Trends Shaping the Future of the Power Industry

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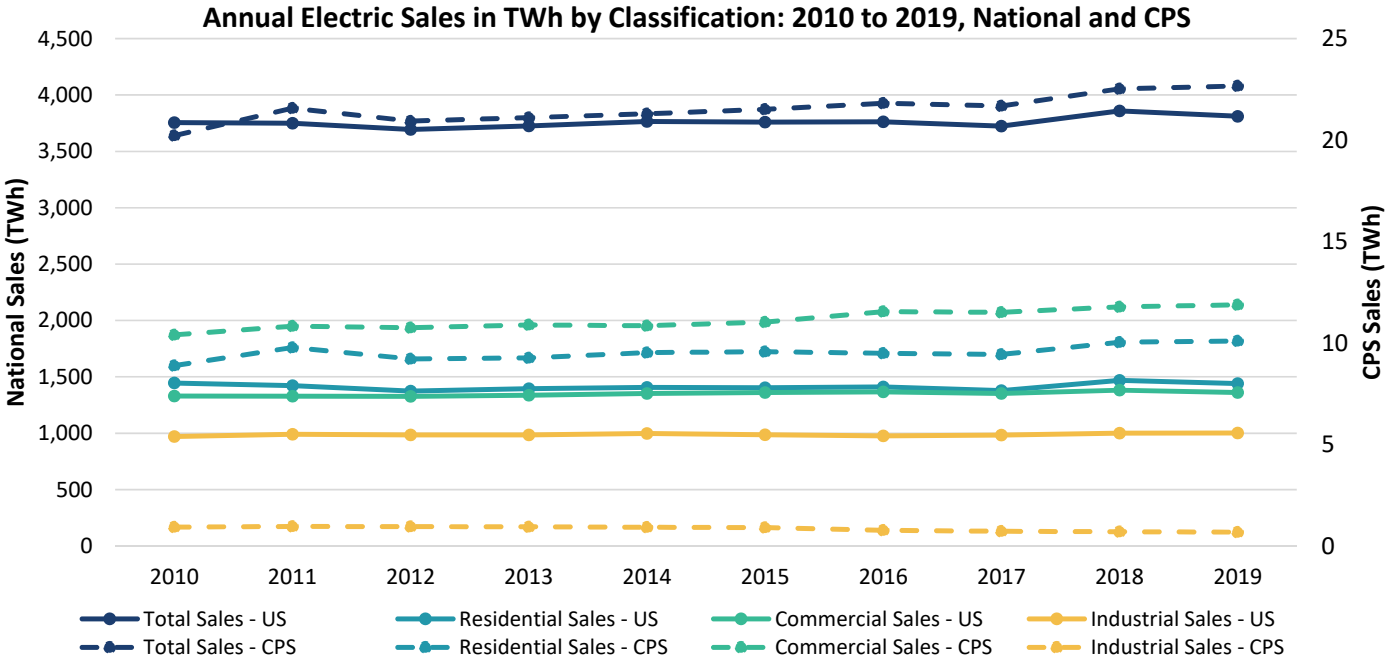
Table of Contents

TREND 1: FLAT TO DECLINING LOAD GROWTH

Load growth has been flat over the past decade

This is mostly due to the success of energy efficiency programs, organic conservation and proliferation of distributed energy resources (“DERs”)



Annual Growth Rate in Load (%)

Category	US	CPS
Total Sales	0.17%	1.28%
Residential Sales	-0.04%	1.43%
Commercial Sales	0.25%	1.49%
Industrial Sales	0.35%	-3.38%

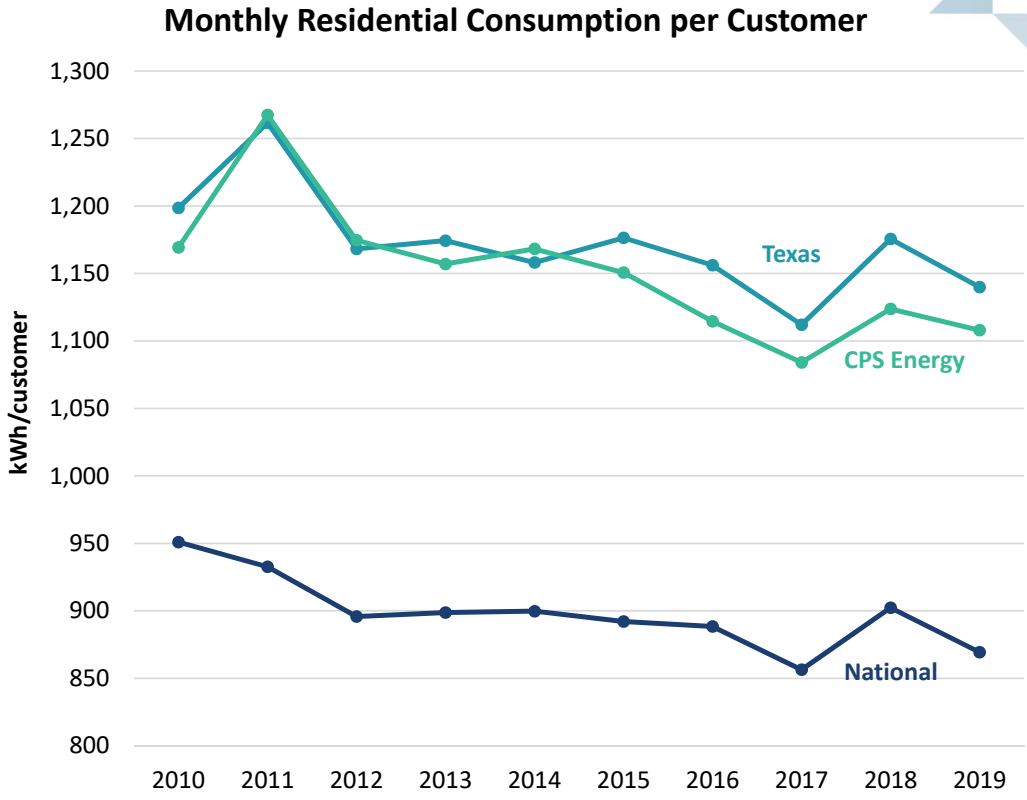
Sources and Notes: Retail Sales of Electricity, Electricity Data Browser, Energy Information Administration & Annual Electric Power Industry Report, Form EIA-861, Energy Information Administration. These sales figures are not weather normalized.

TREND 1: FLAT TO DECLINING LOAD GROWTH

Average Residential Consumption by Region

Average monthly consumption per customer declined since 2010 in all regions

- The annual consumption per customer has declined by 5.2% for CPS Energy's residential customers
- The annual consumption per customer for all residential customers in the US has declined by 8.6% between 2010 and 2019
- The annual consumption per customer for residential ratepayers who live in Texas has fallen by 4.9% between 2010 and 2019
  - Texas customers consume considerably more electricity than the national average due to regional differences in climate and regulatory structures
  - Over the past decade, Texas customers have consumed 47% more electricity than the national average



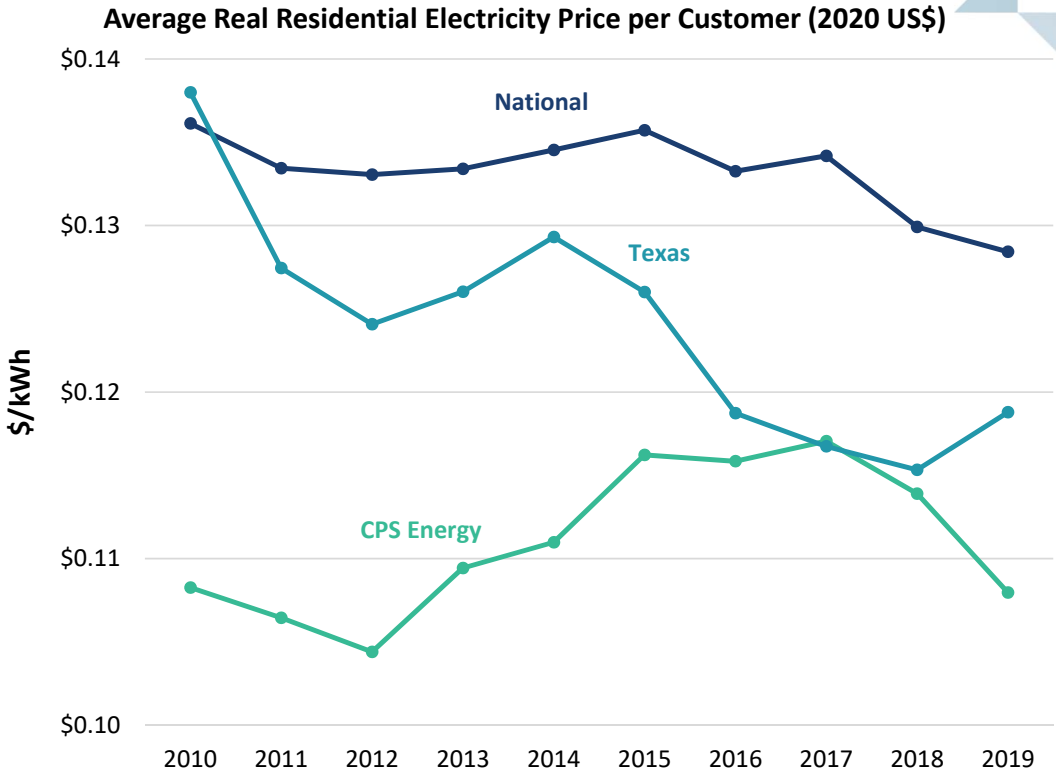
Source: Annual Electric Power Industry Report, Form EIA-861, US Energy Information Administration.

TREND 1: FLAT TO DECLINING LOAD GROWTH

Average Real Residential Electricity Prices by Region

Since 2010, the average real residential electricity price for the US as a whole and CPS Energy have trended in different directions

- The average real electricity price for CPS Energy's residential customers was roughly the same in 2019 as it was in 2009 ($0.11/kWh)
  - The real residential electricity price for CPS Energy fell from 2010 to 2012 and 2017 to 2019 and increased from 2012 to 2017
- The average residential electricity price at the National level fell by almost 6% ($0.14/kWh in 2010 to $0.13/kWh in 2019) and has consistently trended downwards
- The average real residential electricity price for Texas ratepayers fell from $0.14/kWh in 2010 to $0.12/kWh in 2019, a decline of almost 14%
- On a per kWh basis, the price of electricity for CPS Energy residential customers was 17% less than the national average between 2010 and 2019



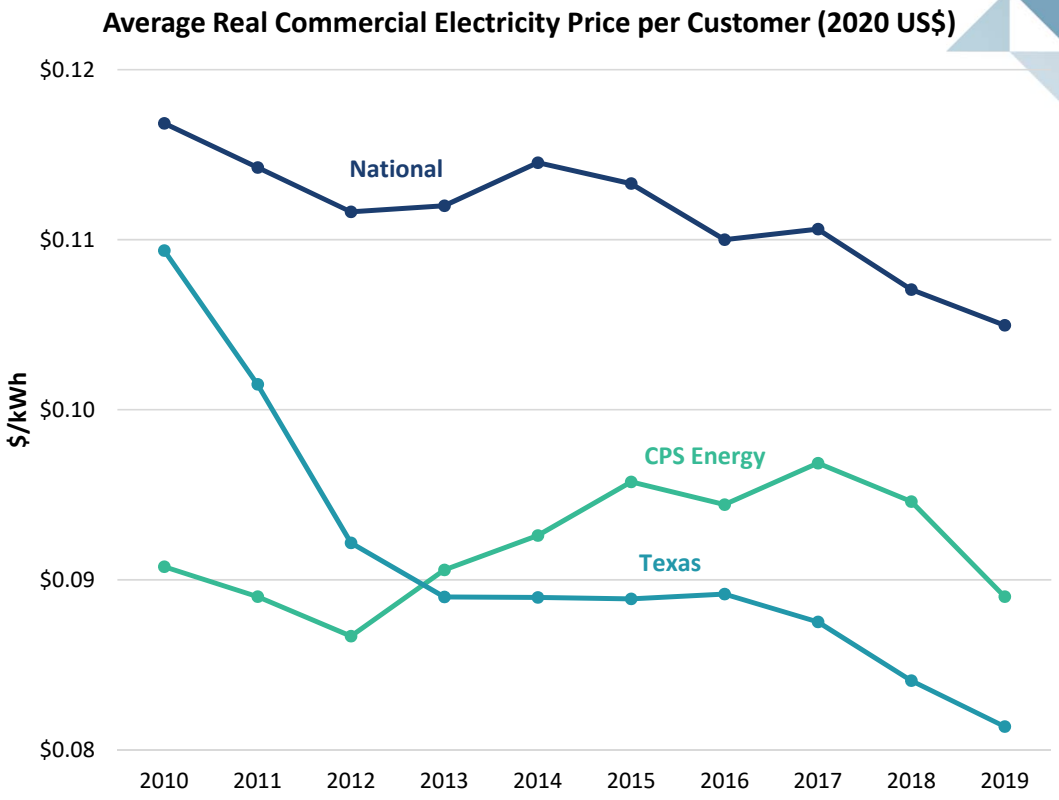
Sources and Notes: Annual Electric Power Industry Report, Form EIA-861, Energy Information Administration. These electricity prices were estimated by dividing total residential revenues by total residential sales.

TREND 1: FLAT TO DECLINING LOAD GROWTH

Average Real Commercial Electricity Prices by Region

Since 2010, the average real commercial electricity price for the US as a whole and CPS Energy have trended in different directions

- The average real electricity price for CPS Energy's commercial customers was roughly the same in 2019 as it was in 2009 ($0.09/kWh)
  - The real commercial electricity price for CPS Energy fell from 2010 to 2012 and 2017 to 2019 and increased from 2012 to 2017
- The average commercial electricity price at the National level fell by more than 10% ($0.12/kWh in 2010 to $0.10/kWh in 2019) and has consistently trended downwards
- The average real commercial electricity price for Texas ratepayers fell from $0.11/kWh in 2010 to $0.08/kWh in 2019, a decline of over 25%
- On a per kWh basis, the price of electricity for CPS Energy commercial customers was 17% less than the national average between 2010 and 2019

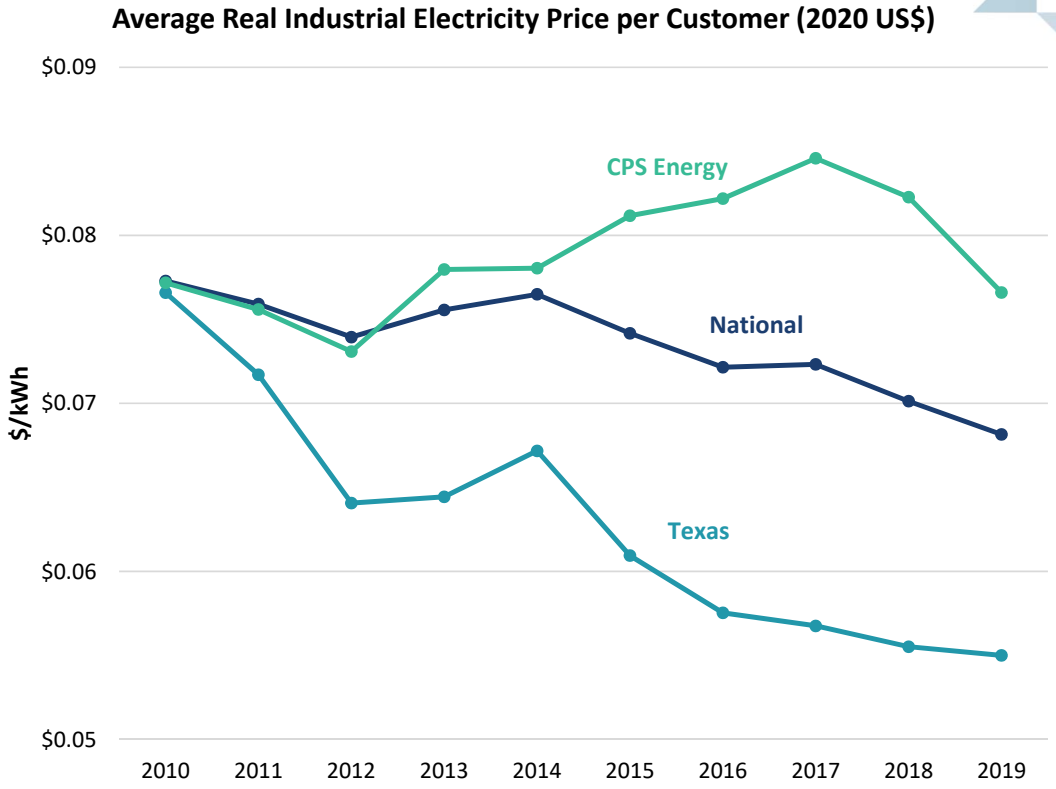


Sources and Notes:
Annual Electric Power Industry Report, Form EIA-861, Energy Information Administration. These electricity prices were estimated by dividing total commercial revenues by total commercial sales.

Average Real Industrial Electricity Prices by Region

Since 2010, the average real industrial electricity price for the US as a whole and CPS Energy have trended in different directions

- The average real electricity price for CPS Energy's industrial customers was roughly the same in 2019 as it was in 2009 ($0.08/kWh)
  - The real industrial electricity price for CPS Energy fell from 2010 to 2012 and 2017 to 2019 and increased from 2012 to 2017
- The average industrial electricity price at the National level fell by more than 12% ($0.08/kWh in 2010 to $0.07/kWh in 2019) and has consistently trended downwards
- The average real industrial electricity price for Texas ratepayers fell from $0.08/kWh in 2010 to $0.06/kWh in 2019, a decline of approximately 28%

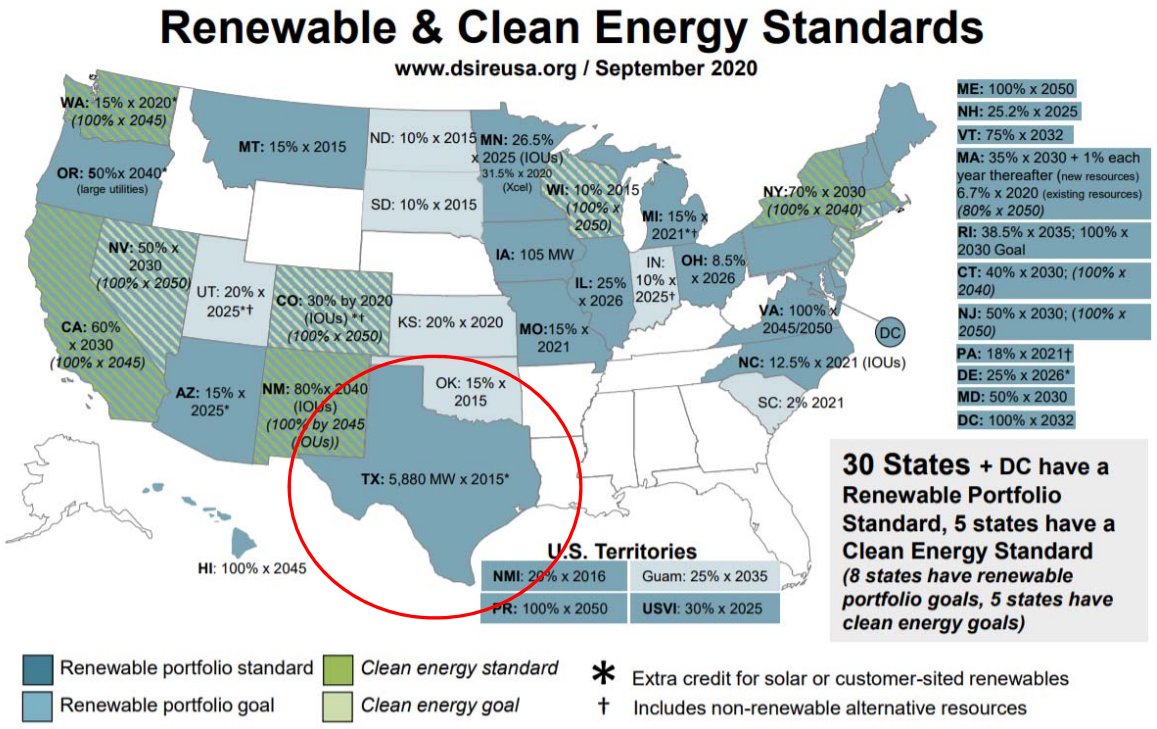


Sources and Notes:
Annual Electric Power Industry Report, Form EIA-861, Energy Information Administration. These electricity prices were estimated by dividing total industrial revenues by total industrial sales.

TREND 2: INCREASING RENEWABLE CAPACITY

Over 30 states and DC have renewable and clean energy standards

- Texas Renewable Energy Policy
  - Despite having a relatively less stringent Renewable Portfolio Standard (5,880 MW by 2015), economics and market forces have made wind and solar an attractive option in Texas
  - Renewable penetration (28 GW in 2019) has exceeded the Texas RPS standard
- The federal government currently offers production, investment, energy efficiency, and electric vehicle tax credits to support the growth of clean energy
- Individual utilities in Texas have also made commitments to clean energy
  - CPS Energy committed to an 80% reduction in net carbon emissions by 2040 and to become carbon neutral by 2050
  - El Paso Electric committed to a 40% reduction in carbon footprint from 2015 levels by 2035
  - Austin Energy has committed to 100% carbon-free electricity by 2035

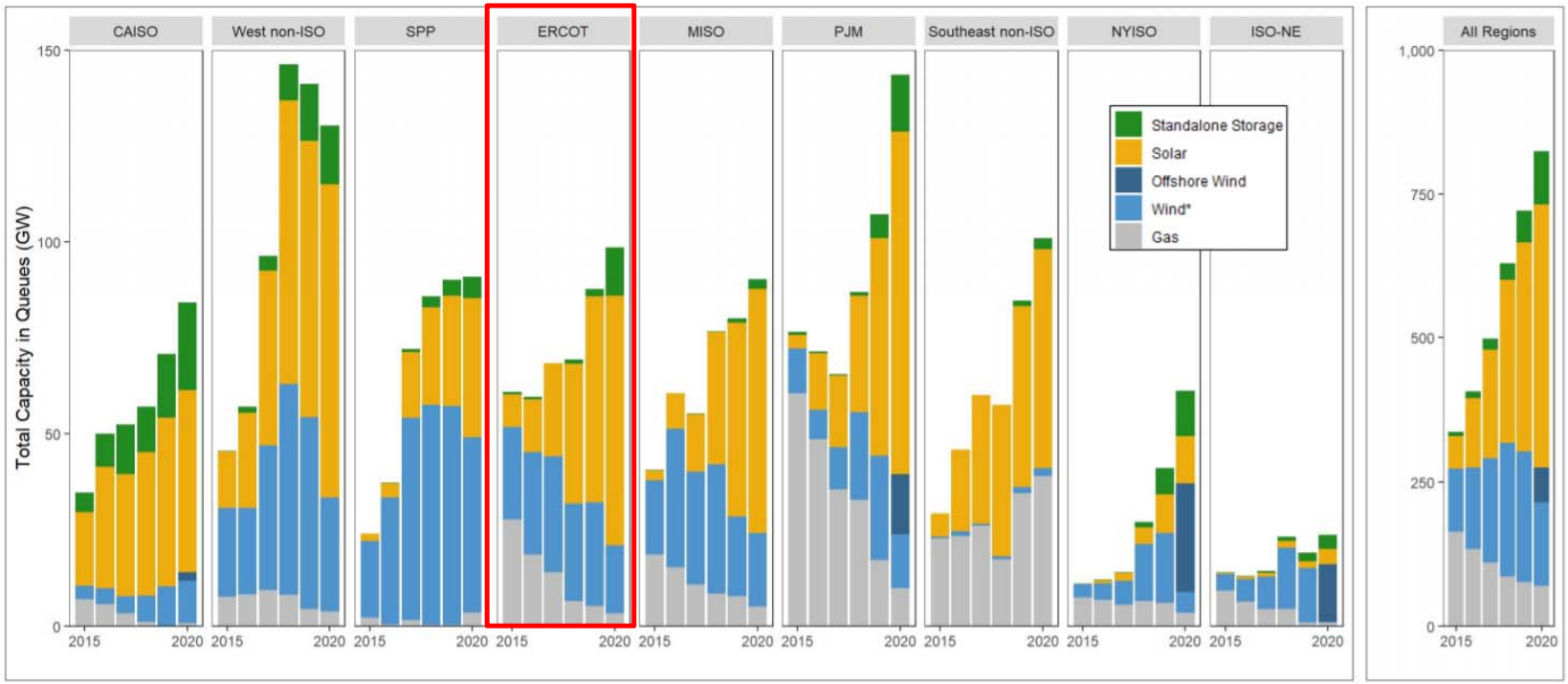


Source: DSIRE, September 2020.

Sources: S&P Global Market Intelligence, as of June 2021; Smart Electric Power Alliance Utility Carbon Reduction Tracker (June 2021)

Across all regions, an overwhelming amount of queued capacity is renewable

This is also true for ERCOT; as of 2020 more than 95% of the capacity in queue is wind, solar, and storage

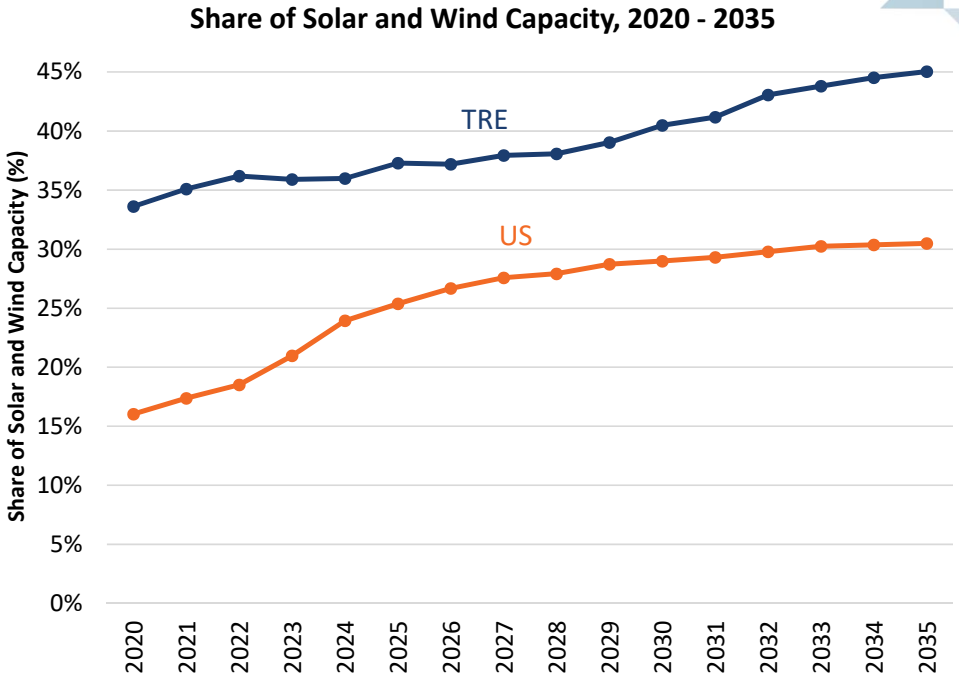


Sources: "Queued Up: Characteristics of Power Plants Seeking Transmission Interconnection As of the End of 2020," Lawrence Berkeley National Laboratory, May 2021

TREND 2: INCREASING RENEWABLE CAPACITY

Projected Renewable Capacity to 2035

- Over the next 15 years, the capacity and generation of solar and wind is expected to dramatically increase both in absolute terms and as proportion of the total capacity and generation
- In the Texas Reliability Entity (TRE), the projected share of capacity of solar and wind is expected to increase from 34% to 45%, while nationwide the share of solar and wind capacity increases from 16% to 31%



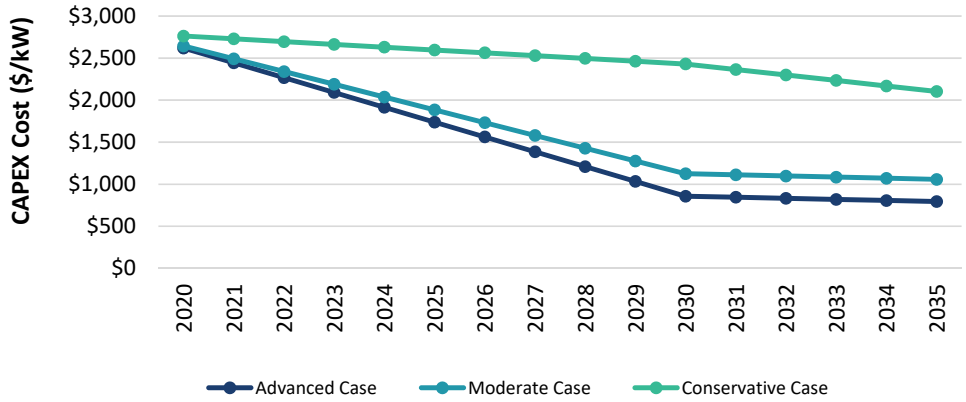
Sources and Notes:
Tables 54 and 56, 2021 Annual Energy Outlook, Energy Information Administration.
Texas Reliability Entity (TRE)

TREND 3: INCREASING DISTRIBUTED GENERATION

Distributed solar penetration has been steadily increasing over the past decade

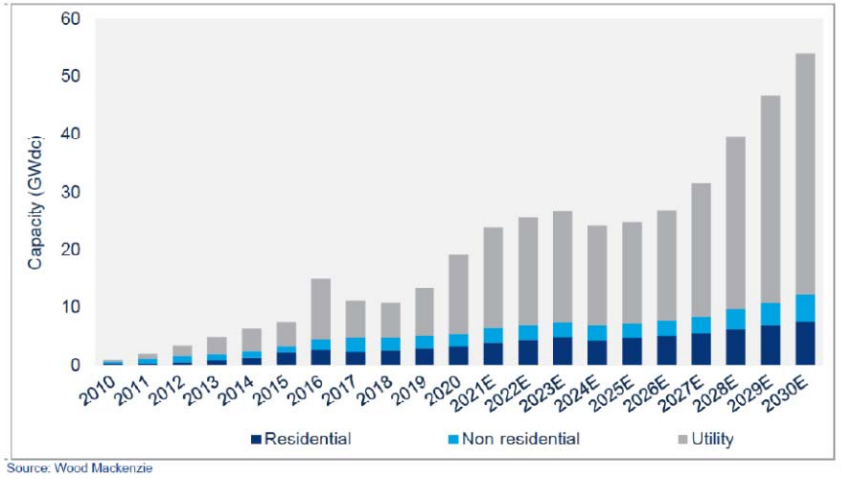
- Steep declines in the technology costs, generous federal investment tax credits and net metering implementations have led to the robust growth of the distributed solar
- NREL predicts that PV prices will decline 64% to $1,000/kW by 2035 (moderate case)
- Texas NEM Customers
  - In 2020, Texas has over 37,000 residential NEM customers with 250 MW of PV capacity
  - Comparatively, California (a similarly large state) has over 1.2 million residential NEM customers with over 6.6 GW of PV capacity
  - CPS Energy customers make up 61% of all NEM in Texas and 71% of the PV capacity

Residential Solar PV CAPEX Cost Trends



Source: "2020 Annual Technology Baseline," NREL (National Renewable Energy Laboratory), 2020, https://atb.nrel.gov/; "Form EIA-861M – Net metering 2020," US Energy Information Administration, October 2020

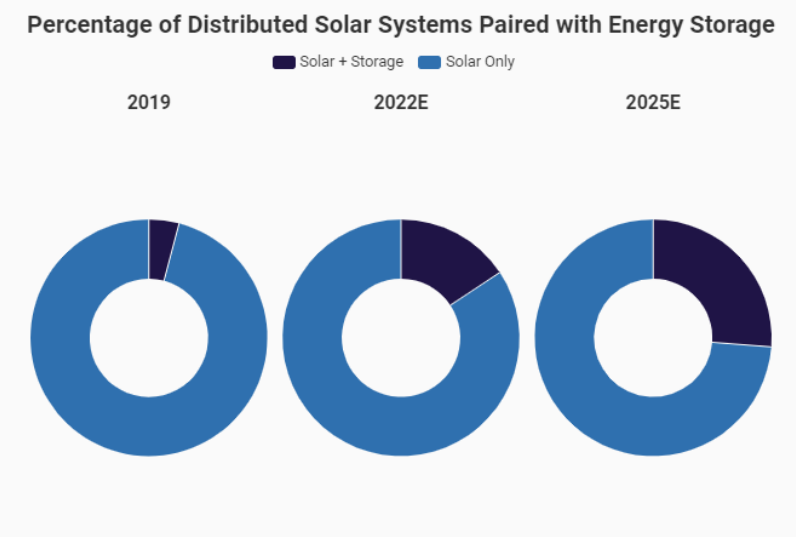
US Solar PV Installations and Forecast



Source: "Solar Market Insight Report 2020 Year in Review," Solar Energy Industries Association, March 2021

Solar PV and battery storage systems are driving a prosumer revolution

- Increasingly, PV systems are being accompanied with battery storage systems to improve reliability, promote grid independence, and lower bills
- By 2025, according to the Solar Energy Industries Association/Wood Mackenzie, more than 25% of all behind-the-meter solar systems will be paired with storage, compared to under 5% in 2019



Source: SEIA/Wood Mackenzie, "U.S. Solar Market Insight 2019 Year-in-Review," https://www.seia.org/us-solar-market-insight

TREND 4: INCREASING BUILDING AND TRANSPORTATION ELECTRIFICATION

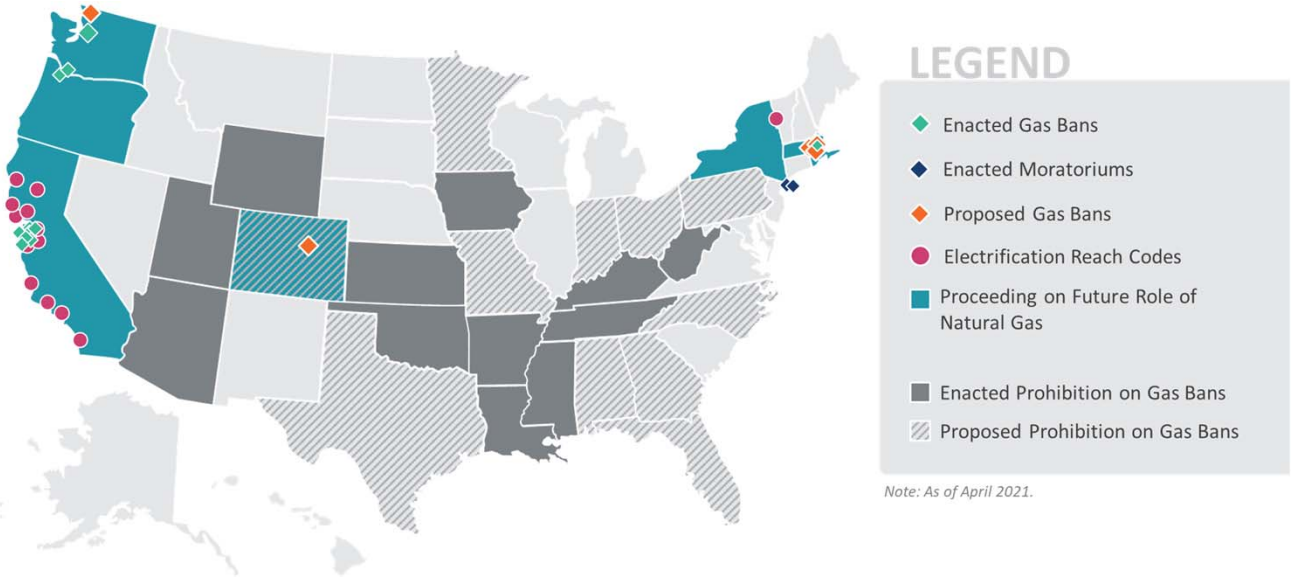
Decarbonization is driving a transition towards electrification

Driven by concerns about climate change, jurisdictions are not only moving towards energy efficiency and decarbonizing the electricity sector, but also electrifying buildings and the transportation sector as well

- **Building electrification** is being encouraged through incentives and/or mandates in new construction
- The **electrification of the transportation sector** is primarily driven by the growth of EV adoption
- While this may signal the potential for load growth, this does not mean utilities will see additional sales due to the increased penetration of solar and storage system for third parties and customers

Electrification of Buildings

- The widespread adoption of heat pumps for space heating and water heating are being encouraged through cash rebates, low interest financing, and other mechanisms
- Cities in California, Washington, Massachusetts, and Oregon have passed ordinances banning natural gas as a fuel source for new construction and utility services
  - Conversely, other states have either proposed or already enacted prohibitions on natural gas bans
  - Texas recently enacted House Bill 17, which prohibits cities and municipalities from banning or limiting energy sources used for utility connections[1]

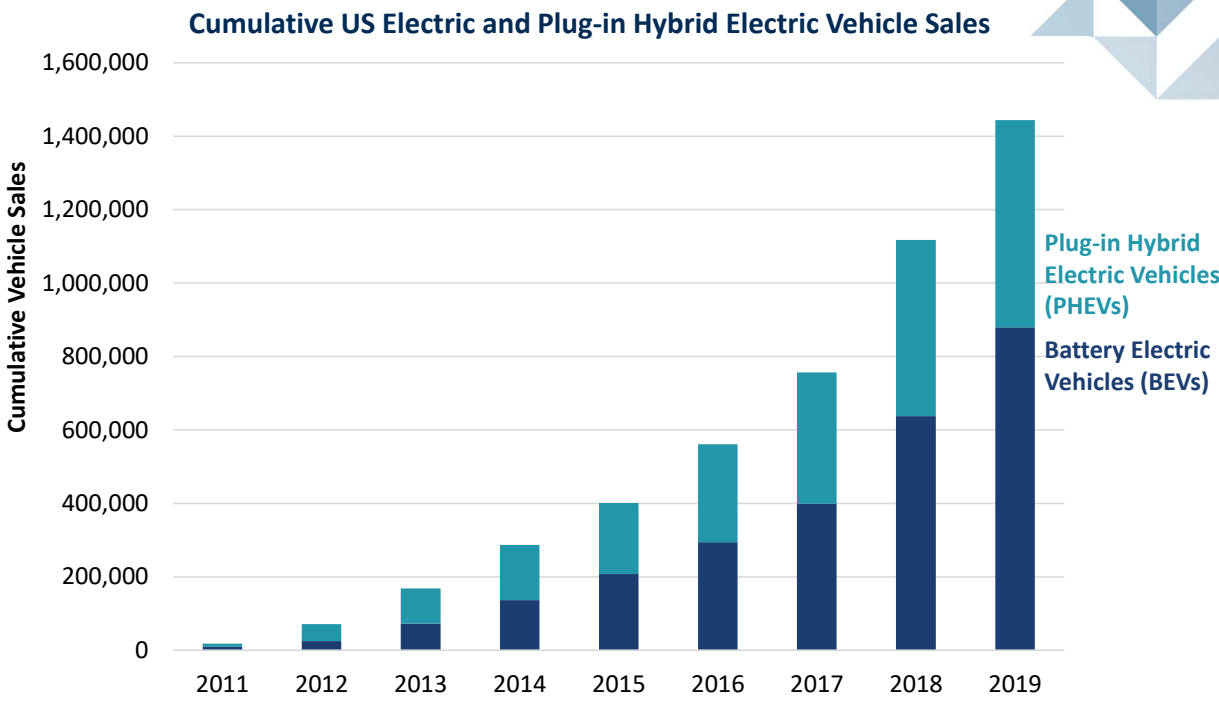


Note: As of April 2021.

Source:
[1] "Bill HB 17," Texas Legislature, May 2021

Electrification of Transportation

- Annual PHEV and BEV sales have grown by a factor of 18 with 18,000 EV sales in 2011 to 327,000 in 2019
- While not initially preferred due to the high cost and lower range, BEVs started make up a majority of the annual to EV sales in 2014
  - By 2019 BEVs make up 74% of EV car sales
- EV market share was 1.8% in March 2020[1]
- Half of EV sales are in California
  - EVs account for 8% of new all new car sales in California

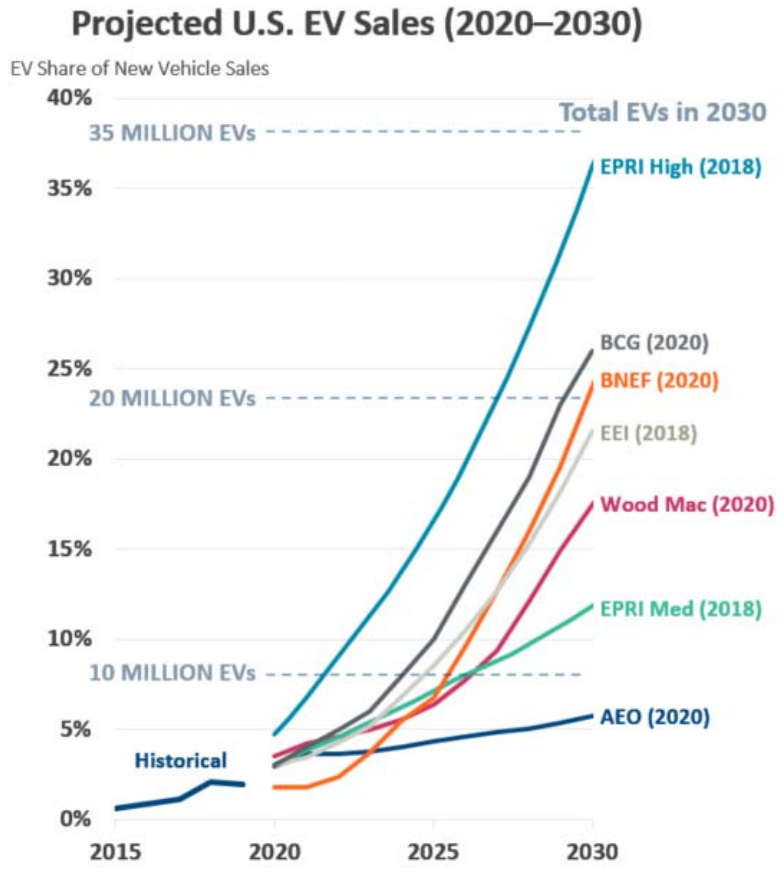


Source: "US Plug-in Electric Vehicle Sales by Model," Energy Efficiency & Renewable Energy, US Department of Energy, January 2020

Source:
[1] "Electric Vehicle Sales: Facts & Figures," Edison Electric Institute, April 2019

EV projections range from 10–35 million EVs as of 2030, creating significant uncertainty for system planners

- A recent Brattle study estimated that 20 million EVs would require $75-125 billion of electric sector investment by 2030
  - **$30-50 billion** for Generation & Storage to meet higher energy demand & peak loads
  - **$15-25 billion** for T&D upgrades to serve peak demand, access renewables, and connect to charging infrastructure
  - **$30-50 billion** for Chargers & Customer-Side Infrastructure to provide sufficient home, workplace, and public chargers
- Transportation electrification has the potential to increase the load growth, which has been anemic over the past decade
  - This is assuming that the EVs are charged using the grid electricity and not distributed generation



Source: Brattle, 2019

Load flexibility is becoming essential to addressing challenges of an evolving grid

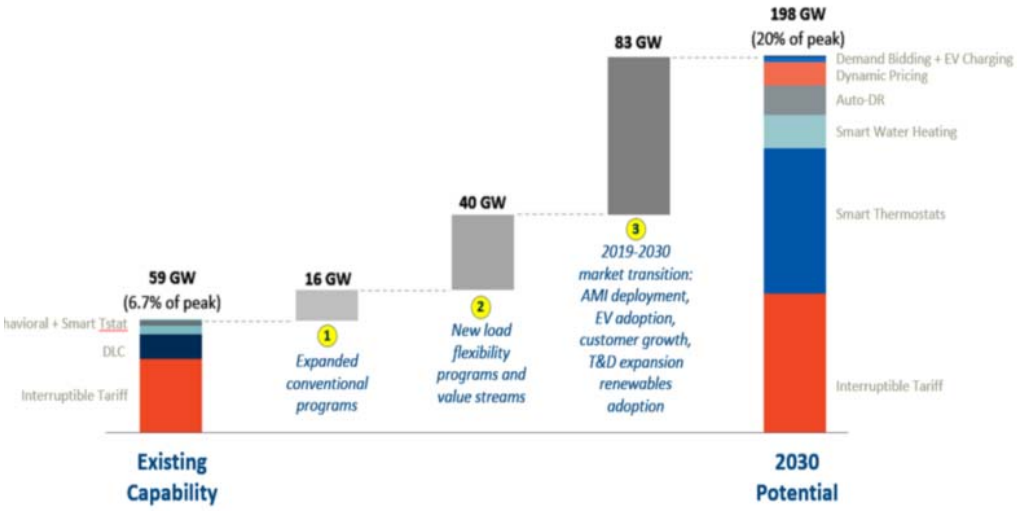
Load can be managed to provide **high value services**, such as geographically-targeted demand reductions, load building, and system balancing

- This is facilitated by rapid adoption of emerging consumer technologies

Understanding the **load flexibility potential** is key to starting to unlock its value

- Last summer's load shedding events in California underscored the importance of load flexibility when high demand driven by extreme weather conditions, unexpected outages, and intermittent generation led to capacity shortages
- With the increasingly evident impacts of climate change and increased penetration of intermittent resources, this scenario is likely to replay in other places

A recent Brattle study assessed the **national load flexibility potential** and found nearly 200 GW of cost-effective load flexibility potential in U.S. by 2030 representing 20% of the 2030 US peak



Source: Brattle, 2019

TREND 6: NEW REGULATORY AND RATE DESIGN APPROACHES

There has been an emergence of alternative regulatory models due to disruptions in in the utility industry

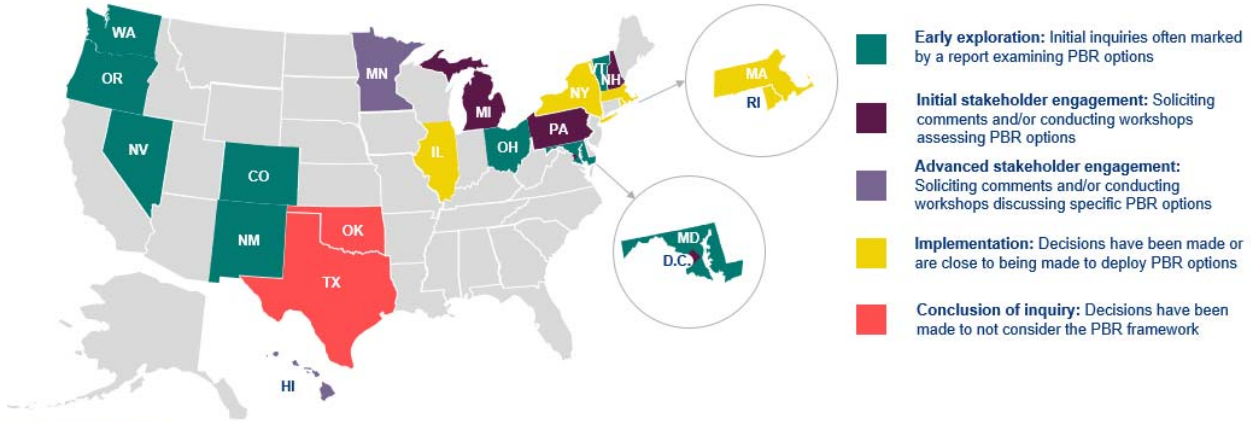
These disruptions are causing the fundamental tenets of regulation to be re-examined

- **Traditional cost-of-service (COS)** regulation is being critiqued for not promoting innovation and leading to rate hikes
- Many jurisdictions are considering a move to **performance-based regulation (PBR)**
- **Community choice aggregation (CCA)** is experiencing a resurgence, especially in high-priced states like California, but it is also being considered in Colorado and New Mexico
- Retail choice is being reconsidered in a few jurisdictions

ENERKNOL Wood Mackenzie

States' progress in grappling with new regulatory approaches has been uneven

Some states abandoned the PBR framework or specific PBR options, while most are at a nascent stage



Analyst perspectives

- **Dynamic stakeholder engagement** is more commonly observed in recent years in the form of standard and interactive workshops facilitated by third-party and independent organizations such as the Rocky Mountain Institute and Great Plains Institute. States including Hawaii and Minnesota are diving into the specifics of performance metrics via this approach, in addition to the traditional method of comment filings.
- **The tide of 100 percent clean energy commitments** has reached the following among those highlighted on the map: Hawaii, New Mexico, Nevada, Washington and the District of Columbia. Xcel Energy also committed to becoming carbon-free by 2050. While clean energy commitments do not touch on PBR explicitly, these initiatives still highlight the significance of PBR, as carbon-free operations fundamentally challenge the current framework under which utilities recover costs, and will in turn help accelerate PBR regulation.

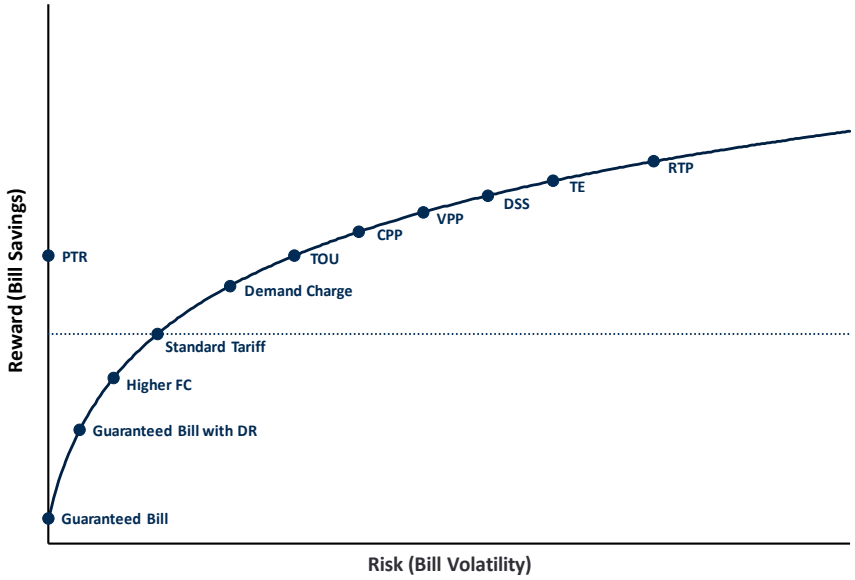
Source: EnerKnol and Wood Mackenzie Power & Renewables; Tracking of the proceedings available on the EnerKnol Platform

Source: https://enerknol.com/regulatory-evolution-for-a-decentralized-electric-grid-state-of-performance-based-ratemaking-in-the-u-s/

Rate design is being modernized with the deployment of smart meters and connected devices

"Post-modern" customers are more likely to embrace technologies such as smart meters, WiFi connected thermostats and appliances, solar PVS, and electric vehicles while wanting to improve the environment and control their energy lifestyles

- Utilities are slowly expanding rate design choices to become more customer centric
  - While there are currently 100 million smart meters installed, only 6 million customers are on smart rates that are essential for customer choice
- These rate designs create an efficient pricing frontier, which is central to promoting customer choice
  - Time-varying rates
    - Time-Off-Use (TOU)
    - Critical-peak pricing (CPP)
    - Peak-time rebates (PTR)
    - Variable-peak pricing (VPP)
    - Real-time pricing (RTP)
  - Demand charges to recover capacity costs
    - Coincident peak
    - Non-coincident peak
    - Connected load
  - Fixed charges to recover the costs of "revenue cycle" services



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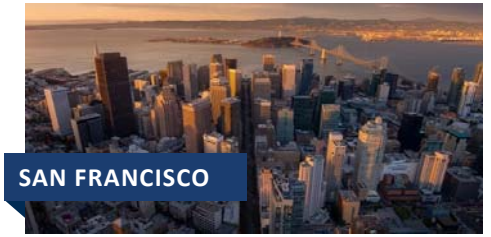
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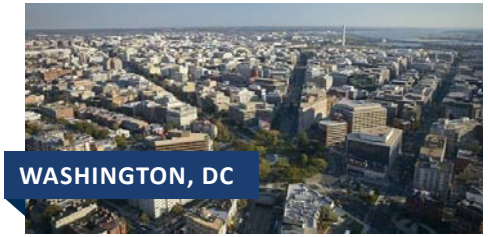
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