

ACEC Private Industry Brief

Energy & Utilities

Fall 2022

Market Scope

The purpose of this brief is to focus on the energy and utilities market, a part of ACEC's award-winning *Private Industry Briefs*. The **power** market is comprised of electric, distribution, gas, and oil. Facilities in the power market are power plants (nuclear, oil, gas, coal, and wood), nuclear reactors, hydroelectric plants, thermal, and wind and solar energy facilities. The distribution sector is electrical substations, switch houses, transformers, and transmission lines. The **water supply** market consists of plants, wells, lines, pump stations, reservoirs and tanks and towers. This includes filtration, treatment, culverts, tunnels, water lines, and storage. The brief follows the construction definitions as provided by the U.S. Census Bureau.

Top Clients

The list below features the top 10 leading water and sewer utilities companies in the U.S. based on sales revenue. Public authorities use private firms to design, build, and operate public water and wastewater systems. According to the National Association of Water Companies, 73 million people are served by the private water industry and more than 2,000 facilities operate under public-private partnerships.

1. American Water Works Company, Inc. pu
2. New York City Municipal Water Finance Authority pu
3. Veolia Water North America Operating Services, LLC
4. Essential Utilities, Inc.
5. Los Angeles Department of Water and Power
6. Suez Environment
7. New Jersey-American Water Company, Inc.
8. California Water Service Group
9. District of Columbia Water & Sewer Authority
10. American States Water Company

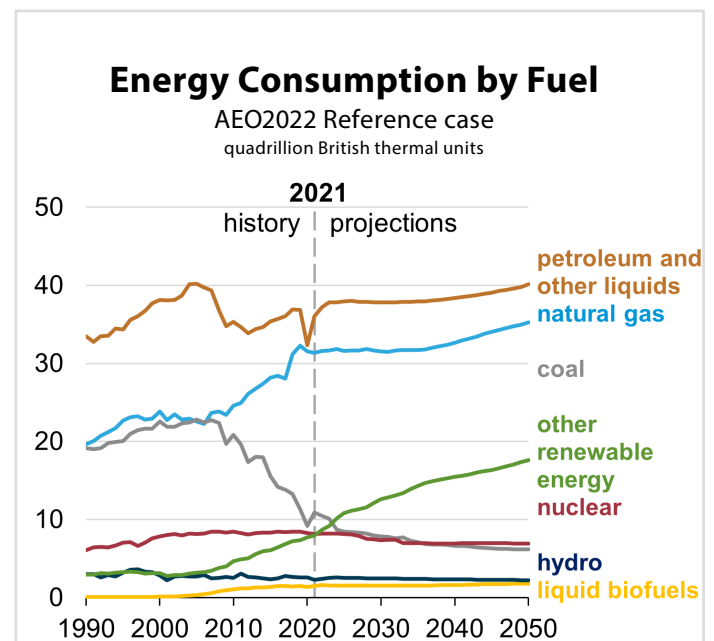
Source: Statista & AquaFed

5 Current Market Trends

- ▶ **1. Sector's Slow to Transition Away from Liquids:** Petroleum, natural gas and other liquids led energy consumption in the U.S. from 1990 to 2021 and continued growth is projected through 2050, according to the U.S. Energy Information Administration's (EIA) *Annual Energy Outlook 2022* (see chart below). Renewable energy is the fastest growing consumed source and is projected to double by 2050 but remains well below the consumption rates of other liquids. Transportation and industrial sectors lead liquid consumption and have the highest energy-related CO2 emissions in the U.S., according to EIA. They are the slowest sectors to transition to electric equipment.

Globally, demand for natural gas is expected

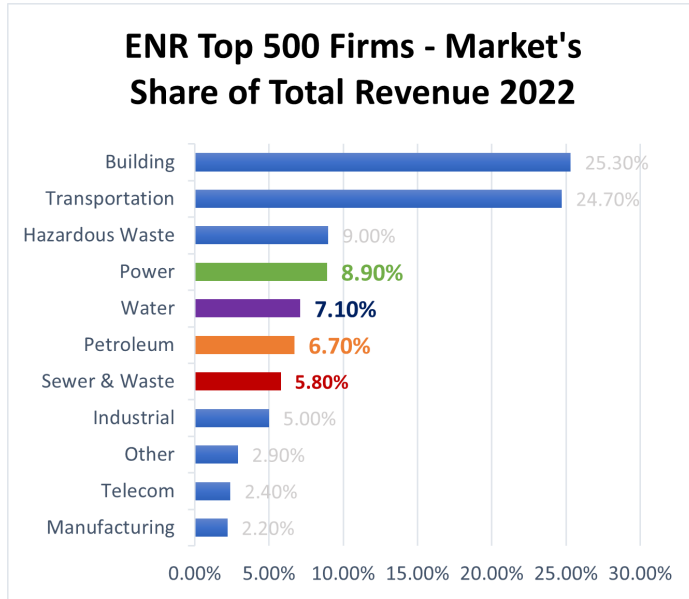
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Source: U.S. Energy Information Administration (EIA)

Current Market Trends, *continued*

to decline in 2022, made tighter by the 2022 Russian invasion of Ukraine and Europe's desire to replace Russian pipeline gas supply, according to the International Energy Agency (IEA) *Gas Market Report, Q3-2022*. Slowing natural gas demand, however, does not mean a quicker energy transition.



Source: ENR

- ▶ **2. Energy & Utilities Pick Up Market Share:** Each year the Engineering News Record (ENR) announces *The Top 500 Design Firms Report*, a ranking of AEC design firms based on revenue performed the prior year. For 2022, firms' market share of total revenue was primarily led by building and transportation sectors. However, the power, water, petroleum, and sewer and waste sectors made up a cumulative 28.5% of total market share (see chart above). According to ENR, 70.1% of firms' revenue rose from 2021 to 2022 and firms' gross revenue rose 11.1% on average while increasing profit margins. The top five design firms' for each energy and
- ▶ **3. Renewables Become Affordable:** Historically coal has been the least expensive energy source in the U.S., and more than one-fourth of total known world coal reserves are in the U.S., according to The National Academies of Sciences, Engineering and Medicine. Renewables have become the cheaper option, thus propelling the energy transition forward and away from fossil fuels. Renewable power alternatives have been recently reported to bring \$156 billion in savings to emerging economies, according to the International Renewable Energy Agency and funding from the Inflation Reduction Act (IRA) and associated tax credits are expected to double domestic

wind and solar generation through 2030 with \$370 billion in funding, according to FMI's *Q4 2022 Outlook*. Renewables are globally poised for long term growth.

- ▶ **4. More Opportunity for Private Investments:** Utilities are expected to place more emphasis on resilience strategy in the year ahead due to the recorded frequency of extreme weather events and climate change recorded in 2021, according to Deloitte's *2022 Power and Utilities Industry Outlook*. The survey reported weather related losses of \$1 billion per event and 51% reported extreme weather impacting the reliability of electricity delivery. This is where public-private partnerships (P3's) can be a positive source of funding. One example of this type of P3 in action is the District of Columbia Power Line Undergrounding project (DC PLUG), which is a partnership between the District and Pepco to provide reliable and resilient electricity to DC's consumers. Dry utility engineering, subsurface utility engineering (SUE), and surveying, are a few services required for this type of project.
- ▶ **5. Water Supply Sector Gets a Boost:** The water supply market became one of the top-five hottest markets, in 2022 with 12.8% year-over-year growth, according to August 2022 construction-put-in-place data, released by the U.S. Census Bureau in October 2022. The need for water infrastructure has accelerated in recent years due to the aging infrastructure of pipes and new funding from the Infrastructure Investment & Jobs Act (IIJA). The IIJA will provide \$55 billion toward clean drinking water initiatives including replacing all lead pipes and service lines. According to the US Environmental Protection Agency (EPA) and McKinsey "water-pipe replacement rates will peak in 2035 at 16,000 to 20,000 miles of pipes replaced per year, four times the current annual replacement rate."

Rank 2022	Top 5 Design Firms by Sector			
	Power	Water	Petroleum	Sewer & Waste
1	Burns & McDonnell	Tetra Tech Inc.	Fluor	Jacobs
2	Black & Veatch	Jacobs	Wood	Tetra Tech Inc.
3	Power Engineers Inc.	AECOM	Jacobs	AECOM
4	Jacobs	CDM Smith	Worley	Brown and Caldwell
5	Sargent & Lundy	HDR	Intertek-PSI	SCS Engineers

Source: ENR Top 500 Design Firms 2022

Government Affairs Action

ACEC advances policy and legislation to promote member firm interests related to climate, clean energy, sustainability, and resilience; fund and implement water infrastructure programs; and improve the efficiency of the permitting process.

The Department of Energy has been very active in recent weeks with notices of funding opportunities and other announcements related to IJIA implementation. In addition, the IRS recently issued six notices requesting public input on the climate and clean energy tax incentives in the Inflation Reduction Act.

Among the key programs of interest that ACEC is tracking:

- ▶ **Clean Hydrogen Hubs, \$7 B:** Funds to create 6-10 regional clean hydrogen hubs (H2Hubs) across the country. Concept papers are due to DOE in November, with complete grant applications due in April 2023.
- ▶ **Grid Resilience, \$10.5 B:** DOE has issued a Request for Information from stakeholders on a program to enhance the resilience and reliability of America's electric grid by upgrading transmission and distribution systems and to facilitate the deployment of clean energy across the country.
- ▶ **Rural Energy Systems, \$1 B:** Funds to improve energy systems and generation in rural or remote communities, known as the Energy Improvements in Rural or Remote Areas (ERA) program. Funds will improve cost-effectiveness, upgrade transmission and distribution lines, reduce greenhouse gas emissions, modernize electric facilities, develop microgrids and promote energy efficiency.
- ▶ **Carbon Management \$4.9 B:** Funds to manage carbon pollution and reduce CO2 emissions. Three recent notices of funding include the Carbon Storage Validation and Testing (\$2.25 B), Carbon Capture Demonstration Projects Program (\$2.54 B) and Carbon Dioxide Transport Engineering and Design (\$100 M).
- ▶ **Transportation Infrastructure, \$2.1 B:** Funds for Carbon Dioxide Transportation Infrastructure Finance and Innovation (CIFIA) program for CO2 transportation infrastructure projects including pipelines, rail, ships, barges, ground shipping, and storage. DOE has invited letters of interest from potential applicants.

ACEC plans to submit industry perspectives to the Department of Treasury on implementation of the climate and clean energy provisions in the Inflation Reduction Act, including the existing and new production tax credits and the manufacturing facility incentives.

Business Development Insight

Hydrogen Hubs Get Funding

The Infrastructure Investment and Jobs Act (IIJA) will allocate \$65 billion into power and grid markets. Of that \$9.5 billion is for clean hydrogen initiatives.

According to the U.S. Department of Energy (DOE) funding is allocated as follows.

- ▶ Regional Clean Hydrogen Hubs; **\$8 billion**
- ▶ Clean Hydrogen Electrolysis Program; **\$1 billion**
- ▶ Clean Hydrogen Manufacturing Recycling Initiatives; **\$500 million**

A hydrogen hub consists of hydrogen production, storage, and demand. IIJA funding and recent H2Hub funding will allow for 6-10 regional hubs. The DOE will oversee the location selection. See the map on page 4 for potential hydrogen hub regions based on core emission areas, as identified by the Great Plains Institute. These locations include:

- Pacific Northwest
- Northern California
- Southern California
- Utah
- Rockies
- Permian
- Houston
- Louisiana
- Illinois
- Michigan/Ohio
- Kansas/Oklahoma
- Western Pennsylvania

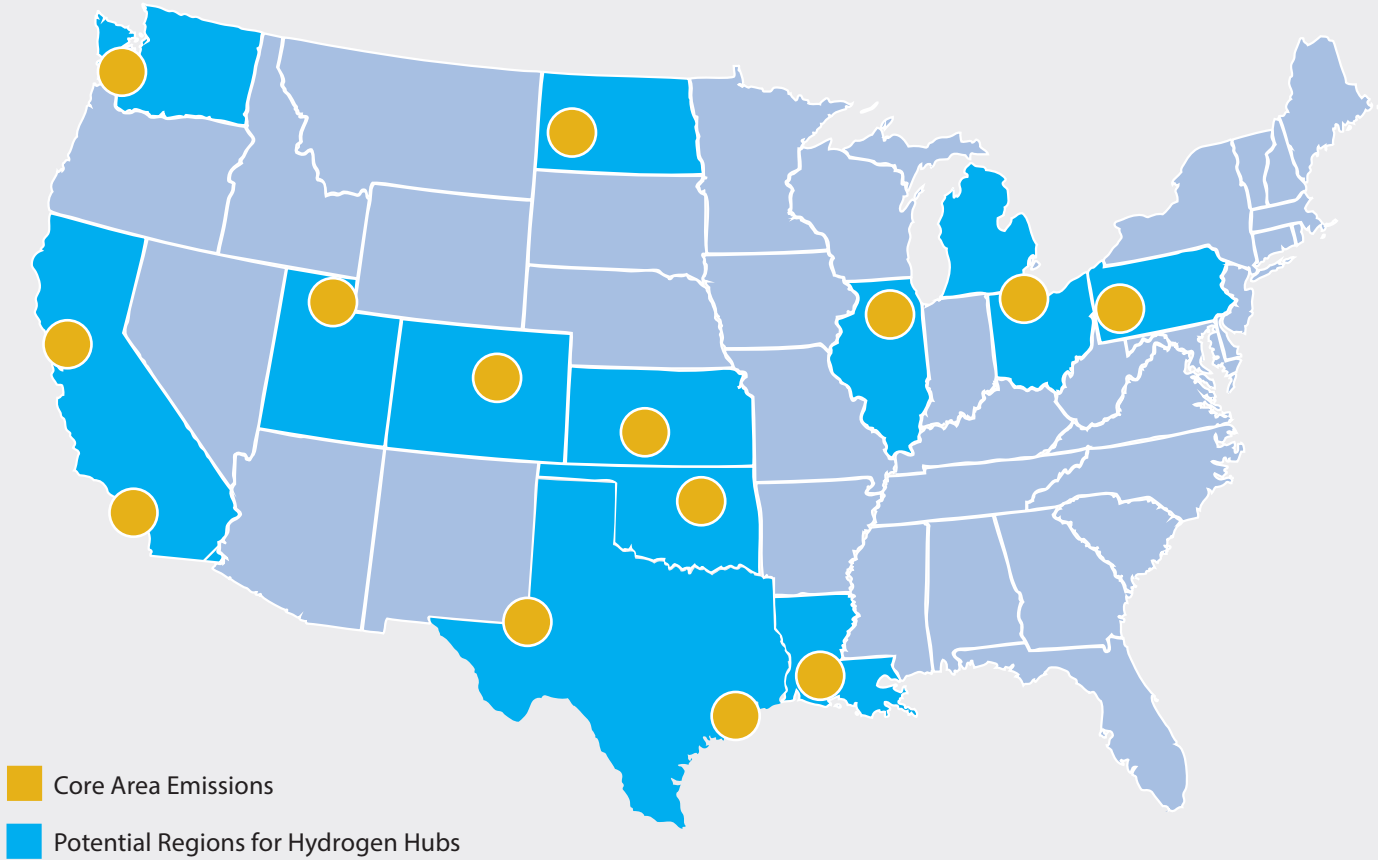
The DOE also has a hydrogen and fuel cell technologies office with a program called the *H2 Matchmaker* which is "an online information resource to assist hydrogen suppliers and users with self-identifying collaborators and opportunities to expand development toward realizing regional hydrogen hubs."

The tool includes clean H2 producers, H2 consumers, infrastructure, other stakeholders, and national laboratories. The infrastructure dashboard contains asset locations for bulk hydrogen delivery service, storage, CO2 capture and/or storage facilities, hydrogen compatible pipelines, and fueling stations.

More information can be found here:

<https://www.energy.gov/eere/fuelcells/h2-matchmaker>

Potential U.S. Hydrogen Hub Locations



Source: Great Plains Institute

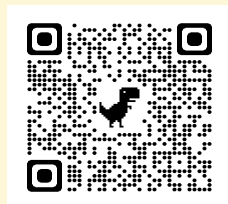
Private Market Symposium:

Join us in Houston, Texas

On November 15, 2022, ACEC will convene clients, economists, policy makers and engineering leaders in Houston, Texas for an in-depth look into the energy market. Sessions include:

- **The Energy Transition - Economic Lens**
- **The Future of Hydrogen**
- **EVOLVE Houston - The Electric Revolution**
- **Decarbonizing Commercial Real Estate**
- **Energy Infrastructure & Battery Storage**

To learn more about private markets scan the QR code:



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Further coverage can be found in *Engineering Inc.'s* regular column "The Private Side" as well as ACEC's quarterly economic reviews.

