

Renewables: The Imperative for Discipline

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ALVAREZ & MARSAL

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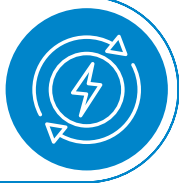
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Executive Summary: The Performance Excellence Imperative for Clean Energy



Renewable Energy Market Trends



Archetypes of Challenges



Our Approach



I. Recent trends highlight the need for performance excellence



The renewables sector has benefited from low interest rates and favorable policy, but the future environment will reward efficient operators

Historical and continued growth in the renewable energy sector has resulted in overoptimistic projections:

- Rapid inflow of capital and government incentives, with business cases typically citing ~20% annual growth through 2027
- \$240B in capital commitments for renewable development in US since passage of IRA¹ and global investments in renewables forecasted to surpass global oil & gas investments for the first time
- High demand for clean energy investment opportunities has forced investors to lower their return targets

Operator and developer results are not meeting business plans, and the gap is exacerbated by rising costs and internal inefficiencies due to rapid expansion:

- Renewables have been hurt by broader inflationary dynamics, as the cost of raw materials and construction labor have gone up as much as 20%
- Residential solar companies carry overburdened debt structures and lower adoption rates due to consumer loan pricing
- Offshore wind developers have cancelled PPAs due to cost overruns on projects (inflation, supply chain, Jones Act and other issues), while others cannot get PPAs that cover costs
















To remain viable, developers and operators must take a pragmatic and holistic approach to managing the business:

- **CapEx Reduction:** Evaluate budgets and schedules to reduce costs through lower-cost suppliers and efficiencies
- **OpEx Optimization:** Review internal organization model and maintenance contracts
- **Revenue Maximization:** Maximize revenue streams (e.g., ancillary services), make strategic capital investments to create new market opportunities (e.g., adding storage) and/or sell-off development/operating assets
- **Financial Management:** Improve timing, predictability and utilization of cash flows and maximize use of available incentives

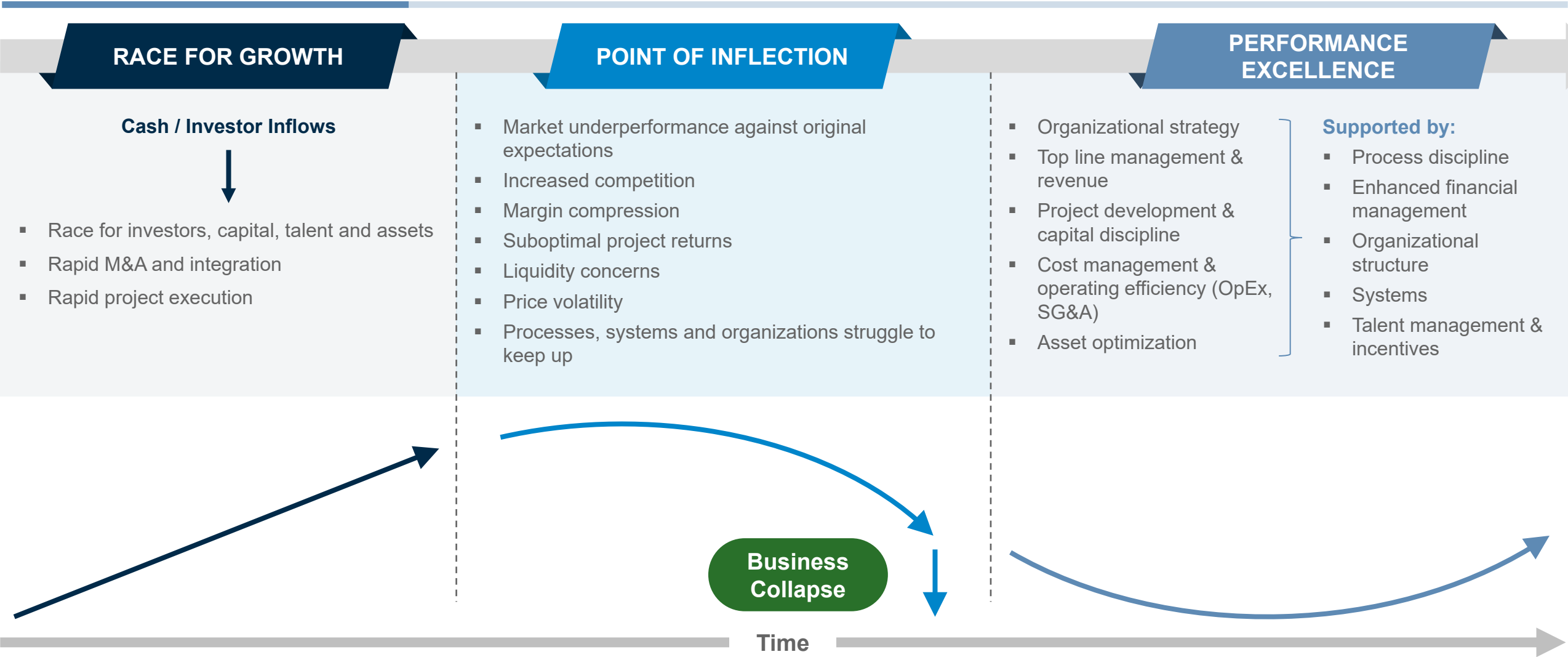
[1] Federal Policies Fueling U.S. Clean Energy Jobs And Investment Boom ([forbes.com](https://www.forbes.com))

[2] 1 World Energy Investment 2023 – Analysis - IEA

II. An acceleration of sector trends is reshaping power markets and forcing paradigm shifts onto certain producers





 Business Model	Highly competitive sale processes for wind, solar and storage require return targets of 6-8% while increasing costs further reduce margins	 Bloomberg.com Renewable Energy Is Getting More Expensive. What Happens Now? The falling cost of renewable energy has been one of the great success stories of our time. Not only does it make greening the planet... 
 Financing	Inflation and heightened cost of project finance will impact new projects alongside existing assets that are at the end of their term and/or changing owners	 Offshore Wind Biz Avangrid Terminates Long-Fought PPAs in Massachusetts at Cost of Almost USD 50 Million Massachusetts's electric distribution companies Eversource Energy, National Grid and Unitil have agreed to terminate their power purchase agreements (PPAs)... 
 Operations	Supply chain challenges plague the industry, delaying projects and exacerbating interconnection constraints	 Bloomberg Law News Grid Transformer Supply Crunch Threatens Clean Energy Plans (1) The Biden administration is still grappling with short supplies of ubiquitous equipment needed to distribute power to where it's needed, even after the... 
 Grid Constraints	Interconnection is unlikely to significantly ease any time soon, as transmission capacity is still a fundamental constraint	 R Street Institute Development heads share mixed reactions to FERC interconnection reform; "needed a home run and FERC hit a single" R Street Institute's Energy and Environmental Program Director Devin Hartman echoed Marquis' concerns about whether FERC went far enough 
 Energy Markets	Pricing model of power generators poised for increased volatility, exacerbated by extreme weather events	 Yahoo Finance PJM estimates penalty of \$1.8 billion to non-performing resources in winter storm Elliott July 17 (Reuters) - PJM Interconnection estimated that there are approximately \$1.8 billion in non-performance charges on resources that failed to perform... 

II. Burgeoning high capital intensity industries tend to follow a similar pattern



Companies that survive and thrive are those who know how to pivot from the race to growth to performance excellence

III. At the current inflection point, four archetypes exemplify core thematic challenges faced within the renewables sector

ARCHETYPE	DESCRIPTION
 Cost Overruns and Delays	<ul style="list-style-type: none">▪ Projects are often fast-tracked without clearly-defined strategy and rigorous project risk assessment/mitigation▪ Interconnection queues get further delayed, companies face shortages in labor, bulk materials and EPC capacities, leading to significant delays▪ Supply chain constraints cause delay in delivery of critical components
 Overoptimistic Projections	<ul style="list-style-type: none">▪ Companies risk exposure to operational inefficiencies when demand slows after overly optimistic projections (e.g., residential solar sector)▪ Assumptions around development timing and costs prove unobtainable over time▪ High interest rates and increased competition from new entrants exacerbate challenges
 Overexposure / Hedging Risk <i>(Coupled with Extreme Weather)</i>	<ul style="list-style-type: none">▪ In response to infrequent event triggers such as Winter Storm Uri, poorly constructed contracts and ineffective hedging strategies can backfire due to overexposure▪ Losses can often surpass underlying asset value (e.g., Texas wind energy market)
 Shareholders Push for Core	<ul style="list-style-type: none">▪ Utilities have been leading divestiture of unregulated renewable assets in order to invest in core business▪ Larger developers have been buying assets with plans for additional investment to realize market potential (e.g., adding storage)▪ There is a large “tail” of older systems not currently owned by major developers that will likely see consolidation

IV. Our approach: We work with energy companies to improve operations and control costs throughout the development cycle



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