



W|EPC: Energy & Utility Project Research

LNG • Utilities • Midstream • Renewables

Subscription Details



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Platform Overview:

Term: 6-months

Price: Bespoke

Subscription Includes:

- **Core Research Reports:** White Papers That Demystifies Major EPC Projects Through Our:
 - Independent project timeline (and slippage) estimates
 - Detailed cost analysis - **identifying cost overruns** (*before the rest of the market*)
 - Highlighted variances between company guidance and EPC reality – *before the surprise*
- **Consulting Services:** Access To Our Experts For Tailored Research
 - In-depth, confidential due diligence with the scope of our covered industries
 - Bespoke Solutions
- **Access to Our Analysts & Team Members In New York & Houston:** Conference Calls, Questions, & Bespoke Work
- **Access to Our W|EPC Research Library:**

Research	Title	Date	Author	Type
W EPC	Golden Pass LNG (XOM, QP) Part 2: Satellite Image Analysis & Progress Details (Deck)	Wednesday, April 29, 2020	Michael Webber, CFA	Presentation
W EPC	Golden Pass LNG (XOM, QP) Part 1: Analyzing Project Costs & Logistics In COVID Era (Deck)	Monday, April 27, 2020	Michael Webber, CFA	Presentation
W EPC	American Electric Power (AEP) Capital Project Analysis – Q220 (DECK)	Monday, April 13, 2020	Michael Webber, CFA	Presentation
W EPC	Sempra LNG (SRE) & Costa Azul – Is ECA Different?	Wednesday, April 8, 2020	Michael Webber, CFA	Report
W EPC	Force Majeure & The LNG Supply Chain: BH, Kiewit, & VG	Thursday, March 26, 2020	Michael Webber, CFA	Report
W EPC	Sempra (SRE) Capital Project Deep Dive – Oncor (DECK)	Tuesday, March 24, 2020	Michael Webber, CFA	Presentation
W EPC	EPD Capital Project Deep Dive (DECK)	Thursday, March 19, 2020	Michael Webber, CFA	Presentation
W EPC	LNG Canada Update - Shell, Fluor, & JGC (DECK)	Wednesday, March 18, 2020	Michael Webber, CFA	Presentation
W EPC	Commonwealth LNG - Calcasieu's Noisy Neighbors (DECK)	Friday, March 6, 2020	Michael Webber, CFA	Presentation
W EPC	Venture Global LNG - Calcasieu Engineering Update	Thursday, March 5, 2020	Michael Webber, CFA	Report
W EPC	Venture Global LNG - Costs Ramping At Calcasieu Pass?	Monday, March 2, 2020	Michael Webber, CFA	Report

*March & April 2020 reports shown above – Library goes back to Q219

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Company Project & Backlog Coverage:

Utilities:

- Southern Company (**SO**)
- Sempra Energy (**SRE**)
- Dominion Energy (**D**)
- American Electric Power (**AEP**)
- CenterPoint Energy (**CNP**)

Midstream Companies:

- Enbridge (**ENB**)
- Enterprise Product Partners (**EPD**)
- Kinder Morgan (**KMI**)
- Energy Transfer (**ET**)

International Oil Companies (IOCs):

- ExxonMobil (**XOM**)
- Royal Dutch Shell (**RDS:A, RDS:B**)
- Total S.A. (**TOT**)

LNG Project Coverage:

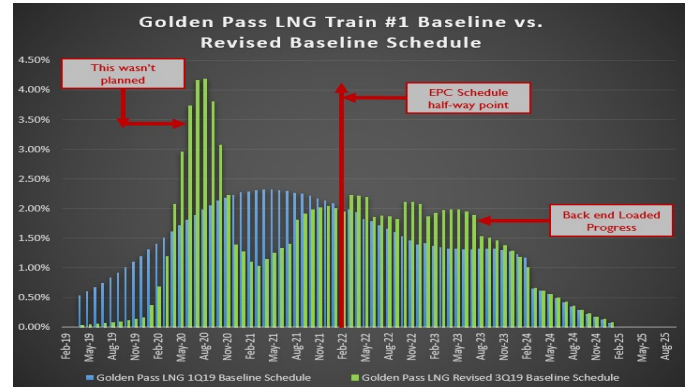
- Cameron LNG [T1-3] (**SRE**)
- Calcasieu Pass LNG (**VG**)
- LNG Canada (**RDS**)
- Elba Island LNG (**KMI**)
- Rio Grande LNG (**NEXT**)
- Driftwood LNG (**TELL**)
- Golden Pass LNG (**XOM, QP**)
- Commonwealth LNG (**Private**)
- Annova LNG (**EXC**)
- Plaquemine's Parish LNG (**VG**)
- Costa Azul LNG (**SRE**)

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Project Tracking: Major Obstacles And Drivers By Independent Project

W|EPC can identify potential schedule issues, significant cost overruns, and material deviations from expectations or guidance – **before the surprise.**



High Resolution Satellite Imagery: A More Accurate Portrayal Of Project Progress

W|EPC uses high-res satellite images to support our core research reports. The images purchased shows the actual project site and temporary project locations, which includes module yards, parking facilities, and storage and laydown facilities. Analysis will accompany each satellite image.



Backlog Capital Project Analysis: Digging Into the Backlogs

W|EPC blends our decades of EPC experience with deep and thorough analyses of federal and local data bases, economic models, and industry expertise to dig deeper into Utility & Energy company backlogs, capital project budgeting, and timelines, that ever before. Our coverage includes Sempra Energy (**SRE**), American Electric Power (**AEP**), Enterprise Products (**EPD**); Energy Transfer (**ET**); Sempra Energy (**SRE**); and Kinder Morgan (**KMI**), and more.

EPD Capital Project Analysis

Existing Projects: PDH #2 Cost Analysis

- PDH #2 is designed to consume up to 35 MBPD of propane and produce 25 MBPD (or 1.65 billion lbs/yr) of polymer grade propylene ("PGP").
- EPD is forecasting the global demand for PGP to continue increasing.
- EPD has provided the following public data:
 - PDH #2 will integrate with existing propane and propylene network.
 - **FID:** October 2019
 - **COD:** 1H23
 - **Total Construction Hours:** 11.7MM
 - **EPD's total investment:** >\$1.2B
- **W|EPC estimates:**
 - **EPC total cost:** \$1.32B
 - **Construction wage rate:** \$54.44/hour (bare rate + burdens & benefits).

W EPC Estimated Cost Breakdown** (\$MM)		
Description	% of Total Cost	Total Cost
Home Office PMT & Engineering	5.1%	\$67.6
Procurement - Equipment	14.9%	\$196.6
Procurement - Bulk Materials	14.9%	\$196.6
Construction - Directs	48.2%	\$637.0
Construction - Indirects	7.6%	\$100.5
Risk/ Contingency/ Profit	9.3%	\$122.0
W EPC Total Estimated Cost	100%	\$1,321.2

Key Points

- The total estimated construction craft labor costs is forecasted (**55%**) to be above standard percentage allocations (~**40%**).
- Why is EPD's estimated construction hours on PDH #2 (11.7MM) less than their proposed PDH #3 (15.6MM)? If it's essentially the same project, will the additional construction labor costs from PDH #3 need to be added to PDH #2?

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Export Infrastructure
Commonwealth LNG: A Detailed Look At Calcasieu's Noisy Neighbors

March 6, 2020
Export Infrastructure



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Export Infrastructure
Sempra LNG's Costa Azul – Deep Dive
Is ECA Different? Analysis & Risks As Larger Projects Falter

April 8, 2020
Export Infrastructure



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Export Infrastructure
Force Majeure & The LNG Supply Chain:
Scenarios For BH, Kiewit, & Venture Global

March 26, 2020
Export Infrastructure



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Reviewing Satellite Images Of Italian Fabrication Yard, & A FM Flow Chart

Given the continued rolling implications of the global response to COVID-19, we thought it was worthwhile to examine potential points of friction as it pertains to the implications of Force Majeure (FM) declarations on large-scale, multi-faceted LNG export projects.

We believe such a scenario is relevant for Venture Global's Calcasieu Pass (CPLNG) project given its globally linked supply chain - including its liquefaction modules which are being fabricated at a Baker Hughes (BH) fabrication facility in Italy (which we detail below). While we're focusing this report on the Venture Global's supply chain, we note

there are se **Webber R|A: AEP Texas Capital Project Analysis**
some of whi
(see our LNI

AEP Company Overview

AEP and Subsidiaries Capital Forecasts

<ul style="list-style-type: none"> • American Electric Power (AEP) has a market cap of (~\$42B), been in business for 11 • Ameri trans Retail 9.4% • South miles custom Texas • Electri Berksl trans prima includ • AEP and 2i 	<ul style="list-style-type: none"> • AEP Key ERCC Acti Capi ETT Key Addi
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American Electric Power (AEP)

April 2020 Capital Project Analysis

AEP Texas (AEP), Electric Transmission Texas (ETT), and Southwestern Electric Power Company (SWEPCO)
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Key Areas Of Expertise:

Capital Project Analysis	Projects with the most optimistic (and unrealistic) schedule and cost estimates may appear to be good investments, but this optimism bias leads to underperforming projects over 66% of the time. We can assist you with your project analysis to ensure the project you become involved with will not be an underperforming one.
Contract Analysis	The EPC industry is among the most fragmented and least transparent in the world. The contracting structures governing projects are rife with mismatched risks and rewards; and owners are often faced with navigating a challenging and opaque marketplace. We can help you and other project stakeholders develop a balanced allocation of contractual risk.
Due Diligence	We can help investors understand and evaluate a potential capital project investment, assess potential risks and protect your interests. Our experts can provide project performance reviews, budget analysis, scope of work definition, identification of potential existing site conditions, and analyzing commercial structures and contracts.
EPC Execution	Almost 33% of industrial projects begin construction without adequately defined project execution plans, leading to execution inefficiencies. We can evaluate your execution plans, assess construction readiness, and mitigate risk prior to starting expensive developments.
Expert Witness	We have world-class experts who can meet your needs for expert consulting or an expert witness to support your litigation or arbitration. Our analysts have extensive hands-on experience in the EPC industry and in megaproject execution. Their experience allows them to opine on what reasonably prudent actors should have done.
Fatal Flaw Studies	Similar to due diligence investigations, but operating on the Pareto Principle, in applying 20% of the effort to uncover 80% of the potential problems. Quickly uncover and evaluate issues in regulatory processes, site conditions, labor markets, execution plans, and technology decisions.
Modularization	Prefabrication and modularization are increasingly moving off-site. Manufacturing larger modules remotely can reduce on-site complexity and on-site labor headcounts; while increasing safety and quality. However, modularization is not the right solution for every project. We can assist you in determining whether modules make sense for your project.
LNG/Petrochemicals	We have extensive knowledge of the North American and International LNG and Petrochemical industries. Our analysts have negotiated or advised on numerous EPC contracts in these industries and have operations experience building these megaprojects. We have extensive knowledge of the challenges facing prospective facilities. We can provide you comprehensive overviews of both markets as well as the major projects within each industry.
Risk Analysis	Understanding potential project risks early in development is critical to delivering successful outcomes. We perform risk assessments and benchmarking evaluations at every stage in the project life cycle, to help you understand likely outcomes, key issues to address, and readiness for the next stage. We can also help you understand which party is the "natural owner" of a key risk and how to manage that risk contractually.

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