

Capital project delivery excellence & best practices for electric utilities

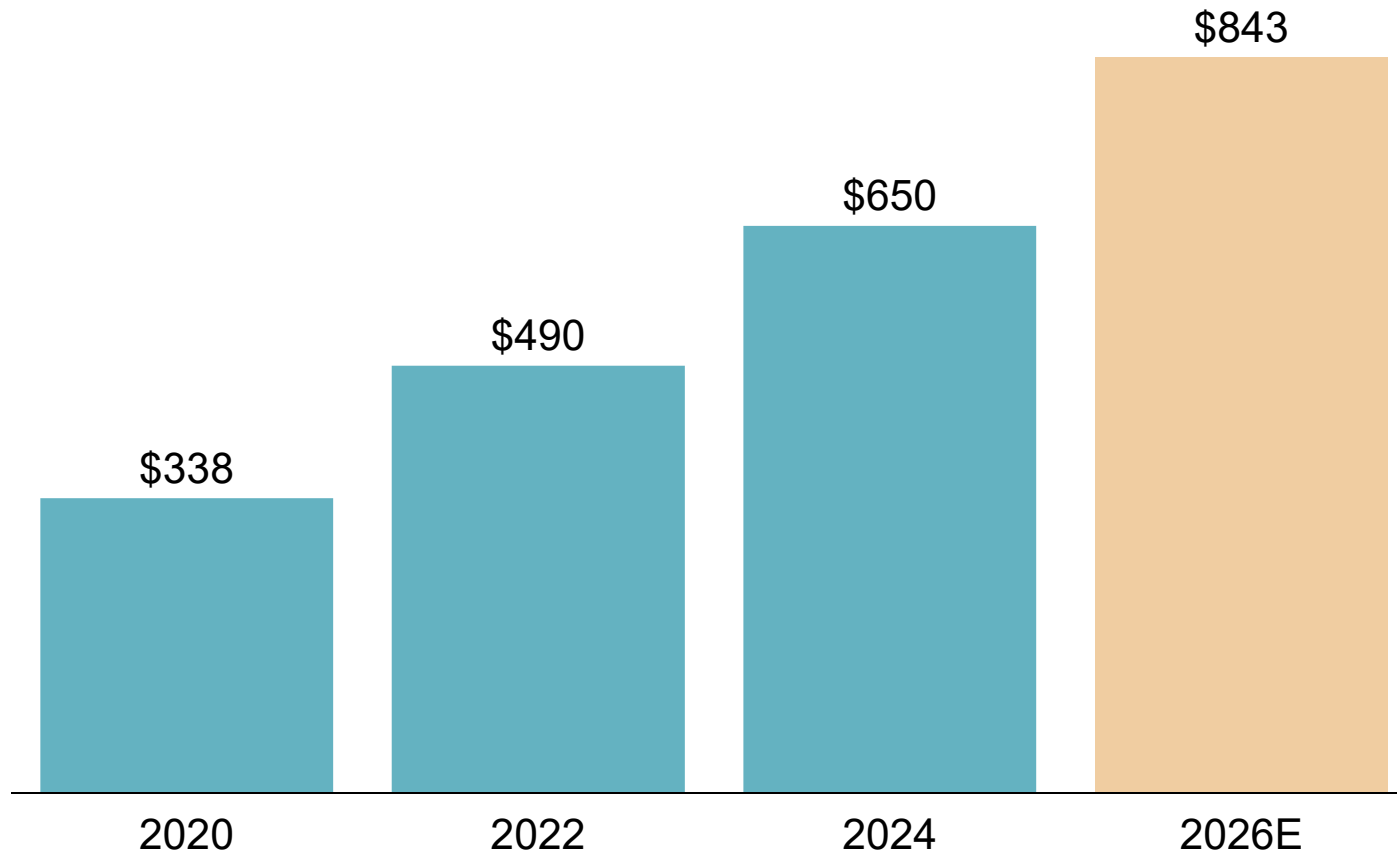
Multi-client study prospectus

- ▶ Study prospectus

- ▶ About ADI Analytics

US utilities are entering the largest capital deployment cycle in history ...

Aggregate 5-year capex plan of U.S. utilities Billion USD



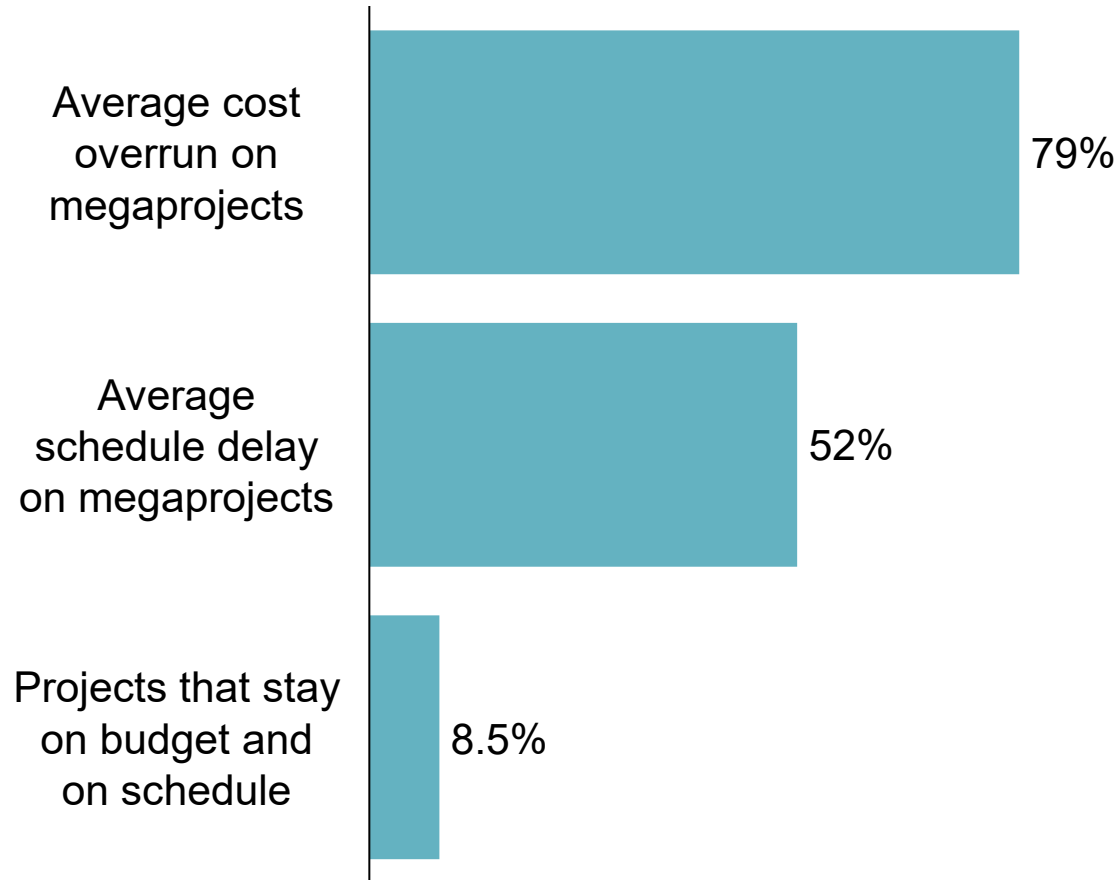
- Total U.S. utility spend is projected to reach **\$1.4 trillion through 2030**.
- Capex budgets are experiencing **24% year-over-year growth**.
- **Duke Energy's \$83 billion 5-year capex plan** set a record for regulated U.S. utilities.

Key demand drivers

AI data centers	Industrial reshoring
Grid hardening	Electrification
IRA / IIJA mandates	Nuclear restarts

... But historical performance underscores persistent challenges in delivering capital projects on time and under budget

Utilities struggle to keep projects on time & budget

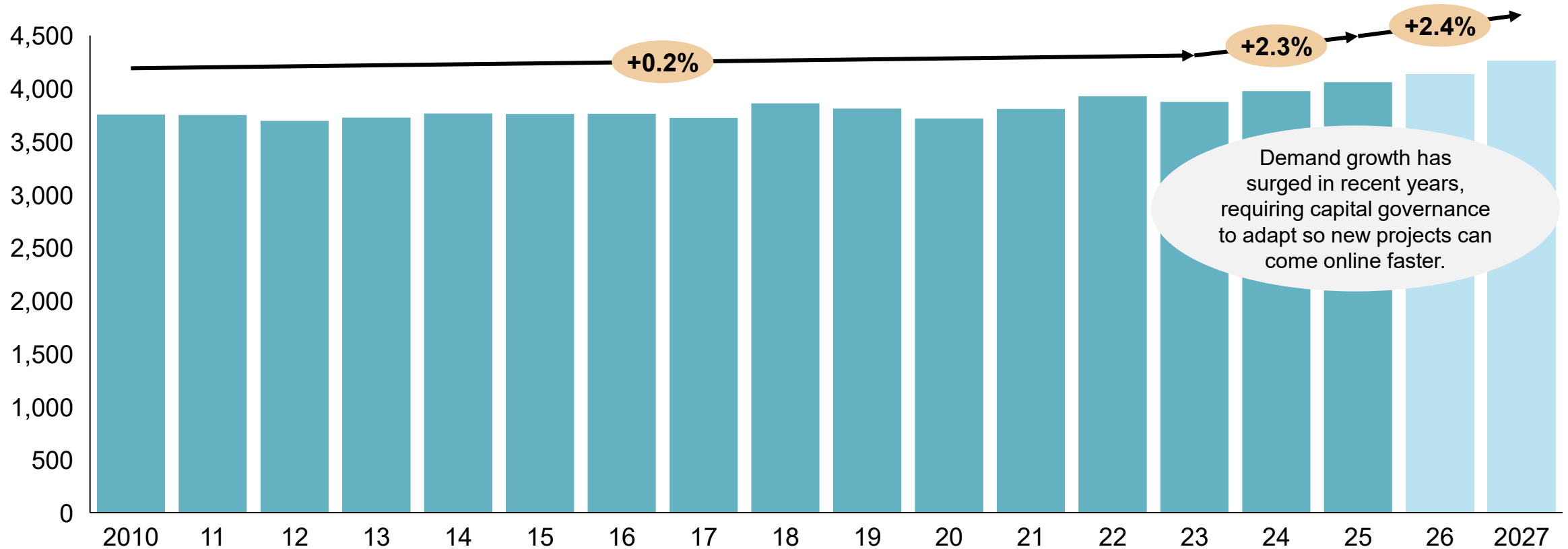


High-profile project examples

 Georgia Power	▪ Vogtle Units 3 & 4 required extended construction timelines ▪ Capital investment base revised to \$22B
 Dominion Energy®	▪ Coastal Virginia Offshore Wind budget adjusted to \$11.5B ▪ Timeline recalibrated to early 2027
 NV Energy®	▪ Greenlink Transmission completion schedule updated to 2027-2028
 PSEG	▪ Maryland Piedmont Reliability Project schedule undergoing active revision
 Orsted	▪ Hornsea 3 commercial operation target adjusted to early 2028

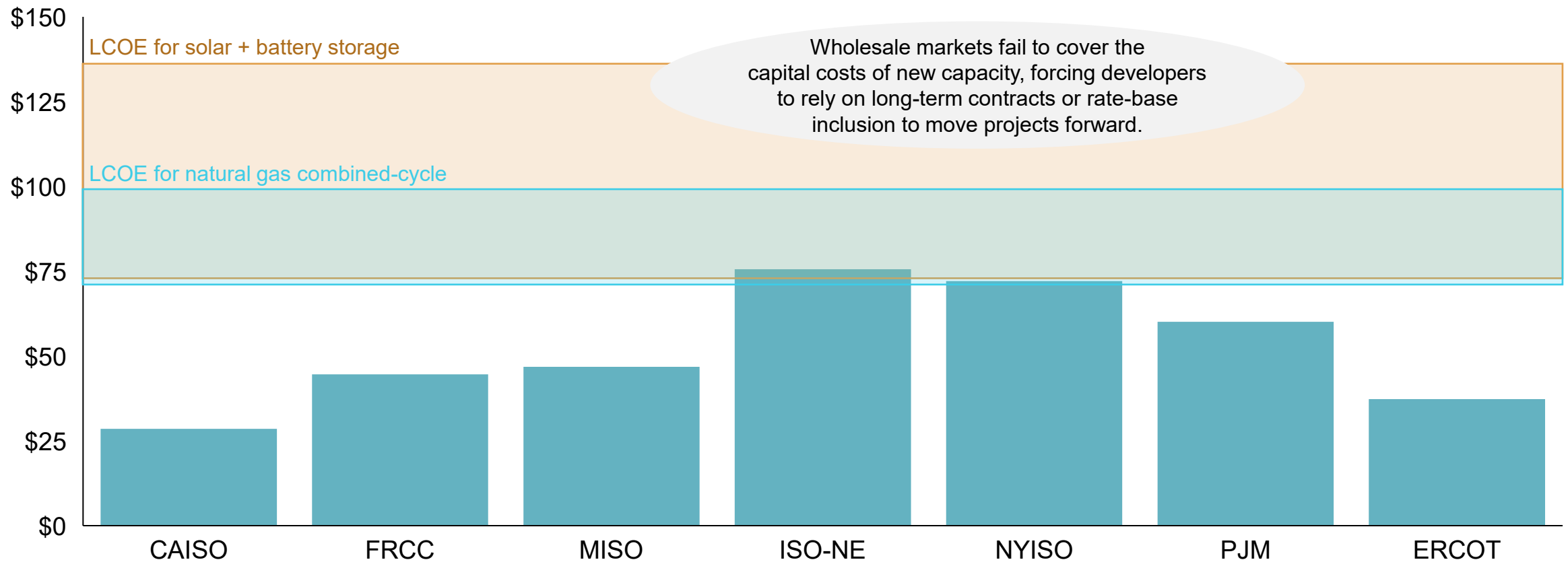
The U.S. is facing a 10x surge in electricity demand growth that legacy capital planning processes were not built to handle

Total U.S. retail sales of electricity
Terawatt-hours (TWh)



Wholesale power prices remain well below the cost of building new generation, creating a key barrier for project development

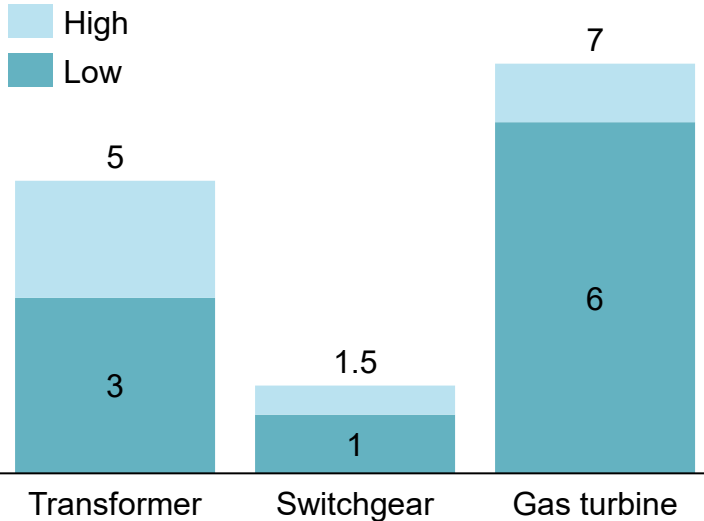
Wholesale electricity prices vs. levelized cost of electricity (LCOE) for new generation
USD per megawatt-hour (\$/MWh)



Converging supply chain bottlenecks, deep talent gaps, and tightening regulatory oversight are threatening capital projects

Supply chain disruptions

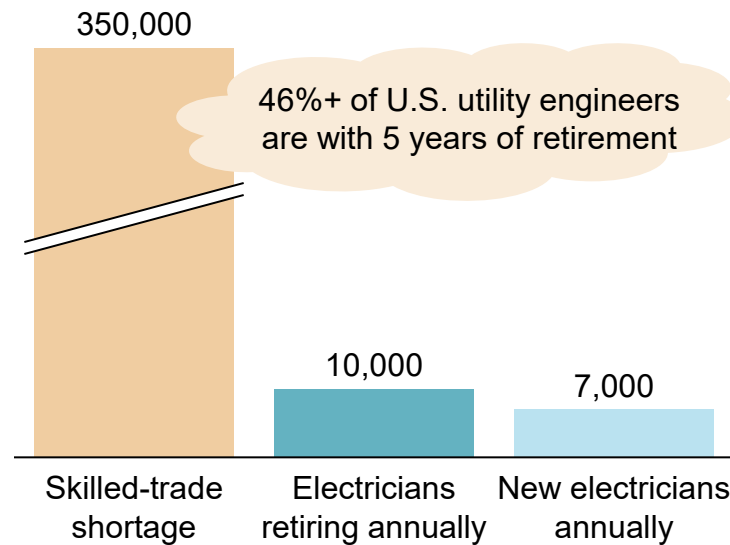
Equipment lead times in years



- Three largest turbine makers hold 228 GW of combined backlog
- The U.S. currently imports 80% of power transformers
- Section 232 tariffs adding cost volatility

Declining workforce

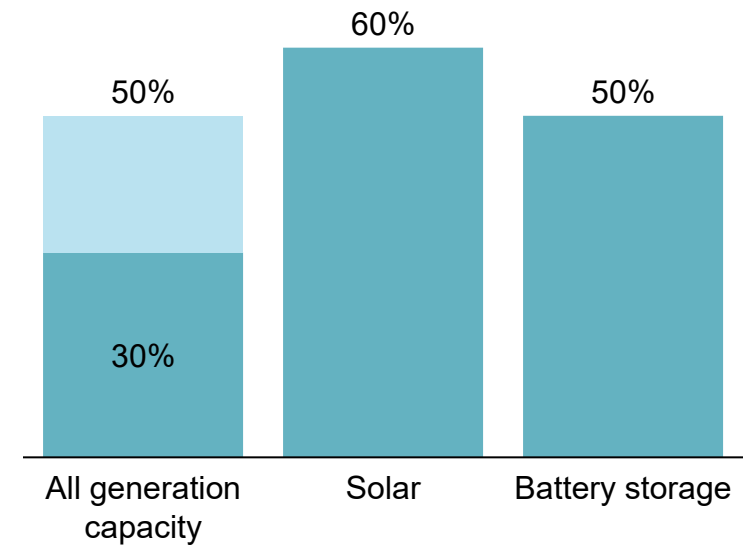
Number of personnel



- Wage inflation of 5-8% annually
- Data center builds are outbidding utilities for skilled labor
- Site project leadership is viewed as the top execution bottleneck

Permitting & regulatory hurdles

Percentage of projects delayed



- Median interconnection timeline of 5 years from request to completion
- FERC Order 1920 is restructuring transmission planning rules
- Punitive regulatory cost disallowances

Project execution failures carry severe financial, regulatory, and reputational consequences for utility operators

Executive perspectives on execution risk

“Did encounter challenges from two large legacy projects ... schedule delays and significant inflation ... unrecoverable cost overruns ... reduced gross profit by ~\$20M in Q4 2024.”



“Labor shortage for constructing gas power plants is severe. Very difficult to find specialized plumbers and welders.”



“Customers are booking equipment slots out to 2030 [rather than 2029] because they cannot secure construction permits — driven by lack of EPC labor.”



Financial consequences of project mismanagement Million USD

Mismanagement breakdown	Cost to utility
Contractor oversight lapses and delays during a grid safety program triggered major regulatory cost disallowances.	\$432
Cost overruns during a transmission and substation build drove total spending far beyond original estimates.	\$302
Schedule delays and contractor change orders during a replacement program resulted in disallowances.	\$58
Scope creep during a software upgrade breached pre-approved spending caps, forcing a direct shareholder write-down.	\$50

ADI's study will answer the critical questions utility leaders face today

1

Capex landscape & trends

How large is the capital wave, and how does spending vary by utility type, region, and project category?

2

Project execution performance

Where do projects typically fail, what causes overruns, and what do best-performing utilities do differently?

3

Governance, PMO, & contracting

What governance structures, stage-gate processes, and contracting models ensure predictable project delivery?

4

Supply chain, workforce, & regulation

How should utilities navigate equipment shortages, talent deficits, tariff risks, and permitting bottlenecks?

5

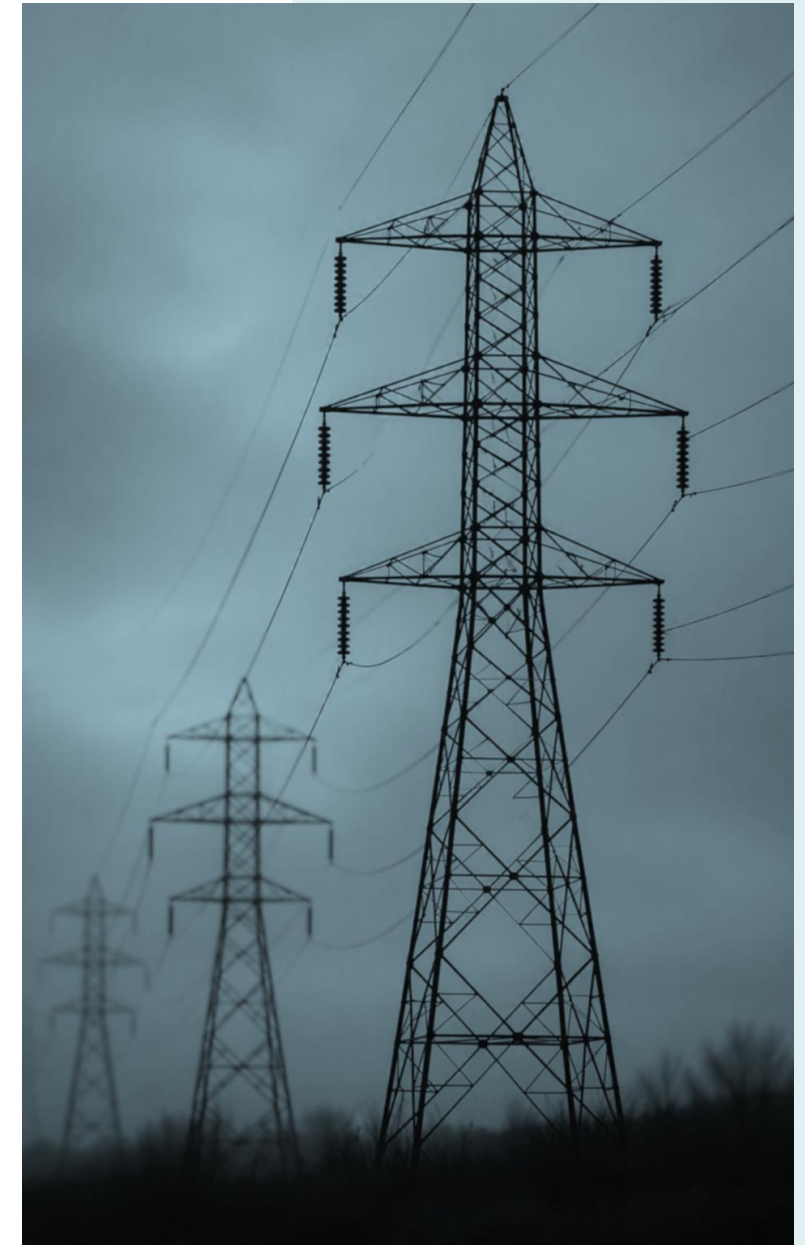
Digital Innovation & AI

Which software platforms and AI tools deliver real project value versus unproven industry hype?

6

Strategic roadmap & maturity model

What is the prioritized action agenda for utilities of different sizes and capital program maturities?



The comprehensive study agenda maps critical execution vectors across the full capital project lifecycle

1	Executive summary Primary study findings, core takeaways, and high-level strategic benchmarks	7	Regulatory, siting, & permitting dynamics Assessment of grid interconnection queues, FERC planning compliance, and cost recovery disallowance risks
2	Utility capital expansion & drivers Analysis of multi-year spending horizons, AI-driven load growth, and shifting functional investment allocations	8	Workforce & talent capabilities Overview of specialized craft labor gaps, technical staffing models, and cross-sector talent competition
3	Project execution & performance metrics Comprehensive metrics on schedule delays, budget overruns, and missed commercial operation dates across the sector	9	Digital innovation & AI strategy Review of project management software, AI-driven analytics, and real-world ROI for digital field tools
4	Portfolio strategy & governance Evaluation of centralized PMO models, standardized stage-gate verification reviews, and internal portfolio delivery structures	10	Comparative project case studies Comparative analysis of generation megaproject failures alongside best-in-class utility execution examples
5	Project contracting strategies Commercial assessment of traditional fixed-price project exposure against collaborative, progressive, and reimbursable contract models	11	Roadmap to capital excellence Framework for a five-stage capability maturity model and a prioritized strategic action agenda
6	Supply chain risk management Strategic overview of extended manufacturing lead times, supplier concentration risks, slot reservation agreements, and tariff volatility	12	Synthesis & implementation roadmap Final synthesis of primary study findings and a practical playbook for organizational implementation

ADI's methodology for developing this study leverages primary research, market intelligence, and proprietary analytics

Primary research

- **Expert interviews** conducted with utility capital leaders, PMO directors, owner's engineers, EPC contractors, and equipment OEMs.
- **Executive workshops** hosted with study sponsors to align research goals and test core hypotheses.
- **Asset site visits** paired with granular, project-level operational deep dives.

Market intelligence

- **Corporate analytics** including earnings call transcripts, broker research, and company filings.
- **ADI proprietary databases** leveraging macro utility capex and project tracking data.
- **Regulatory filings** covering exhaustive reviews of FERC dockets, state PUC filings, and rate case decisions.

Performance benchmarking

- **Proprietary datasets** leveraging historical performance metrics extracted directly from ADI's capital project database.
- **Cross-industry metrics** comparing execution risks across oil and gas megaprojects, nuclear power, and civil infrastructure.
- **Peer-group analysis** applying statistical modeling to utility cost overruns and schedule variance.

Technology assessment

- **Landscape mapping** evaluating commercial vendors for project controls, artificial intelligence, drones, and digital twins.
- **Deployment briefings** held with front-line technology deployers and integration teams at major utilities.
- **Strategic frameworks** validating high-stakes build versus buy decisions for automation software.

- ▶ Study prospectus

- ▶ About ADI Analytics

ADI Analytics is a consulting firm specializing in oil & gas, energy, chemicals, and industrials since 2009



UPSTREAM



MIDSTREAM



GAS & LNG



DOWNSTREAM



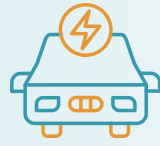
OFSE / EPC



POWER



STORAGE



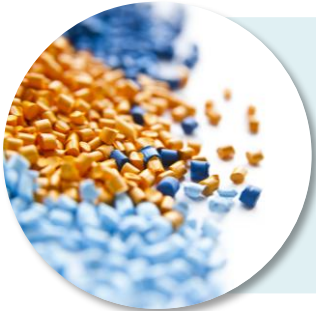
EV



CCUS



HYDROGEN



FEEDSTOCKS



COMMODITY



ENGINEERED



SPECIALTY



RECYCLING

SINCE
2009

450+
CLIENTS

1,000+
PROJECTS



ACQUIRED IN
2017

Over 450 clients in oil & gas, energy, and chemicals rely on ADI to guide their biggest strategic, technical, and investment decisions

Oil & Gas	Power	Chemicals	OFSE	EPC	Industrial	Investors	Start-ups	Institutions
								
								
								
								
								

Our value proposition – expertise, proven experience, thought leadership, and analytics – is designed to help clients succeed



Deep, frontline
industry expertise



Nearly **1,000 projects** for
450+ clients since 2009



Proprietary analytics-
and data-driven



Differentiated
thought leadership

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Cost and economic analyses



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440 COBIA DRIVE • STE 1704 • HOUSTON • TEXAS 77494

+1 (281) 506-8234 • INFO@ADI-ANALYTICS.COM

WWW.ADI-ANALYTICS.COM

The background of the right side of the slide is a collage of images related to energy and industry, including tall industrial distillation columns, wind turbines in a field, and solar panels. The collage is overlaid with a hexagonal grid pattern.

1,000+
PROJECTS

SINCE
2009

450+
CLIENTS



ACQUIRED IN
2017

ANNUAL
FORUM

90+
DATABASES