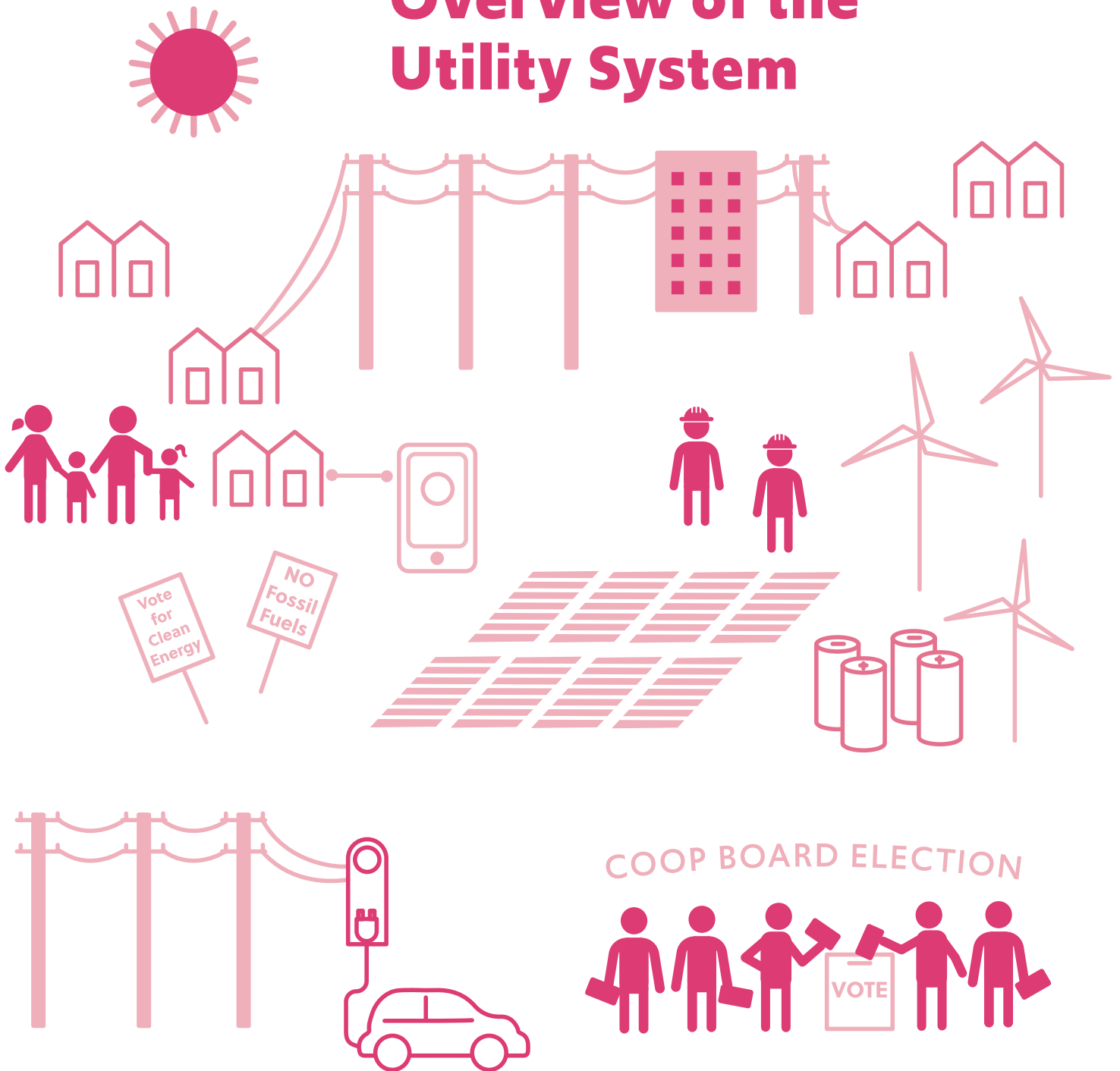


Policy Brief:

Overview of the Utility System



**THE Climate +
Clean Energy**

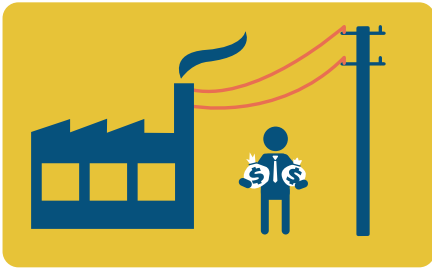
**EQUITY
FUND**

The current system of electricity services is primarily dependent on a centralized model developed in the early 20th century that is dominated by fossil-fueled based generation.

Over the last decade electricity sector and utilities have been undergoing rapid transformation. To understand both the equity issues at stake as well as if utility reform is required, it is important to understand how energy has been delivered to homes and businesses for the past century.

3 Main Types of Utilities:

There are three primary types of electric and gas utilities in the country—Investor Owned Utilities (IOUs), Public Power Utilities (POUs) and Rural Electric Cooperatives (Co-Ops). In large part this system is controlled by corporations (IOUs) that have historically placed short term profit over environmental and social concerns.



INVESTOR OWNED UTILITIES (IOU'S)

68%*



PUBLICLY OWNED UTILITIES (POU'S)

15%*



RURAL ELECTRIC COOPERATIVES (CO-OPS)

13%*

*percentage of United States utility market

Glossary

Renewable portfolio standard (RPS): A utility-level requirement that a certain percentage of electricity generation or sales be derived from renewable energy sources.

Renewable energy: Any energy source or technology that is non-extractive, such as solar, wind, storage, and hydroelectric power.

Clean eneVV mandate: A mandate that allows energy sources that may be “carbon-free” but are still harmful to frontline communities and are false solutions; such as nuclear or carbon capture and sequestration (CCS).

Renewable energy certificate (REC): A credit often used for RPS compliance that represents one megawatt-hour of electricity generated from renewable energy and fed into the grid.

Megawatt-hour: A measure of electricity used over time representing one megawatt (or 1,000 kilowatts) of electricity used continuously for one hour.

Distributed energy resource (DER): A small, grid-connected unit used for electricity generation or storage that is sited close to customers and operated locally (ie. rooftop solar).

Investor-owned utility: A type of energy provider that must provide energy to customers and a financial return to investors and executives.

Municipal utility: A publicly-owned energy provider that is a division of local government.

Electric cooperative: Consumer-owned utility.

Independent power producer: A privately-owned power plant that sells electricity to utilities and end users.

Community choice aggregation: A program that allows local governments to purchase and/or generate power for consumers within a joint service territory, with transmission and distribution managed by an investor-owned utility.

Tribal electric utility: An energy provider owned and operated by a tribal nation.

Energy burden: The share of annual household income used to pay annual home energy bills.

Stranded asset: Energy infrastructure that is retired before its initial projected lifetime.

Peaker plant: A power plant that is used only when there is high demand for electricity, as opposed to baseload plants that provide consistent power to meet minimum demand.

Integrated resource plan (IRP): A comprehensive planning process to evaluate the most efficient, affordable, and reliable mix of energy sources, over a 20-year timeline.

The Rise of Investor Owned Utilities: A brief history of how the current energy system developed

The current system of electricity services is primarily dependent on large-scale, fossil-fueled based generation, which is controlled by corporations that have placed short term profit over environmental and social concerns.



The largest actors in this system are Investor Owned Utilities (IOU's); IOU's are investor owned companies that need to provide financial return to shareholders. **Today, there are more than 3300 utilities across the country, with around 200 of them providing energy to most users in the country.**¹

The IOU model relies on energy generation at large fossil-fuel power plants, such as natural gas and coal-fired power plants, which is then distributed via extensive transmission and distribution lines to ratepayers - the homes and businesses that need energy. Most IOU's are vertically integrated, meaning they own all aspects of the transmission, distribution, and generation.² **This highly centralized system has energy and information flows that only go in one direction:** from the generation source, to the utility, to the customer, which in effect creates a state allowed monopoly.

IOU have a monopoly in the territories they serve. Under the "regulatory compact" developed between state governments and utilities in the mid 20th century, in exchange for a monopoly on service provision, IOU's are regulated by state commissions. The responsibility of the commissions are to ensure customers are supplied with reliable electricity at reasonable rates.

Most utilities rely on financing under a "cost of service regulation" model. Because they are a regulated monopoly, they are prevented from profiting on their main product, energy. **The only way they can make money is by charging rates that cover the costs of infrastructure investments,** which must be approved by the regulatory commissions. This creates an inherent incentive to build large-scale infrastructure so that they can increase rates to provide a profit for shareholders and have financing available.³ Furthermore, because utilities earn revenue on a per-kilowatt-hour basis, they also have a short-term interest in selling as much energy as possible, rather than reducing energy usage.⁴

Utilities were deregulated in the 1970's after a series of large-scale power outages. Deregulation introduced wholesale competition in electricity production, allowing a wider range of facilities that produced power to sell energy, often across state lines. Deregulation also introduced Independent System Operators (ISOs) and Regional Transmission Organizations (RTOs), independent businesses that manage the newly created interstate markets and transactions.⁵

There is a general belief that deregulation led a decline in services. Some utilities used deregulation as an excuse to have utility customers pay off their debt from poor infrastructure investments, the cost of which were leading to financial solvency issues, effectively creating a public bail-out of the IOU's.⁶ With less government oversight, deregulation also enabled massive energy market manipulation by Enron corporation, leading to the California energy crisis of 2001.⁷ Since this time, further deregulation efforts came to a halt.

¹ <https://www.statista.com/statistics/237773/the-largest-electric-utilities-in-the-us-based-on-market-value/>

² <file:///Users/amy/Documents/EnergyDemocracy-2-star-Final.pdf>

³ <https://www.vox.com/2016/6/29/12038074/power-utilities-suck>

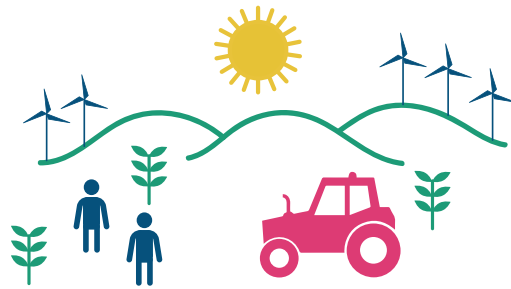
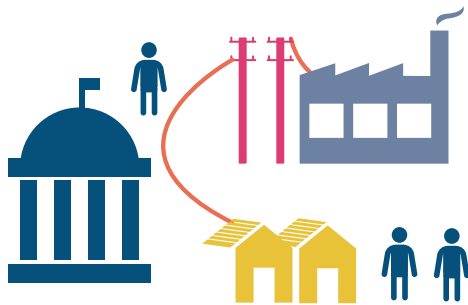
⁴ <https://www.edf.org/sites/default/files/documents/driving-environmental-outcomes.pdf>

⁵ <https://www.ucsusa.org/clean-energy/how-electricity-grid-works>

⁶ <https://www.corp-research.org/e-letter/energy-deregulation>

⁷ https://www.ppic.org/content/pubs/report/R_103CWR.pdf

Other Models



Public Owned Utilities (POU's)

Public Owned Utilities (POUs) are another of the three primary types of electric utilities in the U.S. Like public schools and libraries, public power utilities are owned by the community and run as a division of local government. These utilities are governed by a local city council or an elected or appointed board. **Community residents have a direct voice in utility decisions, including the rates it charges and its sources of electricity.**

POUs are community-owned, not-for-profit utilities that provide electricity and gas to customers. Community-owned POUs have been around since the beginning of customers getting gas and electric service more than 100 years ago. Collectively, these utilities serve 1 in 7 electricity customers across the U.S. and operate in 49 states—all except Hawaii.

POU's infrastructure projects are often funded through the issue of tax-exempt municipal bonds. Funding through municipal bonds means community members invest in their electricity infrastructure—such as new generation equipment, transmission lines, and distribution system upgrades.

A Rapidly Changing System

The old system of utility energy is rapidly changing, for multiple reasons. For one, the existing system is old and not built to handle growth where people have been moving. More significantly, greater environmental awareness, and new technologies have ushered in a completely new context to which all three types of utilities must adapt. Increased consumer demand and regulatory requirements for more renewable energy, and cleaner air have introduced very different mandates from the traditional utility focus of reliability and low cost. These mandates are most often at odds with the dominant model of IOU financing and profit motive.

Rural Electric Cooperatives (Co-ops)

Rural Electric Cooperatives (Co-ops) are not-for-profit electric cooperatives and play a unique role in providing much of the power used by rural America. There are more than 900 cooperatives in 47 states. **Co-ops generate approximately 5% of the total electricity produced in the U.S. each year, while owning and maintaining 42% of the nation's electric distribution lines, covering 56% of the nation.**

Similar to POUs co-ops are owned by the customers they serve and are incorporated under the laws of the states within which they operate. Each co-op is governed by a board of directors elected from the membership which sets policies and procedures that are implemented by the cooperatives' management.

There are two related parts of a Rural Electric Co-op, the distribution cooperatives are the foundation of the electric cooperative network. They are the direct point of contact with the member-owners in the delivery of electricity and other services. Generation & Transmission cooperatives (G&Ts) provide wholesale power to distribution co-ops through their own generation or by purchasing power on behalf of the distribution members.

Utilities must now transition their system to help facilitate a renewable energy future. They must phase out of old fossil fuel power plants and rapidly increase renewable generation. **New and "smarter" distribution lines are needed to connect new distributed renewable sources into the grid.** Increasingly, utilities are required to provide power and infrastructure for electric vehicles, which are needed to reduce transportation emissions—the nation's largest source of GHGs.



Local Energy

There are also new energy technologies that do not require the same level of infrastructure that the old utility model requires. These types of technologies are called “Distributed Energy Resources (DERs),” **today power generation does not have to come from one centralized location**; many different people or non-utility businesses can generate renewable energy or provide energy services. Additionally, larger and more efficient means of energy storage—the capacity to store energy that is not needed at the time of generation so that it can be deployed when and where there is demand - have seen rapid advances, and are critical to expanding the overall amount of both small and large scale renewables.⁸

Many new consumer technologies like smart appliances and smartphone apps allow people to manage their energy usage much more directly, and also reduce the need for large-scale, costly transmission lines.⁹ They also allow for more communication between consumers and energy providers, in contrast to the one-way flow of information in the 20th century model of energy provision.

Energy Democracy

Simultaneous to these changes in the conditions of energy provision, is the **growing focus of many community groups across the country on energy issues**. Groups are increasingly organizing for and winning policies and programs that increase distributed energy generation, create alternative ownership models, and demand that historic inequalities be addressed. **This model, which promotes energy justice over profits** is discussed in a separate policy brief.

Finally, climate change is creating a specific set of challenges for utilities. Utilities have made investments in fossil-fuel generation and infrastructure that is becoming increasingly obsolete because of consumer demand, increased renewable energy mandates, and new technologies. **How to address the costs of safely shutting down and remediating these ‘stranded assets’** is a critical question, and often utilities have sought rate-payer or public bail-outs, and are likely to continue to do so.¹⁰ **In the west, IOUs have been found responsible for causing wildfires through negligently maintained infrastructure**, and this threat is exacerbated by stressed environmental conditions under climate change. For example, Pacific Gas & Electric (the Northern California IOU) is facing \$30 billion dollars in liabilities for its role in disastrous 2017 and 2018 wildfires throughout California.¹¹

All of these changes add up to a new context for energy generation and distribution. This evolved context will inevitably include many more and different entities playing a leading role, including consumers, this is in contrast to the centralized corporate monopoly model of the 20th century. The need for community led and centered planning for the system of the future is critical to the United States having a more equitable and just energy system in the 21st century.

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⁸ <https://www.ucsusa.org/clean-energy/how-energy-storage-works>

⁹ <https://ilsr.org/electricitys-unnatural-monopoly/>

¹⁰ <https://www.vox.com/energy-and-environment/2015/9/3/9254213/ohio-utility-coal-rates>

¹¹ <https://www.forbes.com/sites/arielcohen/2019/02/07/part-1-pge-gets-burned-for-california-wildfires/#6cb1c2e21a8f>