S&P Global is a data company at its core, driven by analytics, powered by fundamentals

“We collect data from all over the world and analyze it in real time, providing you with the intelligence you need to make decisions with conviction.”
The energy transition has become an increasingly important driver of energy and commodity markets. The power generation industry is clearly going through a profound transformation across the globe.
5 Key statistics and indicators that drive Power Transition

- a. Demand & Supply
- b. Price Divergence
- c. Policy
- d. Technology & Energy Efficiencies
- e. Consumers
Demand: U.S. load grew up in 2018; YTD 2019 growth slower

Source: Platts Analytics (Monthly Load Report)
Recent results have confirmed this slowdown in load growth; trade issues and strong dollar as macro causes

AEP: “..Industrial sales decreased by 2.7% for the quarter, which brought the year-to-date comparison down to 1.5% below last year. Sales to the industrial class have been slowing in recent quarters as the impact of a strong dollar and more restrictive trade policy have challenged export manufacturers within AEP’s footprint…”

AEP: “…commercial sales decreased by 0.9% for the quarter and were down 1.3% year-to-date. For both comparisons, commercial sales were down across all operating companies. The tightening labor market and rising interest rates have limited this sector’s growth in recent quarters…”

Southern Co.: “… weather-adjusted retail electric sales were down just over 1% year-over-year due to a combination of factors, including continued energy efficiency and technology advances across all customer segments and continued weakness in industrial sales…”

“…Industrial sales, particularly primary metals, chemicals and stone, clay and glass were down due to global trade concerns and a strong dollar’s impact on trade as well as changes in production levels…”

Ameren: “…Kilowatt-hour sales to low margin Missouri industrial customers decreased 2.5% after excluding the effects of our energy efficiency plan…”
Supply Mix: Power transition: renewables additions slowing, but outpace fossil fuel new builds

Source: IRENA, Platts Analytics, Market Intelligence World Electric Power Plant database. 2019 is a preliminary estimate, 2020 is forecast.
S&P Platts Analytics is forecasting that renewables generation growth will exceed load growth in US, but about half of global annual power demand growth.

**US average annual growth**

- **Average 2020-2025**
  - Solar: 0.1% p.a.
  - Wind: 2% p.a.

**Global average annual growth**

- **Average 2020-2025**
  - Load growth: 0.1% p.a.
  - 2% p.a.

Price Divergence === Lower Consumer Prices === Clean Energy

- Plunging Prices means development of New Renewable Energy Is Cheaper Than Running Existing Coal and Fossil Fuels
- 42% of global coal capacity is currently unprofitable
- Across USA - Costs changes from 2009:
  - Solar photovoltaic (PV) lower by 88%
  - Wind costs lower by 69%
  - Coal decreased just less than 9%
  - Nuclear increased by 23%

Even without subsidies, renewable energy costs are now lower than the marginal cost of conventional energy technologies.
More Renewables; Coal and nuclear generation continue to retire

Source: Platts Analytics (September 2019 Short Term Forecast)
Policy Across North America

RENuwables market share per region Q3-19

Source: Platts Megawatt Daily Publication (October 2019)
Major transformation taking place in global power, with a number of key issues driven by Policy such as:

• Renewables growth impacted by policy uncertainties and step-down of incentives, but solid pipeline of projects in US
  o Declining PV module prices continue to push solar PPAs to record low levels
  o US will see strong onshore wind additions in the short-term. Growing interest in offshore wind, but uncertain timing. Limits to onshore developments emerging in more mature markets (e.g. Germany).
  o Renewables output growth exceeds load growth in US, but below power demand growth globally

• Nuclear: new builds and restarts underpin nuclear generation in Asia, but retirements looming in US/Europe, absent further policy action

• Gas to benefit from large coal retirements, but with lingering questions:
  o What will trigger further coal retirements? Policy (climate change/air quality concerns) or market drivers?
  o Emerging cheap(er) alternatives
Technology & Energy Efficiencies

**Shift of power generation sources**
- Coal to natural gas (short term)
- Aggressive renewable growth
- Natural gas to sustainable hydrogen (long term)

**Efficient energy management**
- Electricity storage for fluctuating renewables- batteries
- Smart grid technology for demand response

**Improved energy efficiency**
- Efficient use of energy
- Power-to-X to decarbonize other Sectors such as transportation, Industry, etc.)
Consumers

Corporations more than doubled commitment to renewable energy in 2018 and expected to increase in 2020-2025

Source: BloombergNEF. Note: Data in this report is through 2018. Onsite PPAs not included. Australia sleeved PPAs are not included. APAC number is an estimate. Pre-market reform Mexico PPAs are not included. These figures are subject to change and may be updated as more information is made available.
Thank you!

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