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Clean Energy Transition: A Risk/Reward Approach

Picking winners requires understanding timing, scale, and competitive advantages.

Morningstar Equity Research

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Energy Landscape in a Net-Zero World

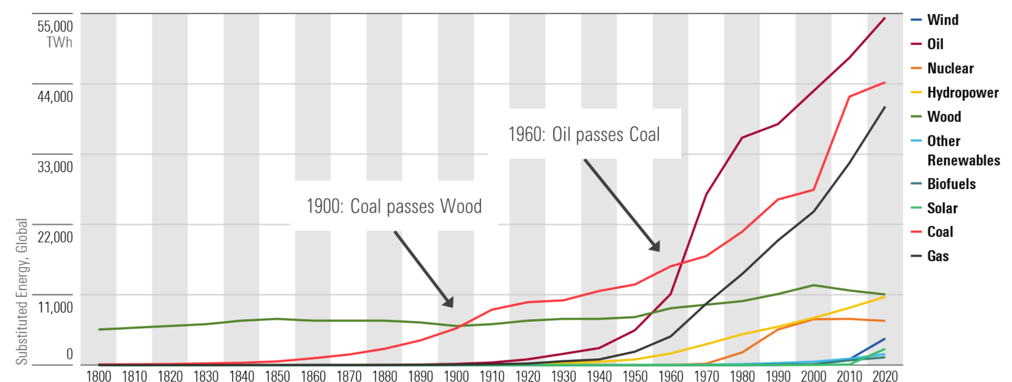
Energy represents about 80% of global greenhouse gas emissions. Achieving any climate goal, notably the Paris Agreement's quest to limit global warming to 1.5 degrees Celsius, will require generational changes in how we produce and consume energy. Investors will determine the speed and direction of that change. Given the wide cone of uncertainty, we think investors should approach the clean energy transition with a risk/reward mentality.

Risk: Can the world achieve net-zero carbon emissions by 2050, a widely accepted target date? Or will the clean energy transition take decades longer, like past energy transitions? The world's leading energy source has changed only twice since the 1800s: from wood to coal in 1900 and coal to oil in 1960 (Exhibit 1). Can renewable energy overtake oil and gas?

Reward: Which companies will be the biggest winners: incumbents with competitive advantages or aspirational newcomers? Which companies will be left behind?

Understanding the scale and scope of the energy transition is the first step to minimizing risk and maximizing investment returns. The first section of our report focuses on electricity supply and demand in the United States. The second and third sections focus on the oil and gas industry, electric vehicles, and lithium. We include top picks from the utilities, energy, and basic materials sectors.

Exhibit 1 Energy Transitions Can Take Decades; Renewable Energy Must Play Catch-Up



Source: BP Statistical Review of World Energy. Data as of August 2021.

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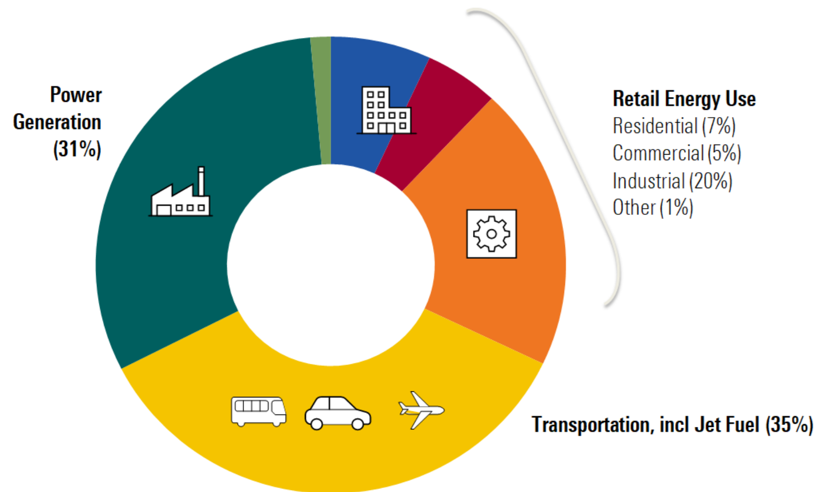
Key Takeaways

- **Utilities will control the pace of decarbonization.** Eliminating carbon emissions will require huge investments in utility infrastructure to support renewable energy, electric vehicle charging, and building electrification (Exhibit 2).

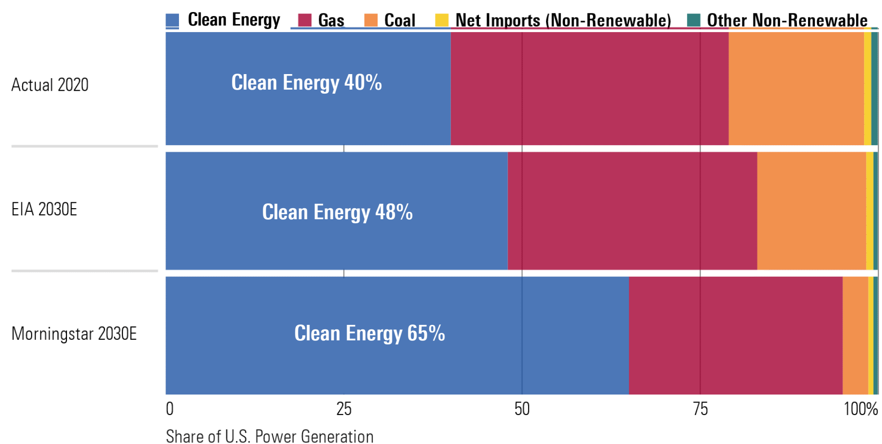
Exhibit 2 U.S. Energy Carbon Emissions Split Among Power Generation, Transportation, and Retail Energy Use



Source: U.S. Energy Information Administration. Data as of April 2023. May not add up to 100% due to rounding.

- **Reducing fossil fuel power generation is the first step in decarbonization.** In the U.S., we think clean energy, including nuclear, will grow to 65% of total power generation by 2030, up from 40% today (Exhibit 3). This is more bullish than some forecasts. The Biden administration and others are aiming for 100% by 2040, but we think that goal faces too many technical and economic hurdles.

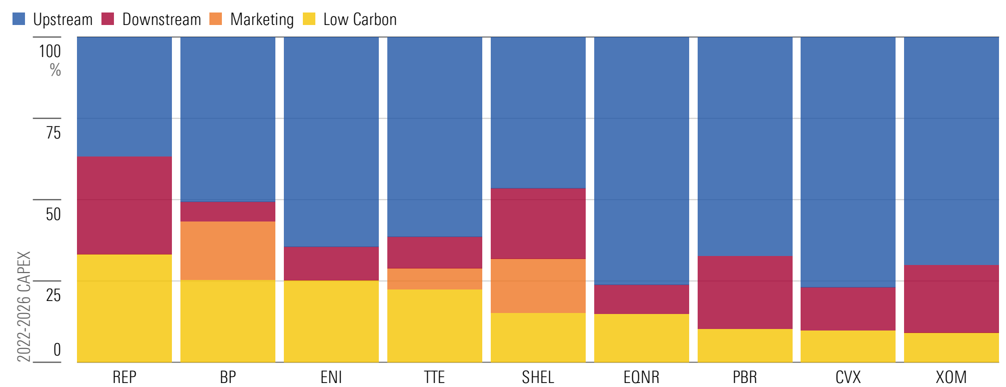
Exhibit 3 Morningstar's 2030 Clean Energy Outlook



Source: Morningstar, U.S. Energy Information Administration. Data as of April 2023. Clean energy includes renewable energy, nuclear, and hydro.

- **Decarbonizing transportation and retail energy use will increase electricity demand.** We forecast 1.4% annual electricity demand growth during the next 10 years in the U.S., an acceleration from the last 15 years. This includes 1% annual core electricity demand growth plus 40 basis points of new growth from EV charging, data centers, and other electrification. This is included in our projected 2030 mix.
- **Oil companies' energy transition strategies balance stakeholders' competing interests.** Facing greater pressure, European firms have set more ambitious 2050 net-zero targets. As a result, they are investing greater amounts in low-carbon projects, particularly renewable power, than American peers. In contrast, U.S. firms Exxon and Chevron are keeping investments primarily in their legacy hydrocarbon businesses and in low-carbon areas that decarbonize their existing operations.

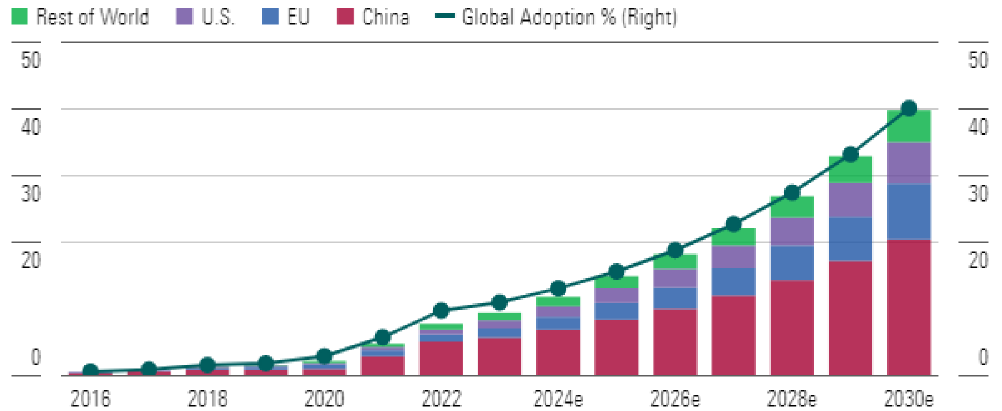
Exhibit 4 Differing Long-Term Targets Drive Divergent Capital Allocation Decisions for Major Oil Companies



Source: Company reports.

- **We forecast battery EV adoption will reach 40% globally by 2030, up from 10% in 2022.** This will result in around 40 million auto EVs sold in 2030, up from 7.8 million in 2022. As EVs reach cost and functional parity with internal combustion engines, they will move from niche luxury vehicles to mainstream consumers, resulting in rapidly growing adoption starting in the second half of this decade. However, rising EV sales each year will affect the vehicle fleet more slowly, leaving ICEs as a larger share of the total vehicle fleet for longer.

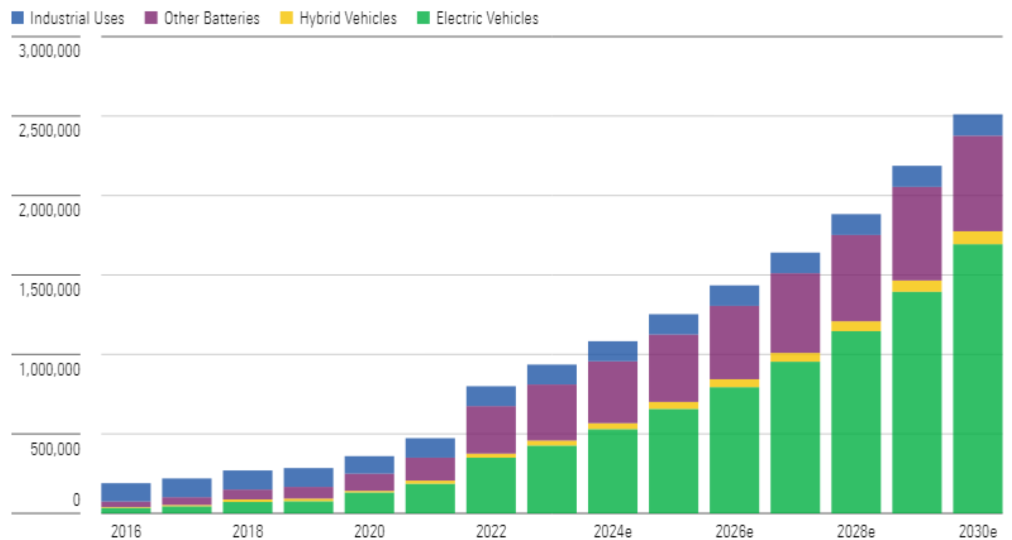
Exhibit 5 EVs Will Reach 40% of Global Auto Sales by 2030
BEV sales in millions of vehicles by region (left) and global adoption rate as a percentage of total auto sales (right), 2016-30E.



Source: Morningstar, International Energy Agency, U.S. Environmental Protection Agency, Wards, European Automobile Manufacturers' Association (ACEA), China Association of Automobile Manufacturers.

- **Lithium will be one of the largest beneficiaries of the clean energy transition.** Lithium is the key energy storage component in batteries used in EVs and energy storage systems, which are the large batteries built to accompany renewable energy. Rising EV sales and increased ESS batteries should drive lithium demand to more than triple to 2.5 million metric tons by 2030.

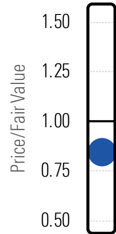
Exhibit 6 Lithium Demand Will More Than Triple by 2030 From 2022 Levels
Lithium demand by end market in metric tons, 2016-30E.



Source: Morningstar, IEA, U.S. EPA, Wards, ACEA, CAAM, IDC, Albemarle, SQM.

Top Picks

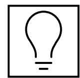
Entergy ETR



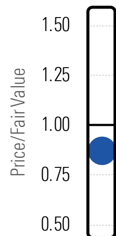
Market Cap	Moat
$21 Bil	Narrow
Rating	**Yield**
★★★★	4.3%
P/FV	**P/E**
0.85	15.1x

Utilities: Best Combination of Yield, Value, and Growth

Entergy's 4% dividend yield and our outlook for 7% earnings growth is one of the best total returns in the sector. Entergy's 15 P/E is a 15% discount to the sector. Above-average electricity demand growth, clean energy investments, and reliability/resiliency network investments are core growth drivers. Entergy also should benefit from industrial carbon emissions cuts, global energy demand, and green hydrogen development.



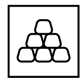
Duke Energy DUK



Market Cap	Moat
$71 Bil	Narrow
Rating	**Yield**
★★★★	4.5%
P/FV	**P/E**
0.87	16.2x

Utilities: Policymaking Supports Renewable Energy Growth

After divesting its renewable energy business, Duke has a clear pathway to achieving management's 5%-7% earnings growth target. Duke's $65 billion capital investment plan for 2023-27 is focused on clean energy and infrastructure upgrades to reduce carbon emissions. New legislation in North Carolina supports the clean energy transition. Florida offers opportunities for solar growth. Duke's 4.4% yield is among the highest in the sector, but dividend growth will lag earnings growth, given the company's higher payout ratio.

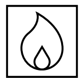


Albemarle ALB

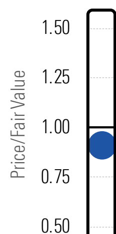
Market Cap	Moat
$26 Bil	Narrow
Rating	**Yield**
★★★★★	1.6%
P/FV	**P/E**
0.63	9.4x

Basic Materials: Most Upside to Electric Vehicle and Lithium Demand Growth

Albemarle is one of the largest lithium producers globally, with nearly 90% of companywide profits coming from lithium. The company produces lithium from three of the best resources globally, which underpins our narrow moat rating based on a strong cost advantage. Albemarle is in the midst of a major capacity expansion, aiming to quadruple its lithium production capacity by 2030 from 2022 levels. We view it as one of the best ways to invest in growing lithium demand and higher prices as a direct result of rising EV adoption.



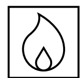
Exxon Mobil XOM



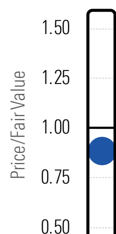
Market Cap	Moat
$434 Bil	Narrow
Rating	**Yield**
★★★	3.4%
P/FV	**P/E**
0.91	10.7x

Oil and Gas: Best Bet for Hydrocarbon Earnings Growth

Exxon plans to double earnings from 2019 levels by 2025 and double cash flow by 2027 through structural operating cost reductions, portfolio improvement, and growth across its upstream, downstream, and chemical segments. Exxon estimates that its plan will generate about $100 billion in surplus cash, after funding investment and paying the dividend, during the next five years. Combined with currently higher-than-expected commodity prices, its current repurchase program of $30 billion through 2023 is likely just the beginning.



TotalEnergies TTE



Market Cap	Moat
$143 Bil	None
Rating	**Yield**
★★★	5.9%
P/FV	**P/E**
0.89	5.3x

Oil and Gas: Leading Energy Transition Major

TotalEnergies' latest strategic plan remains the same, aiming to achieve net-zero emissions by 2050 while delivering near-term financial performance. Its emissions-reduction goal is in line with many of its European peers, but in contrast to some, TotalEnergies does not plan a quick retreat from oil and gas. Instead, it plans to reduce emissions over time by expanding its ownership of renewable power assets. Its plan to return 35%-40% of cash flow to shareholders through the cycle rates as one of the highest payouts among peers.

Source: PitchBook. Data as of June 9, 2023.

Research Methodology for Valuing Companies

Overview

At the heart of our valuation system is a detailed projection of a company's future cash flows, resulting from our analysts' research. Analysts create custom industry and company assumptions to feed income statement, balance sheet, and capital investment assumptions into our globally standardized, proprietary discounted cash flow, or DCF, modeling templates. We use scenario analysis, in-depth competitive advantage analysis, and a variety of other analytical tools to augment this process. We think analyzing valuation through discounted cash flows presents a better lens for viewing cyclical companies, high-growth firms, businesses with finite lives (mines, for example), or companies expected to generate negative earnings over the next few years. That said, we don't dismiss multiples altogether but rather use them as supporting cross-checks for our DCF-based fair value estimates. We also acknowledge that DCF models offer their own challenges (including a potential proliferation of estimated inputs and the possibility that the method may miss short-term market-price movements), but we believe these negatives are mitigated by deep analysis and our long-term approach.

Morningstar's Equity Research Group ("we," "our") believes that a company's intrinsic worth results from the future cash flows it can generate. The Morningstar Rating for stocks identifies stocks trading at a discount or premium to their intrinsic worth—or fair value estimate in Morningstar terminology. Five-star stocks sell for the biggest risk-adjusted discount to their fair values, whereas 1-star stocks trade at premiums to their intrinsic worth.

Four key components drive the Morningstar rating:

- our assessment of the firm's economic moat.
- our estimate of the stock's fair value.
- our uncertainty around that fair value estimate.
- the current market price.

This process ultimately culminates in our single-point star rating.

Economic Moat

The Morningstar Economic Moat Rating is a structural feature that Morningstar believes positions a firm to earn durable excess profits over a long period of time, with excess profits defined as returns on invested capital above our estimate of a firm's cost of capital. The economic moat rating is not an indicator of the investment performance of the investment highlighted in this report. Narrow-moat companies are those that Morningstar believes are more likely than not to achieve normalized excess returns for at least the next 10 years. Wide-moat companies are those that Morningstar believes will earn excess returns for 10 years, with excess returns more likely than not to remain for at least 20 years. Firms without a moat, including those that have a substantial threat of value destruction-related risks related to environmental, social, and governance; industry disruption; financial health; or other idiosyncratic issues, are more susceptible to competition. Morningstar has identified five sources of economic moats: intangible assets, switching costs, network effect, cost advantage, and efficient scale.

Fair Value Estimate

Each stock's fair value is estimated by using a proprietary discounted cash flow model, which assumes that the stock's value is equal to the total of the free cash flows of the company is expected to generate in the future, discounted back to the present at the rate commensurate with the riskiness of the cash flows. As with any DCF model, the ending value is highly sensitive to Morningstar's projections of future growth.

Fair Value Uncertainty

The Morningstar Uncertainty Rating represents the analysts' ability to bound the estimated value of the shares in a company around the fair value estimate, based on the characteristics of the business underlying the stock, including operating and financial leverage, sales sensitivity to the overall economy, product concentration, pricing power, exposure to material ESG risks, and other company-specific factors. Based on these factors, analysts classify the stock into one of several uncertainty levels: Low, Medium, High, Very High, or Extreme. Our recommended margin of safety—the discount to fair value demanded before we'd recommend buying or selling the stock—widens as our uncertainty of the estimated value of the equity increases.

Market Price

The market prices used in this analysis and noted in the report come from exchanges on which the stock is listed, which we believe is a reliable source.

Morningstar Rating for Stocks

The Morningstar Rating for Stocks is a forward-looking, analyst-driven measure of a stock's current price relative to the analyst's estimate of what the shares are worth. Stock star ratings indicate whether a stock, in the equity analyst's educated opinion, is cheap, expensive, or fairly priced. To rate a stock, analysts estimate what they think it is worth (its "fair value"), using a detailed, long-term cash flow forecast for the company. A stock's star rating depends on whether its current market price is above or below the fair value estimate. Those stocks trading at large discounts to their fair values receive the highest ratings (4 or 5 stars). Stocks trading at large premiums to their fair values receive lower ratings (1 or 2 stars). A 3-star rating means the current stock price is close to the analyst's fair value estimate.

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