

Engineering & Construction Biweekly

ExxonMobil Exploring LNG in Canada; Tracking MDR Bids

■ Industry Overview

- **Commentary in this Issue** — ExxonMobil is in the early stages of assessing potential LNG export projects in Western Canada. MDR is the low bidder at \$439 million for the Litoral-A platform in the Bay of Campeche, Mexico. The Vladivostok LNG (i.e. Russia) FID is scheduled for 1Q13. TEPCO is in advanced negotiations to buy LNG from North America, though they are trying to procure LNG at Henry Hub linked prices (i.e. not oil linked prices). Yamal LNG will utilize a BASF technology to remove carbon dioxide from natural gas. Chevron has made a gas discovery which could be used to support the Gorgon 4 LNG train. Lastly, Dow Chemicals has warned that LNG exports out of the U.S. could limit an industrial revolution.
- **Award Tracker Highlights** — Over the last two weeks, FLR, FWLT, and JEC announced contract wins. FLR was awarded three contracts: 1) a 38-month extension at Savannah River, 2) an EPC contract for a solar power project in California, and 3) an EPCM contract from the Dow Chemical Company for a propylene production project. FWLT also announced three awards, including two heat recovery steam generators in Mexico, and an EPCM award in Canada for a potash facility. Lastly JEC announced three contract wins, including the basic engineering of three sulfur recovery units to be located at the Petronas RAPID facility in Malaysia, and an award at NASA's Stennis Space Center.
- **Potential Upcoming Catalysts** — We see a fair number of positive potential catalysts for covered names over the next several months. Most names under coverage face possible final investment decisions and/or potential EPC contract awards on sizable proposed projects through the end of the year. See page 9.
- **Investment Thesis: Selectivity Remains Key** — In the near term, we recognize that the outlook for the E&C sector is challenging leading us to adopt a more guarded stance. Indeed, while the fundamental backdrop presents some risks, we do believe longer term opportunities remain and urge selectivity. This viewpoint suggests that the E&C sector remains one of the best ways for investors to benefit from economic growth (i.e. albeit slower growth) in countries undergoing industrialization. We judge that near term performance will be largely dictated by global macroeconomic concerns and the expectation of slowing economic growth.
- **Valuation** — Covered E&Cs currently trade at 14.6x and 12.7x 2012 and 2013 consensus EPS estimates, respectively (i.e. average historical multiple is 16.2x; trough multiple of 4.8x in 2008). We recognize the E&Cs are highly levered to crude oil prices, which suggests an oil-based valuation framework. That said, we prefer a cyclical analysis with a tactical view on crude oil given inherent pitfalls in tying 12-month valuation to crude oil prices. As such, we calculated an implied crude oil price for each stock using a simple regression between P/E and the 12-month crude oil strip. Currently, the group is pricing in \$100.10 on average compared to the current NYMEX strip at \$93.00/bbl.
- **Investment Opportunities** — For investors willing to look beyond the near-term headwinds and able to sustain volatility, we believe E&Cs with exposure to developing economies and the Oil & Gas and Mining end market offer a compelling risk reward proposition. We recommend investors focus on: CBI, FLR, KBR and MDR.

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Performance Overview & Investment Thesis

E&C Group Recent Performance

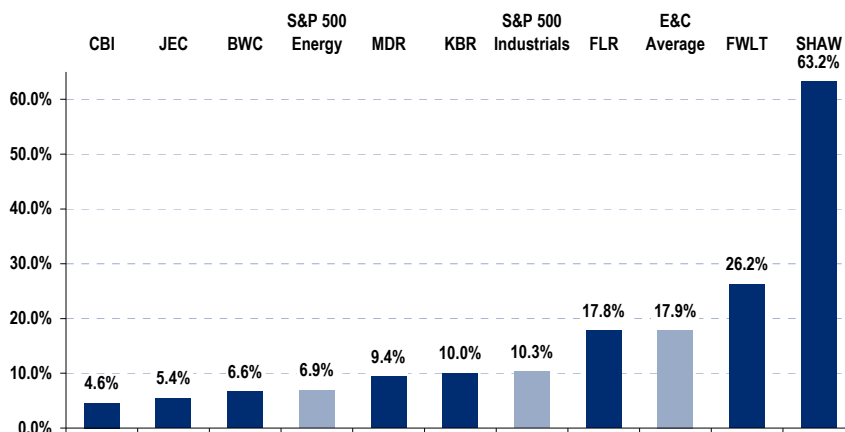
On average, our covered E&C group generated a total return of -18.8% in 2011 and 17.9% year to date. In comparison, the S&P 500 Energy & Industrial indices generated a total return of 2.8% and 3.2% in 2011 and 6.9% and 10.3% year to date and 3.7% and 1.7% over the last four weeks, respectively.

On average, our covered E&C group generated a total return of -18.8% in 2011 and 17.9% year to date. In comparison, the S&P 500 Energy & Industrial indices generated a total return of 2.8% and 3.2% in 2011 and 6.9% and 10.3% year to date and 3.7% and 1.7% over the last four weeks, respectively. The notable performer in our E&C coverage over the last four weeks has been FWLT, returning 16.3%, which compares to the 8.0% return of the group ex FWLT.

Covered E&Cs currently trade at 14.6x and 12.7x 2012 and 2013 consensus EPS estimates, respectively (i.e. average historical multiple is 16.2x; trough multiple of 4.8x in 2008) which compares to our peer group target multiple of 12.6x (i.e. target prices are based on our 1-year forward, next 12-month EPS estimate). We set our target multiples based on an in depth analysis of prior E&C cycles, current competitive trends as well as individual E&Cs end market exposure, business strategy and execution, and operating metrics. We recommend CBI, FLR, KBR, and MDR given their large opportunity sets, exposure to developing economies, and market leadership in the most favorable end markets (i.e. oil & gas with a particular focus on LNG, offshore and storage as well as Mining).

Given that our coverage universe is highly levered to crude oil prices, we also calculate the implied 12-month oil strip embedded in current share prices. Based on our calculations, the group is pricing in a 12-month oil strip of roughly \$100.10 per barrel with significant dispersion among our covered companies. In comparison, the current 12 month NYMEX Futures strip is at \$93.00 per barrel. We will monitor these implied calculations in conjunction with our end market analysis as a tactical supplement and sentiment gauge for the E&C group. See the "Oil Based Valuation – A Tactical Tool" section for details.

Figure 1. 2012 E&C Performance YTD



Source: Citi Research, FactSet

Investment Thesis – Selectivity Remains Key

We believe the E&C sector represents one of the first places to make money as investors seek to profit from emerging market GDP growth and from the structural changes these economies are undergoing.

Given a potentially deteriorating global economic environment, we recognize that the outlook for the E&C sector is challenging, thereby, leading us to adopt a more guarded stance. Indeed, while the fundamental backdrop presents some risks for the remainder of 2012, we do believe longer term opportunities remain and urge selectivity. This viewpoint suggests that the E&C sector remains one of the best ways for investors to benefit from economic growth (i.e. albeit slower growth) in countries undergoing industrialization. In particular, we believe the sector which participates in the build out of energy and power infrastructure assets, represents one of the first places to make money as investors seek to profit from emerging market GDP growth and from the structural changes these economies are undergoing.

Near term, while there might be a few periods of strong absolute performance, assuming the macro issues remain unresolved/uncertain, we continue to expect a fair amount of volatility and possibly some notable pullbacks. Similarly, we judge that project sponsors will remain wary, and though we foresee pockets of growth we do not anticipate a broad-based pickup in new award activity over the next few months. Specifically, award activity is likely to be lumpy throughout the remainder of the year. As a result, we believe differentiation among E&Cs is likely. This viewpoint suggests that being selective and focusing on names with visible catalyst driven investment opportunities should partially guard against broader market turmoil. Our selective stance on the E&C group stems from the combined assessment of: 1) our bottom-up analysis of potential new awards, 2) historical share performance trends, 3) the competitive landscape, 4) risks to the factors that drive project sponsor decisions (i.e. the commodity, economic, capital markets/funding cycles – “Three Cycles”), and 5) our analysis of past E&C cycles.

Longer term, despite the expectation for slower global economic growth leading to broader market volatility, we believe that the E&Cs do provide investors with a relatively compelling opportunity through: 1) exposure to developing economies as well as to spending the result of U.S. shale (i.e. late 2013 early 2014 investable theme), 2) market leadership in favorable end markets supported by strong secular trends (Oil & Gas), 3) strong balance sheets with very limited leverage (i.e. average debt to equity 15.7%; buybacks remain a possibility), 4) operating margins that are generally below historical peaks, and 5) the potential for a strong rebound given relative underperformance (i.e. E&C's should rebound more once the selling stops).

Well Positioned: Developing Economies, Oil & Gas, Mining

The companies in our coverage that are most exposed to developing economies and the oil and gas and mining end markets are: CBI, FLR, FWLT, KBR, and MDR.

Based on our analysis, we judge that **the most favorable E&C end markets are Oil & Gas, with particular emphasis on LNG, offshore and storage and Mining.** As such, the key is to be regionally selective as developing countries should require greater investments in energy over time. Moreover, for investors seeking to gain exposure to emerging markets, the E&C sector represents a good way to get involved as we estimate that ~50% of 2012 revenues will be derived from the developing world (JEC at the low end - 6%; MDR at the high end - 90%). The companies in our coverage that are most exposed to developing economies and the oil and gas and mining end markets are: CBI, FLR, FWLT, KBR, and MDR.

Least Well Positioned: Developed Economies, Power

The companies in our coverage that are most exposed to developed economies and the power generation end market are: BWC & SHAW.

Given recent downward revisions to economic growth in the developed world combined with our study of previous E&C cycles, we believe it is reasonable to assume that a weakening macroeconomic environment is not supportive of capital spending. In addition, given that developing markets are a key driver for power spending that benefits our covered E&C's, a meaningful recovery is likely to be adversely impacted by slower growth. Environmental controls spending remains the best near term opportunity in the power end market. The companies in our coverage that are most exposed to developed economies and the power generation end markets are: BWC & SHAW.

Figure 2. E&C Summary Coverage Universe Table

E&C Company	Ticker	Market Cap (\$MM)	90-day		Last Price	12 Month		Total Return Potential	Operating Metrics - 2012E		
			Average Daily Volume (M)	Rating		Target Price	Operating Margin		Burn Rate	Book-to-Bill Ratio	
Babcock & Wilcox	BWC	\$3,058	74	2H	\$ 25.74	\$30.00	16.6%	9.3%	7.9x	1.4x	
Chicago Bridge & Iron Co NV	CBI	\$3,810	359	1H	\$ 39.39	\$45.00	14.7%	7.5%	7.4x	1.1x	
Fluor Corp	FLR	\$9,803	408	1H	\$ 58.71	\$72.00	23.7%	3.9%	5.6x	0.9x	
Foster Wheeler AG	FWLT	\$2,606	1,740	2H	\$ 24.16	\$21.00	(13.1%)	5.4%	3.3x	1.0x	
Jacobs Engineering Group	JEC	\$5,552	216	2H	\$ 42.79	\$47.00	9.8%	5.4%	5.2x	1.0x	
KBR, Inc.	KBR	\$4,493	307	1H	\$ 30.50	\$39.00	28.5%	6.5%	8.6x	1.9x	
McDermott International Inc	MDR	\$2,969	631	1H	\$ 12.59	\$16.00	27.1%	9.4%	6.9x	1.6x	
Shaw Group Inc	SHAW	\$2,897	320	2H	\$ 43.90	\$44.00	0.2%	3.8%	12.2x	0.7x	
Sector Average								13.5%	6.4%	7.1x	1.2x

Source: Citi Research, priced as of 9/24/12

Industry News Flow & Project Updates

Positives

Oil & Gas:

- ExxonMobil and Imperial are currently in the early stages of assessing potential LNG export options from British Columbia (Downstream Today, 9/21/2012).
- Dragados Offshore (Spain) and McDermott are facing off for an EPC contract from Pemex to construct and install the Litoral-A platform in the Bay of Campeche. MDR is understood to have submitted a bid of \$439 million, while Dragados's bid is understood to be slightly higher at \$449 million (Upstream, 9/21/2012).
- The Final Investment Decision for the Vladivostok LNG project located in Russia will be taken at the beginning of 2013 (LNG World News, 9/19/2012).
- Korea National Oil Corp. plans to begin work on a \$1.4 billion oil storage and trading hub next year. The hub, consisting of two terminals, will have a total storage capacity of 28.4 million barrels, including a 9.9 million barrel terminal for petroleum products and an 18.5 million barrel terminal for crude oil. It aims to have the tank for petroleum products completed by 2016 (Downstream Today, 9/19/2012).
- PetroSA has urged the South African government to advance the \$10 billion refinery project. The company stated that if the government does not move quickly to approve Project Mthombo, South Africa could have a fuel shortage (Downstream Today, 9/19/2012).
- TEPCO of Japan is in advanced negotiations to buy LNG from North America. The company stated they are in negotiations with several projects, and that they want to procure LNG where prices are linked to Henry Hub (LNG World News, 9/18/2012).
- Nigeria's long-delayed Brass LNG project has three strategic investors working on details of sales and purchase agreements for the two-train, 10 mtpa plant. They hope to finalize contracts by year end or early 2013. The FID is scheduled for 1Q13 (LNG Unlimited, 9/21/2012).
- Yamal LNG will use BASF's technology for removing carbon dioxide from natural gas (Oil & Gas Journal, 9/18/2012).
- Total is pressing on with the third phase of the South Mahakam gas and liquids project off Indonesia. MDR is understood to be bidding on the transportation and installation tender for the tripod and associated pipelines for a new tripod unit (Upstream, 9/20/2012).
- Chevron has made another gas discovery in the Carnarvon basin off Western Australia, which could be exploited as part of a planned fourth train at Gorgon (LNG Unlimited, 9/21/2012).
- Saipem has signed new offshore contracts in Angola, Kazakhstan and the North Sea, which are worth approximately \$950 million (Offshore Energy Today, 9/24/2012).

- Pemex has signed a licensing agreement with Bechtel for the process design of a delayed coking unit for the new Tula refinery in Hidalgo, Mexico. The unit will use Bechtel's ThruPlus Coking technology to upgrade heavy oil into light hydrocarbon liquids (Oil & Gas Journal, 9/17/2012).

Power End Markets:

- Dominion Virginia Power is proposing to convert Bremo Power station from using coal to natural gas as fuel to generate electricity. This would be the ninth Dominion plant in recent years to be closed or converted to alternative fuels (LNG World News, 9/14/2012).

Miscellaneous End Markets:

- The government of the Australian state of New South Wales has pushed forward the likelihood of uranium extraction by calling for expressions of interest for licenses to explore the mineral (IJ Online, 9/19/2012).
- The city of Ottawa has shortlisted consortiums bidding for the Ottawa Light Rail project, which is expected to commence construction in early 2013 and cost \$2.1 billion. The three consortiums are Ottawa Transit Partners, Rideau Transit Group, and Rideau Transit Partners (IJ Online, 9/18/2012).

Negatives

Oil & Gas End Markets:

- Dow Chemical has warned that LNG exports out of the U.S. could limit the country's industrial renaissance (Natural Gas Week, 9/24/2012).
- The DOE has once again pushed back the release of a long-awaited report assessing how much LNG can be exported from the U.S. An update on the website said the study is due to be completed by year-end (LNG Unlimited, 9/21/2012).
- The Western Australian Government introduced legislation that rules out alternatives to James Price Point as the site of its Browse gas hub (Downstream Today, 9/20/2012).
- Chevron is considering delaying its investment decision on the full-field development of a heavy oil project in an onshore area of the Neutral Zone between Saudi Arabia and Kuwait. Chevron has previously indicted it intends to make a FID at Wafra by the end of next year, but now is considering pushing that decision off until at least 2016 (Oil Daily, 9/21/2012).

Power End Markets:

- Japan has unveiled a plan that would pledge every policy resource will be brought to bear to phase out nuclear power by 2040 (EI New Energy, 9/20/2012).

Miscellaneous End Markets:

- Conflicting regulations and a freeze on new mine deals in the Philippines are putting more than half of the country's \$12 billion in mining investments at risk (MineWeb, 9/24/2012).

Potential Near-Term Catalysts

We have included a list of upcoming potential catalysts and notable events for our covered companies. The list is sorted chronologically with potential positive events noted with a "+", neutral ones with a "=" and negative ones with a "-".

Figure 3. Upcoming Potential E&C Catalysts and Related Events

Potential Catalyst		Relevant E&C							
Date	Event	BWC	CBI	FLR	FWLT	JEC	KBR	MDR	SHAW
2012	Environmental Control Spending	+							
2012	Power Generation Awards	+							+
2012	Loan Guarantee from DOE	=							
2012	Share Buyback Program Comments/Update		+	+	+		+		
2012	Mining Awards								
2012	Canadian Oil Sands Awards		+	+		+			
2012	GES+ Contract Awards						+		
2012	Kilmat LNG award						+		
2012	Gorgon 4 FEED						+		
2012	Anadarko LNG FEED						+		
2012/2013	Yamal LNG award		+						
2012	Ras Tanura Petrochemical Awards Expected			+	+	+	+		
2012	Potential New Awards on Jack St. Malo							+	
2012	Upper Zakum Awards							+	
2012	Block B Development Awards							+	
2012	Bellefonte nuclear construction								=
2012	Vogtle and V.C. Summer execution								+

Source: Citi Research

BWC: Environmental control spending key near term opportunity

- BWC is well positioned to benefit from significant opportunities that will arise from pending environmental regulations in the US. The Industrial Boiler MACT ("Maximum Achievable Control Technology") regulations will affect larger industrial coal-fired boilers in the pulp, paper, and steel markets, and could potentially be a \$1.5 - \$2.5 billion market opportunity in the compliance period. Even larger is the Utility MATS (Mercury and Air Toxics Standards). According to BWC, these regulations have a potential market opportunity in the range of \$12 to \$18 billion from 2012 – 2016. (+)
- BWC, as part of a partnership, is among five power equipment makers that have bid for orders to supply turbines to NTPC Ltd., India's biggest electricity-generating utility. NTPC is ordering turbines and boilers for three 1,600 MW plants and one 2,400 MW project, valued at a combined \$2.2 billion. (+)
- The U.S. Department of Energy has announced the first step toward manufacturing SMRs in the United States. Through the Funding Opportunity Announcement, the DOE will establish cost-shared agreements to support the design and licensing of SMRs. The FOA will fund up to two SMR designs with the goal of deploying the reactors by 2022. (+)

CBI: Opportunity Set Remains Strong

- Management reiterated 2012 new awards guidance of \$5.5 billion - \$7.0 billion, and tightened both revenue and EPS guidance to \$5.4 billion - \$5.6 billion and \$2.85-\$3.05, respectively. In our view, the new awards guidance (i.e. book to bill between 1.0x-1.4x) suggests that 2011 is not merely a new awards outlier, but indicative of CBI's confidence that its robust target list will continue to materialize. It is important to note that the new awards range is relatively large due to uncertainties surrounding the timing of large LNG "elephant sized projects". (+)
- On July 30, CBI announced that it had entered into a definitive agreement to acquire SHAW for \$46 per share in cash and stock. Shareholders will receive \$41 in cash and \$5 in CBI equity (.12883 shares based upon recent average stock price of \$38.81) for each share of SHAW stock, which implies a total consideration of \$3.04 billion. We have identified 21 conditions that must be met in order for the acquisition to proceed. In our view, the 6 remaining notable merger conditions are: 1) valid exercise of the put options by SHAW to sell its investment in Westinghouse back to Toshiba, 2) CBI shareholder approval, 3) SHAW shareholder approval, 4) \$200 million of EBITDA in the four quarters preceding the closing date (i.e. fiscal 2Q12 to 1Q13), 5) unrestricted cash of at least \$800 million, and 6) net debt less than \$100 million. (=)
- CBI is currently working on pre-FEED, FEED studies, or tenders on six LNG export terminals with an estimated scope of ~\$50 billion: 1) Browse, 2) Arrow, 3) Shtokman, 4) Yamal, 5) Freeport, and 6) Dominion Cove. In addition, CBI is preparing to bid on the FEED contract for Anadarko LNG. (+)
- CBI has identified global petrochemicals opportunities of \$16 billion over the next two years. (+)

FLR: Tracking large scale projects in diverse regions

- Guidance was tightened to \$3.50-\$3.80 per share (i.e. previously \$3.40-\$3.80). (+)
- According to management, Oil & Gas margins have likely reached a bottom, and the expectation is for some margin expansion in 2012. Project awards in the segment have been pushed out further than FLR had anticipated which has impacted margins. Importantly, the company is performing 25+ FEED contracts for Oil and Gas projects, which equate to over \$30 billion in capital expenditures. In our view, increased activity is consistent with our views as we judge that FLR is well suited to benefit from increased capital spending in the energy complex. Moreover, historically strong margins in the Oil & Gas Segment should improve the revenue mix and drive EPS growth. (+)
- As the U.S. opportunity comes into focus, FLR is particularly well positioned to benefit given its competencies all across the energy value chain (i.e. competencies in pipelines, natural gas processing, NGL fractionation, petrochemicals, LNG export terminals and natural gas fired power generation). (+)

- Management views stock as tremendously undervalued and expects share repurchase activity to increase through 2012. (+)
- Fourteen construction companies are on the short list of firms posed to bid for contracts to begin building California's high-speed rail system in the Fresno area later this year. Notably, California High-Speed Rail Partners, composed of Fluor, Skanska, and PCL Constructors are among the teams. The contract is expected to be worth \$1.5 billion-\$2.0 billion. (+)

FWLT: Uncertainty on Margins and New Award Timing Persists

- According to the CEO, the company is in the process of reviewing the overall strategy for the organization. Initial results from the strategy review indicate that FWLT is not likely to make a dramatic shift in direction/strategy. The company anticipates communicating the findings to the investment community in 2H12. (=)
- The Graf-Wulff acquisition completed in 2011 positions the company to more fully participate in the retrofit scrubber market. (+)
- FWLT does not see any material pick up in as-sold margins during 2012. However, increases in volumes in both segments are expected to increase margins somewhat due to operating leverage. (+)
- FWLT has 10 unbooked awards in Global Power Group that are awaiting various approvals. (+)
- Shareholders approved a repurchase program which brings the availability up to \$500 million. Currently, FWLT has \$767 million of cash on the balance sheet. (+)
- Foster Wheeler anticipates booking some FEED work in the U.S. related to shale gas in 2012, with EPCs starting to come in 2013. Management further commented that decisions related to shale gas are moving quickly. (+)

JEC: Unfavorable Exposures, Acquisition Strategy Offers Potential

- JEC is one of the only registered GES+ contractors in Saudi Arabia (i.e. along with Mustang Engineering and KBR), and has won a FEED contract at the Ras Tanura Clean Fuels and Aromatics project under GES+. We expect JEC to win awards in the near-term under GES+. (+)
- JEC is the most acquisitive company in our coverage universe, and has stated they are comfortable assuming \$1.0 billion of debt to make strategic acquisitions. (+)
- JEC has been awarded design contracts for Canadian Oil Sands projects that have a total spend of \$1.4 billion. We are monitoring the projects for more awards. (+)

KBR: Exposure to LNG and emerging markets

- KBR is well positioned on several major LNG projects, including: 1) Kitimat, 2) Anadarko, 3) Browse, 4) Gorgon 4, 5) LNG Canada, 6) Pluto II, and Petronas LNG. (+)
- KBR is tracking \$3 billion of U.S. power opportunities, of which \$1 billion should be awarded by mid-2012. (+)

- The Anadarko LNG project should offer tenders for FEED contracts in the coming months. (+)
- KBR has commented that it is currently monitoring a Gulf Coast LNG project for which it has been prequalified, 12 ammonia plants (i.e. \$6 billion opportunity), and several ethylene crackers. (+)

MDR: Robust target list with \$7.0 billion of bids outstanding, but low margins

- MDR is bidding on the Block B development in Vietnam, sponsored by Chevron and Petrovietnam. We estimate the opportunity to be \$2.0-\$3.0 billion. (+)
- Seven contractors have submitted technical bids for the onshore section of the Upper Zakum project, which is estimated at \$2 billion. The companies bidding are Hyundai Heavy Industries, McDermott, Petrofac, Saipem, Swiber, along with a joint bid of NPCC and Technip. Zadcó has asked the companies to prepare commercial bids, with a deadline estimated to be in late June 2012. (+)
- Bids and change orders outstanding are \$7.0 billion. The target list is \$10 billion. (=)
- MDR expects 2012 operating margins to be within the range of 7%-10%. Notably, \$350 million of the current backlog with roll off at cost (i.e. 0% margin). (-)

SHAW: Nuclear data points; Air Quality Control Spending

- As expected, the Tennessee Valley Authority Board members decided upon (and approved) the budget that includes money for engineering and equipment work on the Unit-one reactor at the Bellefonte Nuclear Power Plant in Alabama. The President of TVA expressed his interest in moving forward with the project, for which final approval is expected soon. While TVA awarded Areva the contract for engineering and design work, we are continuing to monitor for the full EPC contract. (=)
- We believe near-term opportunities include Air Quality Control (AQC) spending and nuclear uprate programs. The company estimates that the AQC regulations will lead to spending of roughly \$55 billion over the next 3 to 5 years (i.e. \$35 billion for AQC and \$20 billion for new builds to replace coal fired plants that were shut). More importantly, SHAW believes it will command market share of 15% to 20%. Based on our analysis, this equates to potential new awards of up to \$11 billion through the compliance period (i.e. up to \$2.2 billion per year for 5 years or \$3.6 billion per year for 3 years). (+)
- Shaw anticipates regulation in from the NRC, which would lead to modification of existing nuclear plants. The company is well positioned for this type of work and expects a \$5 billion to \$8 billion opportunity in the uprates market over the next decade. (+)
- On July 30, CBI announced that it had entered into a definitive agreement to acquire SHAW for \$46 per share in cash and stock. Shareholders will receive \$41 in cash and \$5 in CBI equity (.12883 shares based upon recent average stock price of \$38.81) for each share of SHAW stock, which implies a total consideration of \$3.04 billion. We have identified 21

conditions that must be met in order for the acquisition to proceed. In our view, the 6 notable merger conditions left to be met are: 1) valid exercise of the put options by SHAW to sell its investment in Westinghouse back to Toshiba, 2) CBI shareholder approval, 3) SHAW shareholder approval, 4) \$200 million of EBITDA in the four quarters preceding the closing date (i.e. fiscal 2Q12 to 1Q13), 5) unrestricted cash of at least \$800 million, and 6) net debt less than \$100 million. (=)

Covered Company Highlights

Babcock & Wilcox – Neutral/High Risk

Positives:

- Nothing to report in the current period.

CB&I – Buy/High Risk

Positives:

- CBI announced that the waiting period for U.S. antitrust review under the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended, relating to the previously announced acquisition of The Shaw Group (NYSE: SHAW) by CB&I, expired on Wednesday, September 19, 2012. Expiration of the waiting period satisfies a condition to the closing of the transaction. The transaction remains subject to other customary closing conditions, including, among others, certain additional regulatory clearances and approval by the shareholders of CB&I and Shaw (CBI Press Release, 9/20/2012).

Fluor – Buy/High Risk

Positives:

- FLR has been notified that the United States Department of Energy (DOE) exercised its option to extend the current Management & Operating (M&O) contract at the Savannah River Site (SRS) in Aiken, S.C., for an additional 38 months. The extension will cover the time period between August 1, 2013 and September 2016. The M&O contract is currently being executed by Savannah River Nuclear Solutions (SRNS), LLC, a Fluor-led partnership consisting of Fluor, Newport News Nuclear and Honeywell. SRNS was originally awarded the Savannah River M&O contract in January 2008 after an open and competitive bid process. By exercising the option to extend the term of the contract, DOE and SRNS will continue uninterrupted management and operation activities as outlined in the contract (FLR Press Release, 9/20/2012).
- FLR announced that Centinela Solar Energy, LLC, a member of LS Power Group, has awarded the company a lump-sum engineering, procurement and construction (EPC) contract, as well as a separate contract for ongoing operations and maintenance services for its new nominal 170-megawatt solar photovoltaic (PV) facility located in Southern California. Fluor has been awarded both the 125-megawatt Phase 1 and the 45-megawatt Phase 2 of the Centinela project and received full notice-to-proceed for Phase 1 which was booked into backlog in the third quarter of 2012. Phase 2 is expected to be released in the first quarter of 2013 (FLR Press Release, 9/17/2012).
- FLR announced it was awarded an engineering, procurement and construction management (EPCM) contract by The Dow Chemical Company (NYSE: DOW) for a propylene production asset project in

Freeport, Texas. Fluor successfully completed the front-end engineering and design (FEED) contract thereby setting the stage for this next-phase EPCM project award. Fluor will book the undisclosed value in the third quarter (FLR Press Release, 9/14/2012).

Foster Wheeler – Neutral/High Risk

Positives:

- FWLT announced that a subsidiary of its Global Power Group has been awarded a contract by SCS Proyectos, S.A.P.I. de C.V. for the design and supply of two heat recovery steam generators (HRSGs) to be installed in a cogeneration power plant for the TEREFTALATOS MEXICANOS S.A. DE C.V. TOP 1002 Cogeneration Project in Cosoleacaque, Veracruz, Mexico. The plant is owned by Cogeneración de Energía Limpia de Cosoleacaque, S.A. de C.V. Foster Wheeler has received a full notice to proceed on this contract. The terms of the agreement were not disclosed, and the contract value was included in the company's second-quarter 2012 bookings. Foster Wheeler will design, supply and provide advisory services for erection and start-up of the two HRSGs, which will be coupled to two LM 6000PF combustion turbines. Delivery of the HRSGs is scheduled for mid-2013 (FWLT Press Release, 9/24/2012).
- FWLT announced that a subsidiary of its Global Engineering and Construction Group, in consortium with Hyundai Engineering and Construction Co., Ltd. (HDEC), of South Korea, has been awarded a contract by Petróleos de Venezuela, S.A. (PDVSA) for Phase I (Hydroskimming section) of the new Batalla Santa Ines Refinery to be built in Barinas, Venezuela. Foster Wheeler's scope of work includes early detailed engineering design and the delivery of an open book estimate for the crude distillation unit, storage and blending unit and fuel distribution plant. The terms of the contract were not disclosed. The booking was included in the company's second-quarter 2012 bookings. The main release of the detailed engineering design work is expected to be booked at a later date, upon release by the client (FWLT Press Release, 9/20/2012).
- FWLT announced that a subsidiary of its Global Engineering and Construction Group has been awarded an engineering, procurement and construction management (EPCm) services contract by Karnalyte Resources Inc. for the Wynyard Carnallite Project in Canada. The project involves the construction of a facility which is expected to produce 625,000 tonnes of potash per year. The Foster Wheeler contract value was not disclosed. A small initial booking will be made in the company's third quarter 2012 bookings, with follow-up bookings as work releases are issued by the client (FWLT Press Release, 9/20/2012).

Jacobs Engineering Group – Neutral/High Risk

Positives:

- JEC announced that it has been selected to provide program management services to BJC HealthCare (BJC) for its 10-year campus expansion and renovation program, considered one of the largest healthcare projects in the United States. Under the terms of the contract, Jacobs is providing full program and project management services to add or modify approximately 3 million square feet of the medical center campus including BJC's Barnes-Jewish Hospital and St. Louis Children's Hospital, both affiliated with Washington University School of Medicine. Jacobs completed a similar campus integration program for BJC HealthCare in 2001 (JEC Press Release, 9/25/2012).
- JEC announced it received a contract from PETRONAS, the state-owned oil company of Malaysia, to develop a basic engineering package for three sulfur recovery units (SRUs). Officials did not disclose the contract value, however noted the basic engineering services are being provided from Jacobs' Leiden office in The Netherlands (JEC Press Release, 9/25/2012).
- JEC announced that it has been awarded a third option year for its Facility Operations Service Contract (FOSC) at NASA's Stennis Space Center (SSC) in Hancock County, Miss. The option year award term is valued at \$51.8 million. It is the third of seven award term periods following the three-year base period of the contract. Under the terms of the contract, Jacobs supports NASA and SSC missions in the areas of administration, facility engineering, food, mail, fire protection, custodial, multimedia, public affairs and education. In addition, Jacobs provides facility maintenance and operations; safety, quality and environmental assurance; medical and occupational health; and logistics and transportation services (JEC Press Release, 9/18/2012).

KBR – Buy/High Risk

Positives:

- Nothing to report in the current period.

McDermott – Buy/High Risk

Positives:

- No news to report in the current period.

Shaw Group – Neutral/High Risk

Positives:

- No news to report in the current period.

Award Tracker Overview (Upcoming Projects)

We compile our Award Tracker data using a variety of industry publications and news media. When possible, we attempt to verify the reasonableness of this data independently or against multiple sources. Our tracker is not a complete summary of potential projects disclosed by management; rather we aim to identify potential catalyst driven investment opportunities through upcoming awards that have not yet been acknowledged by our covered companies.

The projects and details included in this tracker are not universally included in our financial forecasts. Our forecasts include explicit projects when we believe we have sufficient data to provide a reasonable financial estimate.

Award Tracker Update

We last published the Award Tracker in our 9/14/12 Biweekly. The E&C potential award landscape has changed since that publication, updates to our Award Tracker as well as a summary of new and issued contracts are highlighted below.

Contract wins & other announcements

FLR, FWLT, and JEC announced contract wins over the last two weeks. These are highlighted with a "Win" in the first column of the figures below.

Projects Awarded – We have updated two awards this period: 1) Petronas awarded JEC a contract to develop a basic engineering package for three sulfur recovery units for Petronas RAPID project and 2) Shell Global Solutions International B.V. awarded a contract to Foster Wheeler AG to develop a basic engineering package for a mono-ethylene glycol facility at Ras Laffan, Qatar.

Projects Added/Removed – We have added two projects this period: 1) the Azzawiya Oil Refinery Project and 2) the Ottawa Light Rail project.

Other Changes

Change in project value – Nothing to report in the current period.

Change in estimated timelines – We have also updated timelines on various projects we are currently tracking. Changes in timelines were made to estimated project completion dates as well as estimated award dates.

Recent news articles – We noted news relevant to projects in the tracker since our previous publication, highlighted with a "News" notation in the first column of the figures below.

Figure 4. E&C Award Tracker: 1Q12 TD Award Announcements Updated Through 9/25/12 (Page 1 of 2)

Tracker Update	Name	Projected Value in \$MM	Backlog Effect	Est. Completion	Relevant E&C's						Location	Project Sponsor	
					BWC	CBI	FLR	FWLT	JEC	KBR			MDRSHAV
	Pawnee SCRs	\$30	Unknown	Unknown	X							CO	Xcel Energy
	Termotasajero Plant	Unknown	Unknown	Unknown	X							Colombia	Termotasajero
	J.H. Campbell Generating Complex	\$55	Unknown	Unknown	X							MI	Consumer's Energy
	Columbia Energy Center	\$150	Unknown	Unknown	X							Wisconsin	WPL
	Shand Power Station	\$25	Unknown	2012	X							Saskatchewan, Canada	SaskPower
	DOE Waste Cleanup	\$1,300	Unknown	2022	X							New Mexico	DOE
	Emissions Control - Ascend Performance Material	Unknown	Unknown	Unknown	X							Alabama	Ascend Performance
	Harrison Power Station Reheaters	Unknown	Unknown	2014	X							WV	FirstEnergy
	Ebensburg Power O&M	\$40	Unknown	2022	X							PA	Ebensburg Power
	R.M. Schafner Generating Station FGD	\$75	Unknown	Unknown	X							Indiana	Northern Indiana Public Service Company
	Naval Nuclear Reactor Components	\$600	4Q11	Unknown	X							USA	U.S. Navy
	Pawnee Generating Station	Not Disclosed	Unknown	Unknown	X							Colorado	Xcel Energy
	Propane Dehydrogenation Unit	Unknown	Unknown	2015		X						China	Hebei Haiwei
	Butadiene Extraction Plant	\$50	Unknown	2014		X						Belgium	BASF
	Gas Storage Facility	\$225	3Q12	Unknown		X						Australia	AGL
	Petronas RAPID	Not Disclosed	2Q12	Unknown		X						Malaysia	PETRONAS
	Propane Dehydrogenation License	Unknown	Unknown	Unknown		X						Texas	Enterprise Products Partners
	India Aromatics Technology	Unknown	Unknown	Unknown		X						India	Reliance Industries
	Kearl Expansion Project	\$300	Unknown	Unknown		X						Canada	Imperial Oil
	Ethylene FEED	\$40	Unknown	2013		X						Russia	NKNK
	Trans Mountain Storage Tanks	\$55	1Q12	2013		X						Canada	Trans Mountain Pipeline
	Williams Olefins Expansion	\$300	Unknown	Unknown		X						Louisiana	Williams Olefins, LLC
	Oil Sands Coke Drums and Fractionator Tower	\$50	Unknown	2014		X						Unknown	Canada
	Freeport LNG	Unknown	Unknown	Unknown		X						Texas	Freeport LNG
	Russia Technology Contract	\$120	4Q11	Unknown		X						Russia	Unknown
	Houston Ship Channel Tanks	\$60	Unknown	2013		X						Texas	BOSTCO
	Kearl Expansion Project	\$750	Unknown	Unknown		X						Alberta, Canada	Imperial Oil Resources Ventures Ltd.
Win	Propylene Production Asset Project	Unknown	3Q12	2015			X					Freeport, Texas	Dow Chemical
Win	Solar Photovoltaic Facility	Unknown	3Q12, 1Q13	Mid 2014			X					California	LS Power Group
Extended	Management & Operating contract at the Savannah River Site	Unknown	Unknown	2016			X					South Carolina	US Department of Energy
	BP Whiting Refinery Modernization	\$3,800	3Q08	Unknown			X					Indiana	BP
	Pemex Crude Oil Dehydration Contract	\$45	3Q08	Unknown			X					Mexico	Pemex
	Yara Facilities	Unknown	2Q12	2014			X					Various	Yara
	Sasol Tar Separator	Unknown	2Q12	Unknown			X					South Africa	Sasol
	Pemex Platform	\$48	2Q12	Unknown			X					Gulf of Mexico	Pemex
	Highland Valley Copper Mill	\$397	1Q12	Unknown			X					British Columbia, Canada	Teck
	Wellhead Pressure Management Project	Unknown	1Q12	Unknown			X					Kazakhstan	Kazakh Institute of Oil & Gas
	Jamnagar Refining and Petchem Complex	Unknown	1Q12	Unknown			X					India	Reliance Industries
	BASF Umbrella Services Contract	Unknown	Unknown	Unknown			X					North America	BASF
	LOGCAP IV Task Order	Unknown	1Q12	Unknown			X					Africa	U.S. Army
	PETRONAS Import Terminal FEED	Unknown	1Q12	Unknown			X					Malaysia	PETRONAS
	FEMA Project Management	\$500	Unknown	2017			X					United States	FEMA
	Dow Construction Management	Not Disclosed	1Q12	Unknown			X					Various	Dow Chemical
	Renewable Fuel Production Facility	Not Disclosed	4Q11	Unknown			X					New Mexico	Joule Unlimited
	Biofuels Demonstration Facility	Not Disclosed	4Q11	Unknown			X					New Mexico	Joule Unlimited
	Mildred Lake Mine	Not Disclosed	4Q11	Unknown			X					Alberta, Canada	Synchrude Canada
	Solar Panels	Not Disclosed	4Q11	Unknown			X					Arizona	
Win	Terrefaltos Mexicanos S.A. De C.V. Cogeneration Project	Not Disclosed	2Q12	Mid 2013			X					Veracruz, Mexico	SCS Proyectos, S.A.P.I. de C.V.
Win	Batalala Santa Ines Refinery	Not Disclosed	2Q12	Unknown			X					Barinas, Venezuela	Petróleos de Venezuela, S.A.
Win	Wynyard Carnallite Project	Not Disclosed	3Q12	Unknown			X					Canada	Karnalite Resources Inc
	Zeeland Refinery	Not Disclosed	2Q12	2014			X					Netherlands	Zeeland Refinery
	Salavat Refinery	Not Disclosed	2Q12	Unknown			X					Russia	Gazprom
	Ras Laffan	Not Disclosed	3Q12	Unknown			X					Qatar	Shell
	Yeosu CFB Boiler	Not Disclosed	3Q12	2015			X					South Korea	Yeosu
	Apache Consulting	Not Disclosed	Unknown	2015			X					Egypt	Apache
	Carbon Capture FEED	Unknown	3Q12	Unknown			X					UK	2CO Power Limited
	Complexo Gas Quimico	Unknown	3Q12	Unknown			X					Brazil	Petrobras
	El Palito Refinery Expansion	Unknown	3Q12	Unknown			X					Venezuela	PDVSA
	Lundbeck Plant	Unknown	2Q12	Unknown			X					UK	EPAX Pharma UK
	ChemaWEyatt Aromatics Complex	Unknown	1Q12	Unknown			X					Abu Dhabi, UAE	ChemaWEyatt
	Cameron LNG	Unknown	4Q11	Unknown			X					LA	Sempra
	TOTAL Refinery	Unknown	1Q12	Unknown			X					Belgium	TOTAL
	Dow Chemical Partnership	Unknown	Unknown	Unknown			X					Various	Dow
	Cilacap Refinery	Not Disclosed	1Q12	Unknown			X					Indonesia	Pertamina
	Dominican LNG Import Terminal	Not Disclosed	1Q12	Unknown			X					Dominican Republic	Complejo GNL del Este
	Antipinsky Refinery	Not Disclosed	4Q11	Unknown			X					Russia	CJSC Antipinsky
	Waste Head Boiler	Not Disclosed	4Q11	Unknown			X					Russia	LUKOIL
	Manufacturing Facility	Not Disclosed	4Q11	Unknown			X					Saudi Arabia	SAJA Pharmaceuticals
	CFB Boiler - Biomass	Not Disclosed	1Q12	Unknown			X					Sweden	Lunds Energi
	Propylene Oxide Unit	Not Disclosed	4Q11	Unknown			X					Saudi Arabia	Dow/Aramco
	Discovery System at South Timbalier 283	Not Disclosed	4Q11	Unknown			X					USA	Discovery Gas Transmission
	Albanian Refinery	Not Disclosed	4Q11	Unknown			X					Albania	ARMO
	Don Valley Power Project	Not Disclosed	4Q11	Unknown			X					UK	2CO Power Limited
	Petron Refinery Master Plan-2 Project	Not Disclosed	3Q11	Unknown			X					Bataan, Philippines	Petron Corporation
	CFB Steam Generators for an Industrial Paper Complex	Not Disclosed	1Q12	4Q13			X					Jiangsu Province, China	Yuen Foong Yu Paper Mfg. (Yangzhou) Co., Ltd.
	New LNG Receiving Terminal	Not Disclosed	4Q11	2015-16			X					Tamil Nadu, India	Indian Oil Corporation Limited
	Two HRSGs in Hungary	Not Disclosed	Unknown	Unknown			X					Hungary	Tecnicas Reunidas
	Four CFB Steam Generators	Not Disclosed	Unknown	Unknown			X					Vietnam	Vietnam Electricity
	CFB Steam Generator	Not Disclosed	Unknown	Unknown			X					South Korea	Green Energy Centre BTO

Source: Citi Research

Figure 5. E&C Award Tracker: 1Q12 TD Award Announcements Updated Through 9/25/12 (Page 2 of 2)

Tracker Update	Name	Projected Value in \$MM	Backlog Effect	Est. Completion	Relevant E&C's						Location	Project Sponsor	
					BWC	CBI	FLR	FWLT	JEC	KBR			MDRSHAV
Win	Campus Expansion and Renovation Program	Not Disclosed	Unknown	Unknown					X			U.S.	BJC Healthcare
Win	SUPERCLAUS sulfur recovery units	Not Disclosed	Unknown	Unknown					X			Malaysia	Petronas
Extended	Facility Operations Service Contract	\$52	Unknown	2013					X			Mississippi	NASA - Stennis Space Center
	Wilton PET plant	Not Disclosed	Unknown	Unknown					X			UK	Lotte Chemical
	Ogden Logistics Center	Not Disclosed	Unknown	Unknown					X			Utah	Ogden Air Logistics
	Soda Ash Plant	Not Disclosed	Unknown	Unknown					X			India	RSPL Limited
	Pan Mine Project	Not Disclosed	Unknown	Unknown					X			Nevada	Midway Gold Corp.
	Methanex Plant	Not Disclosed	Unknown	2014					X			Louisiana	Methanex
	Shell European Downstream Assets	Not Disclosed	Unknown	2017					X			Europe	Shell
	Marshall Space Flight Center	\$600	Unknown	Unknown					X			Alabama	NASA
	Marcus Hook Refinery	Not Disclosed	Unknown	Unknown					X			Pennsylvania	Braskem
	INEOS Enterprises Heat Exchangers	Not Disclosed	Unknown	Unknown					X			UK	INEOS
	Veterans Service Networks	\$45	Unknown	2017					X			USA	US Army
	Jackpine Mine	Not Disclosed	Unknown	Unknown					X			Canada	Shell
	NIH IDIQ	\$2,000	Unknown	2022					X			U.S.	NIH
	Kennedy Space Center	\$91	Unknown	Unknown					X			Florida	NASA
	Polyethylene Plant FEED	Not Disclosed	Unknown	Unknown					X			Saudi Arabia	SABIC
	Peoples Gas Light and Coke Company Management Services	Not Disclosed	Unknown	Unknown					X			Chicago, IL	Peoples Gas Light and Coke
	Chevron Phillips Ethylene FEEDs	Not Disclosed	Unknown	Unknown					X			USA	Chevron Phillips Chemical Company LP
	Babours Cut Terminal	Not Disclosed	Unknown	Unknown					X			Texas	Port of Houston
	Sadara Chemicals	Not Disclosed	Unknown	Unknown					X			Saudi Arabia	Dow Chemicals/Aramco
	Methionine Complex	Not Disclosed	Unknown	Unknown					X			Singapore	Evonik Industries
	Kuantan Resin	Not Disclosed	Unknown	Unknown					X			Malaysia	Solutia, Inc.
	Scottford Upgrader	Not Disclosed	Unknown	Unknown					X			Alberta, Canada	Shell
	Gatwick Airport Contract	Unknown	Unknown	2016					X			UK	GAL
	Polyamide 12 Production Facility	Unknown	Unknown	Unknown					X			Asia	Evonik Industries
	Olefins 4 Plant	Unknown	Unknown	2013					X			Netherlands	Saudi Basic Industries
	Rotterdam Refinery Shutdown	Unknown	Unknown	Unknown					X			Netherlands	BP
	Hong Kong Management Services	\$11	Unknown	Unknown					X			Hong Kong	Government of Hong Kong
	TVA Kingston Construction Manager	\$10	Unknown	2013					X			Tennessee, U.S.	TVA
	U.S. Air Force Contract	\$50	Unknown	2017					X			CO	U.S. Air Force
	Afipsky Refinery	Unknown	Unknown	Unknown					X			Russia	Afipsky Refinery
	U.S. Army SETA	\$157	Unknown	2015					X			United States	U.S. Army
	Pipe Rolling Mill	Not Disclosed	Unknown	Unknown					X			Texas	Tianjin Pipe Corporation
	Sulfuric Acid Plant	\$50	Unknown	Unknown					X			British Columbia, Canada	Teck Metals
	Michoud Assembly Facility	\$137	Unknown	2013					X			Louisiana	NASA
	Sulfuric Acid Plant	\$55	Unknown	Unknown					X			Ontario, Canada	Vale
	Lower & Middle River des Peres CSO Controls System	Not Disclosed	Unknown	2042					X			St. Louis, MO	Metropolitan St. Louis Sewer District
	Specialty Polymers Production Plant	\$9	Unknown	Unknown					X			China	Solvay
	Design Service Alliance	Not Disclosed	Unknown	Unknown					X			UK	Sellafield
	Combined Heat and Power Plant	Not Disclosed	Unknown	Unknown					X			Minnesota	University of Minnesota
	GSA Task Order	\$8	Unknown	Unknown					X			Ohio	U.S. Air Force
	Suspension and Emulsion Technology	Not Disclosed	Unknown	Unknown					X			China	Arkema
	Marine Corp. Logistics	\$20	Unknown	2014					X			USA	U.S. Marines
	Iowa Fertilizer Plant	Unknown	Unknown	Unknown					X			Iowa	Orascom
	CatD Liscense	Unknown	Unknown	Unknown					X			Sweden	Statoil
	Gas Processing and Compression Facility	Unknown	Unknown	Unknown					X			British Columbia	Unknown
	Diamantina Power Station	Unknown	Unknown	Unknown					X			Australia	Unknown
	The Premier Residential Tower	Unknown	Unknown	Unknown					X			USA	Guardian Realty
	Cellulosic Ethanol Plant	Unknown	Unknown	Unknown					X			Iowa	Dupont
	Hoegh pre-FEED	Unknown	Unknown	Unknown					X			Various	Hoegh
	Uz-Kor Plant	Unknown	Unknown	Unknown					X			Uzbekistan	Uz-Kor
	Kincaid Power Station	Unknown	Unknown	2013					X			IL	Dominion
	Fort St. John Gas Processing Plant	Unknown	Unknown	Unknown					X			British Columbia, Canada	Unknown
	Ethylene Furnace	Unknown	Unknown	Unknown					X			TX	INEOS
	Providence Hospital	Unknown	Unknown	Unknown					X			SC	Providence Hospital
	UK Ministry Contract	Unknown	Unknown	Unknown					X			UK	UK Ministry
	The Place at Founders Square	Unknown	Unknown	Unknown					X			VA	The Shooshan Company
	Gas Processing Plant	Not Disclosed	Unknown	Unknown					X			USA	
	Vebe Combi Cracker	Not Disclosed	Unknown	Unknown					X			Russia	TAIF Group
	Rio Tinto Iron Ore Expansion	Not Disclosed	Unknown	3Q13					X			Australia	Rio Tinto
	Ichthys LNG	\$15,000	1Q12	2015					X			Australia	Inpex/Total SA
	Simulation Study for Steam System	Not Disclosed	Unknown	Unknown					X			India	Matix Fertilizers and Chemicals
	Construction Services for Synthetics Lubricant Base Stock Facility	Not Disclosed	Unknown	Unknown					X			Texas	ExxonMobil
	Construction Management for Texas	Not Disclosed	Unknown	2013					X			Texas	TCPN
	Aramco Projects	Not Disclosed	Unknown	Unknown					X			Saudi Arabia	Aramco
	Deepwater TBMs	Unknown	Unknown	Unknown					X			Gulf of Mexico	Heerma
	Etame Platform	Unknown	Unknown	Unknown					X			Gabon	Vaalco Gabon
	Ayatsil-B Platform	\$90	2Q12	Unknown					X			Gulf of Mexico	Pemex
	Permanent Living Quarter Modules	Not Disclosed	2Q12	Unknown					X			Trinidad	BG Trinidad & Tobago
	KJO Platform	Not Disclosed	Unknown	Unknown					X			Kuwait	KJO
	Ichthys Gas-condensate Field Development	\$2,000	1Q12	2015					X			Australia	Inpex
	Saudi Electricity Company Service Program	Unknown	4Q12	Unknown					X			Saudi Arabia	Saudi Electric Company
	Boardman Station AQC	Unknown	Unknown	Unknown					X			Oregon	Portland General Electric
	Eastman Chemical Ethylene Furnace	Unknown	Unknown	Unknown					X			TX	Eastman Chemical
	Chevron Phillips Ethylene FEED	Unknown	Unknown	Unknown					X			TX	Chevron Phillips Chemical Company LP
	VC Summer Release	\$2,800	3Q12	2018					X			South Carolina, U.S.	SCANA Corporation
	Ninemile 500MW Combined Cycle Plant	Not Disclosed	Unknown	2015					X			Louisiana	Entergy Corporation
	Rayong Refinery	Not Disclosed	Unknown	Unknown					X			Thailand	IRPC
	Technology license and process design package	Unknown	Unknown	Unknown					X			Thailand	Star Petroleum Refining
	Rapid Response Services	\$80	Unknown	Unknown					X			Omaha, NE	U.S. Army Corp. of Engineers
	Environmental and Restoration Services	Unknown	1Q12	Unknown					X			Louisville, KY	Army Corp. of Engineers

Source: Citi Research

The figures above summarizes all E&C award announcements made from 1Q12 to date, with a backlog effect of 1Q12 or later (or unknown). Note some projects are announced well after the award was placed into backlog, therefore the timing of the announcement is not necessarily a reliable proxy for the respective backlog effect. ¹Sources include company reports and related press releases, websites of project sponsors, CIRA Research, Upstream, Bloomberg, Reuters, Infrastructure Journal Online, Industrial Info, Rigzone, Downstream Today, Oil & Gas Journal, Energy Intelligence, Zawya, and MEED.

Figure 6. E&C Award Tracker: Potential Project Pipeline Updated Through 9/25/12 (1 of 10)

Tracker		Projected	Est.	Project	Relevant E&C's										# of	Potential	Est. Award	Bids	Recent		
Update	Name	Value in \$MM	Completion	Status	FEED	BWC	CBI	FLR	FWLT	JEC	KBR	MDR	SHAW	Bidders	Bidders	Date	Due	Location	Project Sponsor	News	
	Block B Development	\$4,300	Unknown	EPC Selection								X		3	MDR, Daewoo, Samsung	2012	11/30/2009	Vietnam	Chevron	7/12 - A stalemate in negotiations over gas sales contracts has put Chevron's \$4.3 billion Block B gas project in Vietnam on the backburner.	
News	California High-Speed Rail	\$2,000	Unknown	Bids Shortlisted				X								2012			California High-Speed Rail Authority	9/12 - The Federal Railroad Administration gave its approval Wednesday for construction on the first phase of California's high-speed rail system, clearing the final technical hurdle for construction to start next year on a 65-mile span from Merced to Fresno.	
	Abadi LNG	\$10,000	2016	selected, design/engineering tenders			?		?		?	?				2012		Indonesia	Inpex	1/12 - Inpex has pushed back front-end engineering and design work for the Abadi floating liquefied natural gas project into the second half of the year.	
	Cold Lake Oil Sands Expansion	\$2,000	2014	Announced			?	?		?	?					2012		Canada	Imperial	2/12 - Imperial approved a \$2 billion expansion of its big Cold Lake oil sands operation in a move that will add more than 40,000 bbl/d of bitumen production.	
News	Kidan Gas Field Development	\$8,000		Feasibility												2013		Saudi Arabia	South Rub Al Khali	9/12 - Shell-led South Rub Al Khali is confident that - together with its partner Aramco - it can find a way to commercially develop the Kidan sour gas field, despite the remote location and huge logistical challenge of stripping out tonnes of sulphur to make the gas usable. The government mandated gas price is 75¢ per million British thermal units (mmBtu), but development of Kidan will cost many multiples of that, say the partners.	
	Mohammed Bin Rashid Solar Park	\$3,500	2030	Announced												2012		UAE	DEWA	5/12 - ILF Consulting Engineers were awarded a consulting contract. The EPC tender for Phase I is expected to be launched in June 2012, and awarded in September.	
	Gulf Coast LNG Export Facility	\$4,000	2017	Announced			?	?			?					2013		Texas	Gulf Coast LNG Export LLC	6/12 - The DOE has opened a comment period with regard to the export application which expires on August 3, 2012.	
News	Cameron LNG Export Facility	\$6,000	2016	Announced			?	?	?		?					2013			Sempra	9/12 - Sempra plans to launch a financing for a \$6 billion LNG export terminal at its Cameron facility in 2013.	
	EJPC - Methanol/Ammonia Complex	\$2,500	2015	Announced			?	?	?	?	?	?				2012		Egypt	Egypt Japan Petrochemical Corporation	5/12 - Uhde Engineering is the ammonia technology provider. The tendering and bidding process for the EPC is expected to be launched in 3Q12, with constructions starting in 4Q12.	
	Basra Refinery Rehabilitation	Unknown	Unknown	Feasibility Study						?			X		SHAW	2013		Basra, Iraq	South Refineries Company (SRC)	1/12 - In December 2011, the feasibility study contract was awarded to Shaw International/Shaw International. The study would assess the current condition of the refinery and estimate the engineering, equipment supply and construction services required to improve its operation. No completion date was yet disclosed for the project. In Q1 2012, the feasibility study is expected to start. In Q4 2012, the feasibility study is expected to be completed.	
	Jack-St. Malo Development	\$7,500	2014	FEED execution, EPC tenders distributed	KBR's GVA Consultants (Hull), Mustang (Topsides)								X	Semisub Hull (Samsung, Hyundai, Daewoo) Topsides (Kiewit, MDR, Gulf Island) Subsea (Technip, Heerema, Acergy)	2012	2/28/2010	Gulf of Mexico	Chevron/Devon	02/12 - Chevron USA Inc. has awarded Schlumberger a three-year contract for tubing-conveyed perforating and drillstem testing services on nine wells on the Jack/St. Malo deepwater project. Key technologies to be deployed include the new 6 5/8-in 27,000 psi 'Insidr' gun system with PowerFlow Max* charges, the new deepwater Omega-matic* long-stroke 9-5/8-in packer, and the use of PURE* planner software for gun shock and dynamic underbalance modelling.		
	Madeenat Chemawayaat Pet/Chem Complex	\$20,000	2015	PMC/FEED Awarded	JEC JV				x	?						2012		Taweelah, Abu Dhabi	Consortium	5/12 - Foster was awarded a PMC contract for an aromatics complex at the project.	
	Union Railway/Shah sour gas Rail Packages	\$11,000	2014	Tenders Issued						?						2012	10/3/2010	UAE	Union Railway	3/11 - Union Railway expects to start construction on a \$11 billion railway across the emirates in the middle of 2011, after it issued tenders for the section of the railway that runs through the western region of Abu Dhabi emirate.	
News	Mthombo Refinery at Coega	\$9,000	2015	FEED Execution	KBR											2012		South Africa	PetroSA	9/12 - PETROSA this week warned against the government delaying a decision on the multibillion-rand Coega refinery project for four to five years, saying it might push the country into a crisis of petroleum-product shortages similar to chronic electricity blackouts in 2008.	
	Pluto 2 LNG	\$5,000	Unknown	Securing Gas Reserves, FEED Execution	FWLT/WP, KBR					X		x				2015		Australia	Woodside	8/12 - The expansion project is on hold following disappointing exploration. Indeed, Woodside does not have sufficient gas to underpin an expansion and has written off Pluto II and III FEED costs which it had previously capitalized.	

Source: Citi Research, Industry Publications¹

Figure 7. E&C Award Tracker: Potential Project Pipeline Updated Through 9/25/12 (2 of 10)

Tracker	Projected	Est.	Project		Relevant E&C's								# of	Potential	Est. Award	Bids			Recent
Update	Name	Value in \$MM	Completi	Status	FEED	BWC	CBI	FLR	FWLT	JEC	KBR	MDR	SHAW	Bidders	Date	Due	Location	Project Sponsor	News
	Upper Zakum Field Development - Offshore	\$15,000	4Q15	EPC Tendering	Technip								X	MDR, KBR (Gas Processing), Saipem, Hyundai Heavy Industries, National Petroleum	2012	ITB in 2/2011 Bid 2Q11	Abu Dhabi, UAE	ADNOC/Exxon/JODCO	9/12 - Leading contractors are preparing to submit bids for the onshore facilities. NPCC with Technip, Petrofac with Daewoo, Hyundai with KBR, and Samsung are among the bidders.
	Chevron Lianzi Field	\$1,900	2013	FEED completed										Saipem/Technip/Subsea 7	2012		Angola	Chevron	8/12 - Subsea 7 was awarded the SURF contract, with an estimated value of \$600 million.
	Riyadh Drainage Network	\$2,900	2014	Announced						?					2012		Riyadh, Saudi Arabia	Riyadh Municipality	11/11 - The Riyadh Municipality plans to build a drainage network in Riyadh, Saudi Arabia. The purpose of the project is to cope with the recurrent floods caused by seasonal heavy rainfall.
	Al Diwanayah Refinery	\$2,900	2014	Feasibility Study			?		?	?	?				2012		Iraq	Iraqi Ministry of Oil	2/12 - Decision regarding the launching of the project expected in March 2012.
	Yanbu Lubricants Oil Refinery Expansion	\$1,000	1Q15	EPC Tendering	JEC		X		X	?				JEC, CBI, Bechtel, FWLT, Saipem	2013		Jeddah, Saudi Arabia	Luberef	9/12 - The EPC contract is expected to be awarded in 1Q13.
News	Satah al-Razboot Field - offshore development	\$1,500		Tendering	FLR-PMC, SHAW-FEED			X					X	Archirodon, Hyundai, Jan De Nul, Target Engineering	2012	5/22/2012	Abu Dhabi, UAE	Abu Dhabi Marine Operating Co.	9/12 - Adma Opco has started clarification talks with technical bidders. Bidders for EPC-1 are MDR, NPCC, Petrofac, and a Leighton-FLR partnership. The qualified engineering companies submitted their technical bid in July and their commercial offers in September.
	Liquid Niugini LNG Plant (Gulf LNG Modular)	\$6,000	Unknown				?	?	?				?		1Q12		Papua New Guinea	InterOil/Pacific LNG Operatings	12/11 - FLEX LNG has, as expected, delayed the final investment decision for the proposed Gulf floating LNG project in Papua New Guinea to the first quarter of 2012.
	KNPC - Mina Al Ahmadi Clean Fuel Project	\$18,000	1Q14	Planning	FLR		?	X		?	?		?	ABB Engineering, Technip	4Q12	7/10/2012	Kuwait	Kuwait National Petroleum Company	6/12 - Bids for the EPC contract are due July 10, 2012. No North American E&Cs have been prequalified to bid.
	Aramco - Shoaiba Bulk Terminal	\$600	2014	Planning			?								2012	7/4/1905	Saudi Arabia	Saudi Arabian Oil Company	1/12 - Tendering and bidding process expected to be launched 2Q12.
	Ras Laffan Refinery Expansion	\$1,000	2015	FEED Execution	Technip			?	x	?	?			Chiyoda, FWLT, JGC, Saipem, Technip	4Q12	FEED ITB in 1H11	Ras Laffan, Qatar	QP/Exxon	11/11 - Technip was awarded the FEED contract, and the study is expected to be completed 1Q12. EPC expected 3Q12.
	Petronas FLNG	Unknown	2015	Announced											2013		Malaysia	Petronas	9/12 - Petronas has awarded the FLNG FEED contract to JGC.
	Iraq-Iran Natural Gas Pipeline Project	\$10,000	2016	Announced											2012		Iraq-Iran	Iran Ministry of Petroleum (MOP)/Ministry of Petroleum, Syrian Ministry of Petroleum and Mineral	9/11 - National Iranian Gas Exporting Company has announced that the first contract for exporting Iran's natural gas to Iraq will be signed within the next two months. According to the initial contract Iran's gas will be transited through Ilam border to feed three Iraqi power plants but the final agreement will be inked within two months.
	Kinnoull Reservoir	\$1,100	2013	Announced									?		2012		North Sea, around north-east of Aberdeen	BP, EniSpA	9/11 BP Plc along with its partners has announced an investment of up to 700 million pounds (\$1.1 billion) for the development of the Kinnoull reservoir in central North Sea after the project was approved by the U.K. government. Output from Kinnoull is estimated to peak at 45,000 barrels per day.
	Clair Ridge Project	\$6,500	2016	Announced									?		2012		Shetland Island UK	Chevron, Royal Dutch Shell	2/12 - Subsea 7 award awarded a \$100M contract for the EPCI of gas and oil export pipelines.
	Yanbu Power and Desalination Plant - Phase 3	\$2,000	4Q14	EPC Tender Issued											3Q12	5/2011	Saudi Arabia	SWCC & Marafiq	8/12 - EPC contracts are expected to be awarded in September.
	Sadara Petrochemicals Complex	\$20,000	2015	FEED - Execution	KBR, FWLT, JEC			x	x	x	x				2012	2Q11	Jubail	Aramco/Dow Chem	8/12 - Tecnicas Reunidas was awarded the ethylene oxide contract.
	Yamal LNG	\$20,000	2017	FEED FEED - Execution	CBI		X		?		?				2012		Russia	Yamal LNG/Novatek	7/12 - Novatek has started construction of the \$30 billion Port of Sabetta.
	Badra Oil Field Development	\$2,000	4Q13	Execution	Technip										2012	3Q11	Iraq	Iraq Oil Ministry	8/11 - Bidders for the EPC contract are expected to be pre-qualified.
	Sohar Gas Based Steel Plant	\$3,000	2015	Feasibility Study				?				?			4Q12		Oman	Oman Oil/Steel Authority of India	11/11 - The JV of Steel Authority of India and Oman Oil plan to build a steel plant in Sohar, Oman. The plant will utilize gas-based direct reduced iron technology.
News	Petronas RAPID	\$20,000	2016	FEED awarded	Technip		?	?	?		?				4Q12		Malaysia	Petronas	9/12 - Jacobs received a contract from PETRONAS, the state-owned oil company of Malaysia, to develop a basic engineering package for three sulfur recovery units (SRUs).

Source: Citi Research, Industry Publications¹

Figure 8. E&C Award Tracker: Potential Project Pipeline Updated Through 9/25/12 (3 of 10)

Tracker	Projected	Est.	Project	FEED	Relevant E&C's								# of	Potential	Est. Award	Bids	Location	Project Sponsor	Recent
Update	Name	Value in \$MM	Complete	Status	BWC	CBI	FLR	FWLT	JEC	KBR	MDR	SHAW	Bidders	Bidders	Date	Due			News
	Indian LNG III	\$1,000	Unknown	Announced		?	?	?		?					Early 2012		India	Petronet LNG	7/11 - India's Petronet LNG plans to set up a third import and regasification terminal, this time on the east coast. Managing Director and CEO A.K. Balyan says. The terminal, being planned either in Andhra Pradesh or Orissa, will have the capacity to import up to 5 million tons per year.
	Kitimat LNG	\$4,000	2017	FEED - Awarded	KBR		?	?		x					4Q12/1Q13		Kitimat, British Columbia	Apache/Encana/EOG	9/12 - The FID may be pushed back to 1Q13, as the consortium is still looking for an Asian buyer.
	Australia Pacific LNG	\$35,000	2014-2020	Construction											FID for T1 in July, T2 expected		Queensland, Australia	ConocoPhillips/Origin Energy	7/12 - ConocoPhillips has sanctioned the second train of the APLNG project, which is estimated to cost \$6 billion.
	Port Meridian Deepwater LNG	Unknown	Unknown				?	?		?	?				FID in late 2012		Offshore U.K.	Hoegh LNG	9/11 - The commercial startup of Britain's first floating LNG import terminal may be delayed until 2015 due to regulatory holdups. The FID is expected to be delayed a year until 4Q12.
	Port Everglades Combined Cycle Plant	\$1,200	2016	Approval Granted			?			?		?			Late 2012		Port Everglades, Florida	Florida Power & Light Co.	4/12 - State regulators have approved a plan from NextEra to build a 1,277 MW natural gas fired plant. Construction is expected to begin in 2014 with commercial operation in 2016.
	Sasol gas-to-liquids (GTL) facility in Uzbekistan	\$3,500	Unknown	FEED		?	?			?					2013		Uzbekistan	Sasol, Uzbekneftegaz, Petronas	7/12 - Sasol and Petronas launched the infrastructure construction of the plant.
	Chevron Rosebank	\$8,000	2016	FEED Tendering			?			X	?			KBR, Wood, WorleyParsons	2013		UK	Chevron	8/12 - WorleyParsons was awarded the FEED for the facilities associated with the Rosebank field, which includes a FPSO and subsea infrastructure.
	Scottish Road PPP	\$1,000	Unknown	Tendering			?		?	?					2013	14-May	Scotland	Transport Scotland	4/12 - Transport Scotland has published the contract notice for the M8, M73, and M74 motorway upgrades.
	Northwest Gas Pipeline	\$3,500	Unknown	Bidding		?	?	?		?					2013		Mexico	Mexico	3/12 - Mexico has begun inviting bids for the Northwest Gas Pipeline, a conduit that will stretch for more than 2,000 km and cost \$3.5 billion.
	Kuwait Metro Project	\$10,000	Unknown	Bidding			?		?	?					2013		Kuwait	Kuwait	3/12 - Kuwait has launched the procurement process for its metro megaproject, and is seeking expressions of interest for the first of five contracts to be awarded in the \$10 billion project.
Delete	West Midlands and Surrey Police contract	\$2,400		Bidding						X					2013				9/12 - Surrey Police are pulling out of plans to privatise parts of their services amid doubts over the venture's future.
	Formosa Plastics Olefins Cracker	\$1,700	2016	Announced		?	?	?	?	?					2013		Texas	Formosa Plastics	3/12 - Formosa Plastics Corporation will develop an Olefins cracker. The project includes an 800,000 mt/year olefins cracker, an associated 600,000 mt/year propane dehydrogenation unit, and a 300,000 mt/year low density polyethylene resin plant.
	Shell Marcellus Ethane Cracker	\$3,000	2017	Planning		?	?	?	?	?					2014		PA	Shell	3/12 - Shell has signed a land option agreement in PA for its ethane cracker.
	Dow Chemicals Cracker	\$2,000	2017	Announced		?	?	?	?	?					2014		Freeport, TX	Dow	4/12 - Dow Chemical Co. announced plans to build a 1.5 million tonne/year plant at its Texas operations in Freeport under a strategy of integrating U.S. operations with feedstocks available from increasing production of natural gas shales. Expected start-up is 2017.
	Pacific Trail Pipeline	\$1,000	2016	Approved			?			?					2013		Kitimat, British Columbia	Pacific Trails Pipelines	5/12 - The British Columbia Environment Assessment Office has approved the significant expansion of the \$1 billion pipeline between Summit Lake and the Kitimat LNG terminal.
	Ras Lanuf Refinery Expansion	\$1,500	2016	Announced		?	?	?	?	?					2013		Libya	NOC/Al Ghurair Group	3/12 - The project aims at doubling the refinery's original capacity to total 400,000 bbl/d.
	Dominion Cove Point LNG Export Terminal	\$4,000	2017	Announced		?	?	?		?					2013		MD	Dominion	4/12 - Dominion secured all capacity and announced it will move forward with the LNG export terminal.
	Bahrain Refinery	\$8,000	Unknown	Announced		?	?	?	?	?					2013		Bahrain		6/12 - Bahrain is in the process of finalizing the implementation of an \$8 billion refinery modernization plan.
	Anadarko LNG	\$12,000	Unknown	Pre-FEED Execution		X				X					2013		Mozambique	Anadarko	7/12 - Anadarko may build up to 10-trains off the coast of Mozambique.
	Waad El Shamhal Mining City	\$6,900	2015	Approval Granted			?		?	?					2013		Saudi Arabia	MOPM	3/12 - The Ministry of Petroleum and Mineral Resources approved the project to construct a railway and electricity supply system as well as a phosphate complex dedicated to a mining deposit.

Source: Citi Research, Industry Publications¹

Figure 9. E&C Award Tracker: Potential Project Pipeline Updated Through 9/25/12 (4 of 10)

Tracker		Projected	Est.	Project	FEED	Relevant E&C's								# of	Potential	Est. Award	Bids	Location	Project Sponsor	Recent
Update	Name	Value in \$MM	Complete	Status		BWC	CBI	FLR	FWLT	JEC	KBR	MDR	SHAW	Bidders	Bidders	Date	Due			News
	ExxonMobil Ethane Cracker	\$3,000	Unknown	Announced			?	?	?	?	?					2013		Bahrain		6/12 - ExxonMobil is considering a multi-billion expansion at its petrochemical facility near Houston.
	Aramco Gas Plants	\$1,000	Unknown	Bidding				?	?		?	?				2013		Saudi Aramco		7/12 - Saudi Aramco intends to invite bids to build three Greenfield gas-fired electricity and steam plants in the country on July 12. The total capacity of the plants will be 770MW of power and 2.95 million pounds an hour of steam.
	Dominion Natural Gas Fired Power Plant	\$1,000	2016	Site Selection						?		?	?			2013		Dominion		3/12 - Dominion Virginia Power has selected a 205-acre site to build a 1,300 MW natural gas fired power plant. The facility is estimated to cost \$1 billion and is expected to come online in the summer of 2016.
	Maissan Refinery	\$5,000	2017	FEED Execution	SHAW					?	?	X	X			1Q13		Maysan, Iraq	Iraqi Government	9/11 South Refineries Company (SRC), a subsidiary of the Iraqi Ministry of Oil, has awarded French's engineering firm Axens the basic engineering, design and license contracts for the construction of the new refinery in Maissan, Southern Iraq.
	KNPC - Mina Al Ahmadi Gas Train	Unknown	2015	Planning												2013	1Q13	Kuwait	Kuwait National Petroleum Company	7/12 - The ITB is expected to be offered in September 2012.
	Nuclear Plant - Polska Grupa Energetyczna S.A. (PGE)	Unknown	2020	Announced				?										Poland	Poland's power utility Polska Grupa Energetyczna S.A. (PGE)	10/11 - PGE launched a campaign to boost support for nuclear power in the coal-reliant country. Public opinion polls this year showed about half of the nation opposes the plan, while only a minority of about one third of respondents supported it, according to an August poll. PGE plans to publish tender details for the first nuclear power plant technology vendor by the end of the year and to choose the technology vendor by the end of 2013.
	Homer City Environmental Controls	\$725	Unknown	Approval Granted			?	?	?		?	?	?			2013			Edison Mission Energy	4/12 - Alstom has announced the award of a \$95 million contract to supply its NID Dry Flue Gas Desulfurization systems for two 660 MW coal fired units at the Homer City Generating Station.
	Bay of Campeche Platforms	\$5,000	Unknown	Announced											MDR, CBI, KBR	2Q13		Mexico	PEMEX	4/11 - Petroleos Mexicanos, one of Latin America's largest oil producer, plans to award contracts worth \$5 billion in the next two years to build 50 platforms to boost output in the Bay of Campeche in the Gulf of Mexico.
	Al Mosul, Ninawa Refinery	Unknown	2017	Planning			?	?	?	?	?	?	?			4Q13		Iraq	Ministry of Oil - Iraq	5/12 - The feasibility study on the 150,000 bpd oil refinery is expected to be completed in 4Q13.
	Browse LNG	\$40,000	2017	Onshore and Offshore FEEDs - Awarded	KBR, CJV for onshore & FLR/MDR for offshore		X	X	?		X	X		2	KBR & CJV for onshore and FLR/MDR for offshore	2014		Australia	Consortium	8/12 - The James Price Point option will be evaluated by 1H13. The team estimates an IRR of below 12% and assumes that the Browse JV will pursue other options. Specifically, the team estimates an IRR of 13.4% for FLNG and 15.3% for the NW Shelf. If Shell pushes its FLNG technology as a new partner, the team does not see a FLNG FID until CY2015.
	Sasol Ethane Cracker	\$4,500	2017	Feasibility			?	?	?	?	?					2014		Louisiana	Sasol Ltd.	12/11 - Sasol may spend \$4.5 billion to build a cracker that will produce 1-1.4 million tons of ethylene per year.
	Shtokman LNG	\$9,000	2016	EPC Tendering/Bidding	Aker, Technip, SBM, CBI		x							2	Saipem/Samsung Heavy, Aker/SBM/Technip, CBI	2014		Murmansk, Russia	Gazprom/Total/Statoil Hydro	8/12 - Gazprom has appeared to have lost interest in the Shtokman development as it turns to LNG projects targeted at Asia. Lengthy delays and cost escalations have undermined the business rationale for the project. Gazprom has already said it plans to focus on gas projects in East Siberia and the Russian Far East, initially LNG schemes aimed at Japan and eastern China.
	Masdar Hydrogen Power Plant	\$2,200	Unknown	Completed - Delayed	FWLT			X	?					3+	Chiyoda, Fluor, Technip, FWLT	Delayed		Abu Dhabi, UAE	Masdar & BP	11/11 - As of November 2011, the project is still facing delays.
News	Jizan Export Refinery	\$7,000	1Q15	FEED - Awarded	KBR		X	X	X	?	X			6	FWLT, KBR, Technip	4Q12 - EPC		Saudi Arabia	Saudi Aramco	9/12 - South Korea dominates a 20-strong pack of international engineering firms bidding to build a multi-billion-dollar refinery for state oil giant Saudi Aramco.
	LNG Canada	\$12,000	Unknown	Planning			X	?			X							British Columbia	Shell/Petrochina	7/12 - The project will initially have two 6 mtpa trains, with an option for expansion.
	Greater Gorgon LNG	\$12,000	2014	FID Approved 9/14/09	KBR et al						x				Unknown near term			Barrow Island, Australia	Chevron/Exxon/Shell	12/11 - Chevron Australia has awarded Switzer a 20-year contract on the Gorgon LNG Project. The value of the contract is 600 million USD.

Source: Citi Research, Industry Publications¹

Figure 10. E&C Award Tracker: Potential Project Pipeline Updated Through 9/25/12 (5 of 10)

Tracker		Projected	Est.	Project	Relevant E&C's										# of	Potential	Est. Award	Bids			Recent
Update	Name	Value in \$MM	Completion	Status	FEED	BWC	CBI	FLR	FWLT	JEC	KBR	MDR	SHAW	Bidders	Bidders	Date	Due	Location	Project Sponsor	News	
	Al-Zour Refinery	\$15,000	Unknown	Delayed - Obtaining government approval	FLR		?	X	X		?				JGC, GS E&C, SK E&C, Daelim, FLR	Unknown		Al-Zour, Kuwait	KNPC	7/12 - Five companies have bid on a \$14 billion oil refinery and upgrade two existing ones in Kuwait. Foster Wheeler, Fluor, Technip, Amec, and WorleyParsons are the bidders. Kuwait National Petroleum Company will finish evaluating bids by the end of the month.	
	Lobito Refinery (Project Sonaref)	\$9,000	2014-2016	FEED Execution	KBR				?		X					Unknown		Lobito, Angola	Sonangol	2/10 - KBR expects the project to move forward into EPCM during 1H10.	
	Dhamra Port - Orissa	Unknown	Unknown	Planning			?				?					Unknown		India	Petronet	9/11 Petronet LNG Ltd appears to have zeroed in on Dhamra port in Orissa for setting up its third LNG terminal, incidentally the first on east coast. Plans are also afoot to kick-start coastal trade of LNG through daughter vessels beginning 2012-end, once the Kochi terminal is operational to large users in Sri Lanka, Andaman and Nicobar Islands and others.	
	Jordan Cove LNG	\$6,300	Unknown	Planning			?	?	?		?					Unknown		Oregon	Oregon LNG	7/12 - Oregon LNG has asked the the FEREC to begin an early environmental review of its proposed LNG terminal. The \$6.3 billion project is designed to export 1.25 bcf/d of gas and import 0.5 bcf/d of gas, and will include an 86-mile pipeline.	
	South Helwan Power Plant	\$2,400	2016	Planning			?	?	?		?		?			Unknown		Helwan, Egypt	Wajah Al Kably Power Generation Company	12/11 - Wajah Al Kably Power Generation Company plans to build a power plant in south Helwan, Egypt. Construction of 3 thermal generation units with a total capacity of 1,950 MW.	
	Sohar Aluminum Smelter Expansion	\$4,000	2015	Planning				?			?					Unknown		Oman	Sohar Aluminum Company	9/11 - The government of Oman is expected to announce a decision regarding the approval of gas feedstock during 4Q11.	
News	Duqm Refinery	\$6,000	2017	Announced			?	?	?	?	?					Unknown		Oman	IPIC	9/12 - Preliminary engineering design work on refinery complex at Duqm has commenced, marking a key step in the development of a major petrochemicals hub on Oman's Wusta coast. FEED around end of '12 or early '13.	
	Texas Express Pipeline (ATEX)	Unknown	1Q14	Planning												Unknown		Texas	Enterprise Products Partners L.P. (EPD), Enbridge Energy Partners L.P., (EEP) and Anadarko	1/12 - Enterprise Products Partners LP says it has received sufficient transportation commitments to support development of its 1,230-mile pipeline from Appalachia to Texas, a project it calls "ATEX Express."	
	Sasol gas-to-liquids (GTL) facility in Louisiana	\$8,000	Unknown	Planning				?	?				?			Unknown		Louisiana	Sasol	9/11 South African energy and chemicals group Sasol announced that it has chosen the southwestern region of the State of Louisiana as the site for a planned gas-to-liquids (GTL) facility. The project is slated to be the first plant in the U.S. to produce GTL transportation fuels and other products.	
	Gasum Oy LNG Import Terminal	\$1,000	Unknown	Planning			?	?	?		?					Unknown			Gasum Oy	4/12 - Gasum Oy is planning an LNG import terminal in Southern Finland.	
	Envidity Gas-to-Liquids	\$1,000	Unknown	Planning				?	?		?		?			Unknown			Envidity	9/11 - Envidity Incorporated has announced the commitment of funds to launch a \$1 billion Mongolian underground coal gasification/gas-to-liquids projects.	
	Genting Natuna Development Project	\$800	2014	Announced				?			?	?				Unknown		Indonesia	Genting Oil Natuna	11/11 - Indonesia has approved an \$800 million oil and gas development project on Northwest Natuna block run by Genting Oil Natuna Pte Ltd, a subsidiary of Malaysia's Genting Bhd.	
	Shell Gas-to-Diesel Plant	\$10,000	Unknown	Planning			?	?	?	?	?					Unknown		Louisiana	Shell	4/12 - Shell is considering building a plant in Louisiana that would convert natural gas into diesel fuel.	
	Natuna Gas Field	\$30,000	Unknown	Planning				?			?	?				Unknown		Indonesia	Pertamina	9/11 - Indonesia's state oil and gas firm Pertamina and its partners could spend between \$20 billion and \$40 billion on the offshore Natuna gas field project, depending on delivery methods and the extent of production, a senior company official said.	
	Suez 650 MW Thermal Cycle Power Plant	\$980	2015	Tendering				?			?	?				2012		Egypt	EDEPC	4/12 - EDEPC plans to construct a 650 MW thermal cycle power plant in Suez City, Egypt.	
	Equatorial Guinea LNG Train 2	\$2,200	2016	Announced			?	?	?		?					2012		Equatorial Guinea	Equatorial Guinea	8/12 - Ophir Energy has found enough gas to support the second train.	
	HR Milner Expansion Project	\$1,500	2015	Announced			?	?	?		?					Unknown		Alberta, Canada	Maxim Power	9/11 Maxim Power was granted final approval from the Alberta Utilities Commission (AUC) to expand their Grande Cache coal-fired power plant. Despite federal regulations to cut coal-fired greenhouse gas pollution by 2015, the H.R. Milner Generating Station is looking to expand the plant to 500-megawatts, rather than the 150-megawatt plant currently runs at.	
	Klickitat Public Utility District Pumped Storage Project	\$2,500	Unknown	Proposed				?					?			Unknown		Washington	Klickitat Public Utility District	4/12 - The Utility District is proposing a \$2.5 billion 1,200 MW pumped storage hydro project on the Columbia River.	

Source: Citi Research

Figure 11. E&C Award Tracker: Potential Project Pipeline Updated Through 9/25/12 (6 of 10)

Tracker		Projected	Est.	Project	FEED	Relevant E&C's								# of	Potential	Est. Award	Bids	Location	Project Sponsor	Recent
Update	Name	Value in \$MM	Complete	Status		BWC	CBI	FLR	FWLT	JEC	KBR	MDR	SHAV	Bidders	Bidders	Date	Due			News
	Abu Dhabi Aluminum Complex	\$4,000	Unknown	Announced				?								Unknown		Abu Dhabi, UAE	Mubadala Development and Malaysia Development	6/11 - Mubadala Development, Abu Dhabi's state investment company, has signed a joint venture agreement with Malaysia Development to build a \$4 billion aluminum complex in Abu Dhabi. Malaysia Development plans to cluster other factories around the smelter project, such as an aluminum rolling mill, a cable plant, a casting plant and 10 extrusion facilities, which will total \$1.8 billion in investments that will be separate from the MD joint venture smelter.
	North Slope LNG	Unknown	2013	Announced			?	?	?	?						Unknown		Fairbanks, Alaska	Fairbanks Natural Gas LLC	1/12 - BP and ConocoPhillips now believe a major liquefied natural gas project is the best option for marketing North Slope gas, the chief executive officers of the two companies said following meetings with Gov. Sean Parnell. 12/11 - A consortium formed by Technip, Modec International and JGC have won out in a tender to provide Brazilian oil giant Petrobras with a floating liquefaction vessel to export new supplies of natural gas from ultra-deepwater fields in the Santos basin pre-salt province.
	Petrobras FLNG	\$3,800	Unknown	Delayed										Technip, Modec and JGC, SBM and Chiyoda, Saipem		Unknown		Brazil	Petrobras	
News	BP 3rd Tangguh LNG Train	Unknown		Planning												2013			BP	9/12 - The third train is estimated to cost \$12 billion, with a FID in mid-2013.
	Falconara LNG	\$1,200	2013	Announced			?	?	?	?						Unknown		Italy	Api Nova Energia	7/11 - Italy's Industry Ministry and regional authorities have approved the building of a new liquefied natural gas import terminal as part of efforts to improve security of energy supply, the ministry said. The 4 billion cubic metre (bcm) offshore terminal, planned by unlisted company Api Nova Energia, part of energy group Api, is scheduled to be built at Falconara Marittima on the Adriatic coast.
	Jordan LNG	Unknown	Unknown	Announced Bid Submission			?	?	?					AECL, AREVA/Mitsubishi		Unknown	7/15/2011	Jordan	Jordan Government	1/12-Trowers & Hamlins LLP, Navigant Consulting (Europe) Ltd, Mapstone Ltd and Tractebel Engineering have been appointed by Jordan's Ministry of Energy and Mineral Resources (MEMR) to advise and perform a techno-economic study for an LNG terminal & LNG supply to the Middle Eastern country. The feasibility study will cover all aspects relating to LNG imports into Jordan as it aims to move towards 80% of gas-fired power generation by 2020.
	Jordan Nuclear Reactor	\$10,000	2019										?		Unknown	6/30/2011	Jordan	Jordan Government	5/12 - Rising construction costs are likely to push the price tag of the project to \$10 billion.	
	QIP/Qapco Petrochemicals Complex	\$5,500	2018	Announced				?	?	?	?					Unknown	Unknown	Doha, Qatar	QIP/Qapco	7/12 - The feasibility study is expected to be completed in 3Q12. The study is being performed in-house.
	Trinidad & Tobago Methanol Complex	\$5,400	Unknown	Planning				?	?	?	?					Unknown	Unknown	Trinidad & Tobago	Sabic and Sinopec	2/12 - Saudi Basic Industrials Corp. and Sinopec have agreed to start negotiations with Trinidad and Tobago to possibly build a \$5.4 billion methanol complex in the country.
	Saudi-Bahrain Railway	\$4,500	Unknown	Announced				?		?						2014	Unknown	Saudi Arabia	Saudi Arabia/Bahrain	2/12 - Saudi Arabia and Bahrain have agreed to construct a railway between them at a cost of \$4.5 billion
	Dunkirk LNG	\$1,400	4Q15	Announced			?	?	?	?						Unknown		Dunkirk, France	Electricite de France SA, Total SA, Fluxys SA	7/11 - French state-controlled power group Electricite de France SA said that it, oil major Total SA and Belgian gas distributor Fluxys SA, will invest together a total EUR1 billion in a liquefied natural gas terminal in Dunkirk, northern France.
	Israeli LNG	\$140	1Q13	Announced				?			?					Unknown		Hadera, Israel	Israeli Government	11/11 - State-owned Israel Natural Gas Lines said on Monday it signed a deal with Italian marine contractor Micoperi to build an off-shore liquefied natural gas terminal costing about 500 million shekels (\$140 million).
	Pertamina Refinery Construction	\$1,400	Unknown											5	Toyo Engineering, Sinopec, Saipem, Hyundai Engineering	Unknown		Java, Indonesia	Pertamina	3/12 - FWLT announced that it has been awarded a contract by PT Pertamina (Persero) ("Pertamina"), the national oil company of the Republic of Indonesia, to provide project management consultancy services for the Residue Fluid Catalytic Cracker (RFCC) Project at the Cilacap Refinery, on the island of Java, Indonesia. Foster Wheeler will manage the engineering, procurement and construction contractor on behalf of Pertamina.
	Michigan Coal Plant	Unknown	Unknown	Announced					x							Unknown		Michigan, USA	Wolverine Power Supply Co-op Inc.	7/11 - The Michigan Department of Environmental Quality approved a construction permit for Wolverine Power Supply Co-op Inc. to build a 600 MW coal-fired power plant.
	Umm Lulu Field Development	\$2,000	2015	EPC - Bid Evaluation	FLR, Tebodin			X					X	5	Hyundai, Larsen and Toubro, NPCC, Saipem, Technip	Unknown	5/22/2012	Abu Dhabi, UAE	Abu Dhabi Marine Operating Co.	4/12 - Adma-Opc set the new bid due date for May 22. MDR is a leading bidder along with NPCC, Petrofac, and FLR.
	Masdar Carbon Capture & Storage	\$2,500	4Q14	EPC Tendering & Bidding -	Mustang											Unknown		Abu Dhabi, UAE	Masdar & BP	4/11 - In February 2011, the tendering and bidding process of the combined EPC contract for the CCS facilities at the Mussafah rolling mill and the pipeline network was delayed.

Source: Citi Research

Figure 12. E&C Award Tracker: Potential Project Pipeline Updated Through 9/25/12 (7 of 10)

Tracker		Projected	Est.	Project	Relevant E&C's										# of	Potential	Est. Award	Bids	Recent		
Update	Name	Value in \$MM	Complete	Status	FEED	BWC	CBI	FLR	FWLT	JEC	KBR	MDR	SHAV	Bidders	Bidders	Date	Due	Location	Project Sponsor	News	
	White Stallion Energy Center	\$2,500	2015	Announced												Unknown		Houston, TX	Sky Energy LLC	1/12 - The Texas Supreme Court denied a request by White Stallion Energy Center to overrule a lower court's decision to send back the air pollution permit to the Texas Commission on Environmental Quality.	
	Timor Sea FLNG	Unknown	2013	FEED Execution												Unknown	2012	Timor Sea, Australia	SBM Offshore, PTT FLNG Limited, PTTEP Australasia	9/11 - Thailand's PTT Exploration & Production has drilled a successful appraisal well on the Cash-Maple gas field off north-west Australia to add support to its proposed floating liquefied natural gas project. The company said the Cash-2 well was drilled to the depth of 4135 meters.	
	Mad Dog South (Mad Dog Phase 2)	Unknown	Unknown	FEED	Technip								X		Technip, MDR/Keppel	Unknown	1H10	Gulf of Mexico	BP/BHP/Chevron	5/12 - Technip has been awarded a FEED contract for the second spar on the Mad Dog development.	
	Kashagan Development (First Phase)	\$46,000	2017	FEED Execution	CBI et al		X	?								Unknown		Kazakhstan	Consortium	3/12 - Kazakhstan may revisit the possibility of building a fourth refinery as the project develops.	
	Tianjin Refinery	\$3,000	2012	Feasibility Study Completed												Unknown		Tianjin, China	CNPC/Rosneft	10/11 - Russia and China aim to boost oil deliveries to the Tianjin refinery, an effort between Russia's Rosneft and CNPC, Russia's deputy prime minister said. A high-level delegation of Chinese officials arrived in Moscow to discuss bilateral ties, including energy issues. Russian officials said trade between the countries could reach \$200 billion within 10 years.	
	Qatar Petrochemicals Complex - Ethane Cracker	\$1,100	2012+	On Hold	FWLT		X							3 JV's	CBI/Toyo/Hyndai, KBR/GS, Linde/Samsung	Unknown		Mesaieed, Qatar	Qatar/Honam	7/12 - Projects are still on hold.	
	Qatar Petrochemicals Complex (Other packages)	\$1,500	2012+	On Hold	FWLT				?							Unknown		Mesaieed, Qatar	Qatar/Honam	7/12 - Projects are still on hold.	
	Pertamina LNG Terminal	\$275	1Q13	Feasibility Study				?	?		?					Unknown		Java, Indonesia	Pertamina	2/11 - Indonesia's state energy firm Pertamina plans to build a second liquefied natural gas (LNG) receiving terminal on Java island with capacity of 3 million tonnes per annum and investment between \$250 to \$300 million.	
	Maputo Refinery	\$8,000	2013	Feasibility Study												Unknown		Maputo, Mozambique	OILMOZ/Shell	8/09 - Foreign investment in oil & gas development is expected to reach \$700MM by 2011.	
	Nam Van Phong Petrochemical Complex	\$4,800	Unknown	Feasibility Study				?	?	?	?					Unknown		Province, Vietnam	Petrovietnam	11/11 - Petrolmex is in talks with Daelim Industrial over a venture to build the refinery.	
	Khalifa Refinery & Petchem	\$12,000	Unknown	FEED/PMC Selection									X		FEED/PMC bidders include: WP, VECO Corp,	Unknown		Pakistan	IPIC/PARCO	1/12 - Work has slowed down due to circular debt.	
	Zwara Refinery - Libya	\$5,000	2014	FEED/PMC to FWLT					?							Unknown		Mellitla, Libya	Zwara Oil Refinery Co.	1/12 - The project is on hold, and the decision regarding the go ahead of the project is expected to be made in 3Q12.	
	Adria LNG Import Terminal	\$1,100	2014	Obtained environmental approval,												Unknown		Krk, Croatia	Consortium	3/10 - The Ministry of Environmental Protection approved the project. Construction is expected to begin in 1H11.	
	Tiaret Refinery	\$6,000	2014	Delayed			X		?		?				Saipem/Chiyoda, CB&I Lummus	Unknown		Tiaret, Algeria	Sonatrach	11/11 - Project on hold.	
	Nitrogen Fertilizer Plant	\$1,000	Unknown	Announced				?	?	?	?					Unknown		North Dakota	CHS Inc.	9/12 - Farmer cooperative CHS Inc. unveiled plans to build a \$1 billion nitrogen fertilizer plant near Jamestown, ND.	
	Sloan Kettering Cancer Center	\$1,000	Unknown	Announced				?		?	?					Unknown		New York City	Sloan Kettering	9/12 - Sloan Kettering will build a \$1 billion facility on the Upper East Side.	
	Shell CCS Oil Sands Project	\$1,400	Unknown	Announced				?	?							Unknown		Canada	Shell	9/12 - Shell will build the first carbon capture and storage facility associated with the oil sands in Canada. Local press reported the Quest project would cost around \$1.35 billion.	
	Banten Bay Refinery	\$4,000	2014	Joint venture established												Unknown		Banten, Indonesia	Pertamina/NIORDC/Petrofield	9/11 Pertamina decided to delay the construction of the US\$ 4 billion Bojonegara oil refinery in Banten as it is not economical. MS Hidayat, Minister of Industry, said the postponement of the project is due to high prices of crude oil supplies from the National Iranian Oil Refining and Distribution Co (NIORDC) of Iran.	
	Long Son Refinery & Petchem	\$10,000	2014	Establishing JV					?							Unknown		Vung Tau Province, Vietnam	Petrovietnam/JV	1/12 - Qatar Petroleum International (QPI) will pick up a 25 percent stake in the \$4-billion Long Son petrochemical project in Vietnam.	
	Golden Pass LNG	\$10,000	2017					?			?					Unknown		Sabine Pass, TX	Exxon/QP	8/12 - Golden Pass Products, a newly formed partnership of Qatar Petroleum and ExxonMobil, is proposing the construction of an LNG export terminal at the existing 15.6 mtpa Golden Pass LNG receiving terminal.	
	Shell Queensland LNG (Arrow LNG)	\$25,000	2014-2015	announcement			X		?		?					Unknown		Gladstone, Australia	Shell	8/11 - a JV of CBI, Chiyoda, and Saipem won the FEED contract for the project. The work will take place over 12 months.	

Source: Citi Research

Figure 13. E&C Award Tracker: Potential Project Pipeline Updated Through 9/25/12 (8 of 10)

Tracker		Projected	Est.	Project		Relevant E&C's										# of	Potential	Est. Award	Bids			Recent
Update	Name	Value in \$MM	Completion	Status	FEED	BWC	CBI	FLR	FWLT	JEC	KBR	MDR	SHAW	Bidders	Bidders	Date	Due	Location	Project Sponsor	News		
	Hidalgo Refinery	\$9,600	2015	Site selected				X	?	?						Unknown		Tula, Hidalgo	PEMEX	6/10 - Pemex's CEO said that plans for the refinery will move forward and that the company will spend \$452M this year on basic engineering and other early work.		
	Guangdong Nuclear Reactors	\$3,500	2016	Received Gov't Approval												Unknown		Guangxi	CGNPC	8/10 - CGNPC has received government approval to build two nuclear reactors in Guangxi.		
News	Ras Laffan Petrochemical Complex	\$6,000	2018	MOU signed	FWLT, FLR, WP/JEC Bidding			X	X	?				3	FWLT, FLR, WP	Unknown		Ras Laffan, Qatar	QP/Shell	9/12 - Foster Wheeler AG announced that a subsidiary of its Global Engineering and Construction Group has been awarded a contract by Shell Global Solutions International B.V. to develop a basic engineering package (BEP) for a mono-ethylene glycol (MEG) facility at Ras Laffan, Qatar.		
	Ha Tinh Integrated Refinery, Vung Ang Economic Zone	\$22,000	2016-2017	Received Gov't approval												Unknown		Ha Tinh province, Vietnam	Formosa Heavy Industries	9/12 - The investment is estimated at \$22 billion.		
	Bay of Campeche Crude Extraction Equipment	\$1,000		Initial announcement												Unknown		Campeche, Mexico	Pemex	4/11 - Mexico's state-run oil company Pemex said it is seeking bids on a near \$1 billion project to buy crude extraction equipment for use in the Bay of Campeche. The company wants to acquire electric submersible pumps in more than 100 wells to improve production in fields already operating in Campeche state on the Gulf of Mexico.		
	Dongying Refinery	\$6,500	2016-2020	Feasibility Study												Unknown		Dongying, China	CNOOC	9/09 - CNOOC plans to move forward with the proposed refinery after bringing the 240,000 bpd Huizhou refinery online and to augment refinery capacity previously sought via acquisition.		
	Hoima Refinery - Uganda	\$2,000	Unknown	Feasibility Study					X							Unknown		Uganda	Ugandan/Norwegian Gov'ts assets.	2/10 - Uganda's energy minister stated the country will need \$8 billion of investment of the next decade to develop its energy assets.		
	Kentucky NewGas	\$3,000	Unknown	On Hold				X	?				?			Unknown		Central City, KY	ConocoPhillips/Peabody Energy	3/12 - The project was put on hold due to low natural gas prices.		
	Guangdong Refinery (Venezuelan venture)	\$8,000	Unknown	Received Gov't approval												Unknown		Guangdong, China	PetroChina/PDVSA	1/10 - The gov't approved the venture, which will allow feasibility studies to begin.		
	Nassiriya Refinery	\$5,000	4Q15	FEED Execution	FWLT					X						Unknown		Nassiriya, Iraq	Iraqi Government	10/11 - State Co. for Oil Projects (SCOP), part of the Iraqi Ministry of Oil, has awarded Axens IFP Group Technologies basic design and license contracts for construction of a refinery in Nassiriya, the supply company announced.		
	Kirkuk Refinery (Kirkuk Depot Project)	\$6,000	2015	FEED Execution	SHAW								X			Unknown		Kirkuk, Iraq	Iraqi Government	6/12 - Iraq's State Company for Oil Projects will offer the construction of the Kirkuk oil refinery to international companies on a build, operate, and own basis in December 2012.		
	Denali Gas Treatment Plant	\$5,500	Unknown	Pre-FEED Execution and Site Selection	FLR/WP				?							Unknown		North Slope, Alaska	Denali (BP/ConocoPhillips)	1/10 - The project sponsors plan to disclose the project plan and estimated cost during the planned April 2010 open season.		
	Sunrise LNG	\$14,000	Unknown	Site Selection				?	?	?	?					Unknown		North Australia or Timor-Leste	Consortium	4/12 - Woodside will not make a FID on the Sunrise LNG project until 2014 or 2015.		
	Lithuania Nuclear Plant	\$8,700	Unknown	Announced Design, FEED execution	(Topsides), InterSea (Hull)				?				?			Unknown				6/12 - Lithuania has received approval from the European Commission on its plans to contract a nuclear power plant. The plant will cost approximately \$8.7 billion.		
	Mars B TLP - Topsides	Unknown	Unknown	Design, FEED execution	(Topsides), InterSea (Hull)							X		2	Topsides: MDR, Kiewit Offshore	Unknown		Gulf of Mexico	Shell	2/10 - Shell is expected to request bids for the hull construction bids by mid-March.		
	South Doha Power & Desalination Plant	\$2,000	2016						?	?	?	?				Unknown				6/12 - Qatar plans to develop a new 2,000 MW power and desalination plant in South Doha. The EPC tender is expected to be launched in 2014, with completion anticipated in 2016.		
	Wales 1,000 MW Gas Plant	\$1,200	Unknown						?	?	?	?				Unknown				6/12 - Plans have been revealed for a proposed 1,000 MW gas fired plant in Wales. The plant will cost around \$1.2 billion and will be capable of generating electricity for approximately 1.25 million homes.		
	Mosul Power Plant	\$1,000	Unknown						?	?	?	?				Unknown				6/12 - The Iraqi Ministry of Electricity plans to build a power plant in Mosul, Iraq. The plant will consist of four 350MW units, and is expected to cost \$1 billion. The construction tender is expected to be issued during 4Q12.		
	Tenaris Plant	\$1,500	2016						?	?	?	?				Unknown				6/12 - Global steel products player Tenaris is planning a new \$1.5 billion plant in the U.S. to meet customer demand from the unconventional market. The new pipe mill, heat treatment and premium threading facilities are planned to have a 650,000 ton annual production capacity with a planned operation date in 2016.		

Source: Citi Research

Figure 14. E&C Award Tracker: Potential Project Pipeline Updated Through 9/25/12 (9 of 10)

Tracker	Projected	Est.	Project	Relevant E&C's										# of	Potential	Est. Award	Bids	Location	Project Sponsor	Recent
Update	Name	Value in \$MM	Completion	Status	FEED	BWC	CBI	FLR	FWLT	JEC	KBR	MDR	SHAV	Bidders	Bidders	Date	Due			News
	Taizhou Refinery	\$11,700	Unknown	JV established, feasibility study												Unknown		Taizhou, China	PetoChina/Shell/Qatar Oil	1/12 - China National Petroleum Corp. said Thursday that it has signed a deal with Qatar Petroleum International and Royal Dutch Shell PLC (RDSB) to build a refining complex in the eastern Chinese city of Taizhou.
	Fujian Refinery Expansion	\$4,500	Unknown	Seeking Gov't approval												Unknown		Fujian, China	Sinopec/Exxon/Aramco	10/11 - Sinopec's parent company, Sinopec Group, plans to invest 100 billion yuan in Fujian province over the next 10 years, reports the Oriental Morning Post. It signed an agreement with the Fujian provincial government on September 26 to develop the petrochemical industry in the coastal province.
	Chuangongbei Development - 2nd & 3rd Phase	Unknown	Unknown	Awarding FEED												Unknown		Sichuan Province, China	Chevron/CNPC	12/09 - Chevron's 2010 cap ex program is focused on upstream expenditures, Chuandongbei is included in an area of focus, China.
	Polimerica Ethylene Plant	\$3,200	Unknown	Awarded FEED	Technip											Unknown		Jose, Venezuela	Polimerica	1/10 - FEED awarded to Technip, expected completion is 2Q11.
	Gendalo-Gehem Development	\$7,750	Unknown	FEED bidding										WorleyParsons), Export Pipes FEED (Wood, WP,	Unknown		Kalimantan, Indonesia	Chevron	4/10 - WP and Technip submitted facilities bids; while Wood, FLR, KBR are no longer involved in the facilities bid.	
	Yanbu Clean Fuel Project	\$2,500	1Q13													Unknown		Yanbu, Saudi Arabia	Aramco/Exxon	8/10 - Saudi Aramco and Exxon, are jointly investing \$2.5 billion to reduce sulphur from diesel and gasoline at their Yanbu Refinery.
	Tangshan LNG Terminal	Unknown	2013	Approval Granted			?	?	?	?						Unknown		Tangshan, China	PetroChina	10/11 - PetroChina is joining forces with Beijing Enterprises and China Suntien Green Energy Co. to build and operate a liquefied natural gas (LNG) terminal in Caofeidian harbor of Tangshan, north China, according to several local media reports.
	Ukraine LNG Terminal	\$1,100	2016	Tendering												Unknown		Black Sea		4/12 - Ukraine will build the LNG terminal at the port of Yuzhnyi, and will be completed in two stages.
	Lithuanian LNG Terminal	\$280	2014													Unknown		Baltic Sea	Klaipėdos Nafta	1/12 - Höegh LNG said that it has been informed by AB Klaipėdos Nafta that it has the winning tender offer for a new LNG floating storage and regasification unit in Lithuania.
	Uganda Oil Refinery	Unknown	2012-2015											Essar Group, CNOOC, Total	Unknown	2011		Uganda		6/11 - The Ugandan government has started a process to fast-track the development of an oil refinery in the next three years.
	Hokuriku Electric LNG-fired Power Generation Unit	\$1,230	4/2018													Unknown		Japan	Hokuriku Electric Power Co.	10/10 - Japanese utility Hokuriku Electric Power Co said on Friday it would build its first liquefied natural gas (LNG) fired power generation unit, with capacity of around 400 megawatts, with plans to start operations in April 2018.
	Jurong Island LNG Terminal - Tank 3	Unknown	Unknown													Unknown		Jurong Island, Singapore		11/10 - Singapore's Liquefied Natural Gas (LNG) terminal on Jurong Island will now have a third 180,000 m3 LNG tank, in addition to the two that are already being built.
Added	Azzawiya Oil Refining Company	\$2,000	Unknown	FEED												Unknown		Tripoli, Libya	Azzawiya Refining Company	9/12 - The Azzawiya Refining Company plans to upgrade its Azzawiya refinery, 40 km west of Tripoli, Libya. The project aims at upgrading and restoring the 120,000 bpd refinery. The FEED study contract, feasibility study contract, and the technical consultancy contract were awarded to Foster Wheeler International in 4Q11.
Added	Ottawa Light Rail project	\$2,100	Unknown	Ottawa has shortlisted consortiums bidding for the Ottawa Light Rail project.												Unknown		Ottawa, Canada	The City of Ottawa	9/12 - The city of Ottawa has shortlisted consortiums bidding for the Ottawa Light Rail project, which is expected to commence construction in early 2013 and cost \$2.1 billion. The three consortiums are Ottawa Transit Partners, Rideau Transit Group, and Rideau Tran
	Beach/Itochu LNG Liquefaction Terminal	\$978	Unknown	Exploring												Unknown		Southern Australia	Beach Energy, Itochu Corporation	12/10 - Beach Energy and Itochu Corporation are together exploring sites for a proposed LNG liquefaction plant in Southern Australia. The firms estimate the terminal would supply LNG to Asian markets and cost about \$978 million.
	Eastern Star Gas LNG	\$1,000	Unknown													Unknown		New South Wales, Australia	Eastern Star Gas	7/11 - Santos made a \$730m move to buy the 80 per cent of Eastern Star Gas it doesn't already own in a deal that would make it the biggest owner of gasfields in NSW.
	Gasam / Source Energy - Heat Recovery Plant	Unknown	2Q12	Planning												Unknown	Unknown	Saudi Arabia	GASAN/Source Energy Company	4/11 - On 22 March 2011, Gasam and Source Energy Company, a subsidiary of the National TriGeneration CHP company (NTCC), signed an LoI for the partnership agreement to jointly develop the project.

Source: Citi Research

Figure 15. E&C Award Tracker: Potential Project Pipeline Updated Through 9/25/12 (9 of 10)

Tracker		Projected	Est.	Project	Relevant E&C's										# of	Potential	Est. Award	Bids	Recent	
Update	Name	Value in \$MM	Completion	Status	FEED	BWC	CBI	FLR	FWLT	JEC	KBR	MDR	SHAV	Bidders	Bidders	Date	Due	Location	Project Sponsor	News
	Fujairah RO Desalination Plant	Unknown	Unknown	Planning												Unknown		Fujairah, UAE	Abu Dhabi Water and Electricity Authority	11/11 - Spains Abeima bids low for the project. Emirates Sembcorp Water & Power Company, which is owned by owned by Abu Dhabi Water and Electricity Authority (Adwea) and Singapore's Sembcorp, has opened bids to build a 30-35 million gallons a day desalination facility in Fujairah.
	Sadr City	\$10,000	2021	Planning												Unknown		Iraq		9/11 - Broadway Malyan has delivered the concept masterplan for a multi-billion dollar scheme involving an extension of Sadr City and the creation of New Sadr City in Iraq. The project is named 10x10 because of its predicted \$10 billion dollar value and 10-year delivery timeframe. As one of the largest projects in Iraq, it is central to the reconstruction of the country.
	Ituango Hydropower Plant	\$2,300	2018	Announced				?	?							Unknown	2/2012	Colombia	Empresas Publicas de Medellin E.S.P. (EPM)	1/12 - Colombia's EPM Calls for Tender for Main Civil Works of 2,400-Megawatt Ituango Hydro Project.
	Queen Elizabeth Power Plant	Unknown	2015	Announced				?	?		?	?				Unknown		Saskatoon, Canada	Saskatchewan Power	10/11 - Saskatchewan Power will invest more than \$533.8 million to add 200 MW of capacity to the company's 430 MW Queen Elizabeth natural gas-fired power plant in Saskatoon.
	Kenya LNG Terminal - Mombasa Port	\$500	2015-2018	Announced				?	?	?	?					Unknown	2/2012	Mombasa Port, Kenya	Kenya Govt	10/11 - Kenya plans to float a tender by early next year to build a liquefied natural gas terminal at its Mombasa port city as it pushes to diversify its sources of electricity to meet rising demand.
	Gazprom Bashkortostan Chemicals Center	\$4,500	2018	Planned				?	?		?	?				Unknown		The Republic of Bashkortostan	Gazprom	10/11 - Gazprom will invest 80 billion rubles in the construction of a gas chemicals center in Bashkortostan. The first phase will be to expand existing production of ethylene to 380,000 tonnes. The second will see construction of an installation with 600,000 tonne capacity for ethylene.
	Guinea Alumina and Bauxite	\$6,000	Unknown	Planning				?	?		?	?				Unknown		Guinea		9/11 - China Power Investment Company Limited is planning to invest \$6 billion to construct a bauxite mine and alumina refinery in Guinea. It was also build a deep water port and 270 MW power plant at the project site in Boffa, which is 120 km west of the country's capital, Conakry. The refineries are expected to produce 12 million tons of bauxite and 4 million tons of alumina annually.
	Estonia LNG Terminal	Unknown	Unknown	Environmental Assessment				?			?							Estonia	City Council of Sillamae	11/11 - Estonia plans to build two types of LPG and LNG terminals in Sillamae port. Sillamae schedules to build 16,000 cubic meters LPG storage, and 480,000 cubic meters of LNG storage.
	Hess Pony Field	\$1,200	2016	Early Stage Engineering	MDR									X				Gulf of Mexico	Hess	11/11 - Wood Mackenzie research anticipates the development will be sanctioned in 2012 and first oil will be achieved early 2016.
	Queensland Curtis LNG T3	\$5,000	2015	Downstream FEED Execution, Upstream FEED complete	Bechtel (Downstream)						?			5+	Upstream FEED: Technip, Wood Group, WorleyParsons, Amec, KBR			Curtis Island, Australia	BG Group	10/11 - Bechtel Corp. said all three liquefied natural gas projects it was involved with in Australia's Queensland state were currently running on schedule. Bechtel Corp is working on 14 resources projects in Australia, including three LNG projects in Queensland: the \$16 billion Gladstone project, BG Group's \$15 billion Curtis Island project and ConocoPhillips and Origin Energy's \$20 billion Asia Pacific LNG project.
	Vladivostok LNG	\$7,000	2016	Announced				?			?							Vladivostok, Russia	Gazprom/Japan Far East Gas Co.	9/12 - Japan has signed an agreement with Gazprom related to the financing and marketing of the project.

Source: Citi Research

Breaking Down the Award Tracker

Consolidated Award Tracker Composition

Our proprietary Award Tracker forms the basis of our ongoing end market analysis which in turn underscores our current investment thesis. In the Figure below, we group potential awards by end market and estimated award date. The majority of expected activity in our Award Tracker is concentrated in Oil & Gas end markets and have unknown project award dates, suggesting a full recovery of E&C award activity remains a late 2012 event at the earliest.

Figure 16. Award Tracker Composition by End Market & Estimated Award Date

End Market	Estimated Project Award Date (\$ in MM)			Total
	2012	2013	Unknown	
Oil & Gas	\$259,800	\$105,700	\$418,353	\$783,853
Power	\$1,200	\$2,725	\$43,780	\$47,705
Miscellaneous	\$10,400	\$20,300	\$38,600	\$69,300
Total	\$271,400	\$128,725	\$500,733	\$900,858
% of Total	30%	14%	56%	100%

Note: We utilized the midpoint of the range of estimated project values where applicable

Source: Citi Research, Industry Publications¹

Covered Company Award Profiles

In addition to sorting the consolidated Award Tracker by end market and estimated award date, we performed a similar exercise for covered companies. The resulting buckets of potential award activity are smaller than those shown in Figure 16 above simply because not every E&C is a potential bidder on every project in the Award Tracker. To narrow down the database to targeted opportunities, we utilized our bottom-up research to determine whether or not each respective company is a prospective bidder on the project or has a favorable skill set to pursue the given opportunity. Specifically, these are the "X's" and "?s" noted previously in the detailed Award Tracker.

Figure 17. Covered Company Award Profiles

Chicago Bridge & Iron

End Market	Estimated Project Award Date (\$ in MM)			
	2012	2013	Unknown	Total
Oil & Gas	\$95,500	\$86,700	\$180,155	\$362,355
Power	\$0	\$0	\$0	\$0
Miscellaneous	\$2,500	\$0	\$0	\$2,500
Total	\$98,000	\$86,700	\$180,155	\$364,855
% of Total	27%	24%	49%	100%

Fluor

End Market	Estimated Project Award Date (\$ in MM)			
	2012	2013	Unknown	Total
Oil & Gas	\$79,500	\$83,700	\$206,395	\$369,595
Power	\$1,200	\$1,725	\$27,780	\$30,705
Miscellaneous	\$7,500	\$17,900	\$26,500	\$51,900
Total	\$88,200	\$103,325	\$260,675	\$452,200
% of Total	20%	23%	58%	100%

Foster Wheeler

End Market	Estimated Project Award Date (\$ in MM)			
	2012	2013	Unknown	Total
Oil & Gas	\$116,900	\$0	\$166,180	\$283,080
Power	\$0	\$2,725	\$15,600	\$18,325
Miscellaneous	\$2,500	\$0	\$13,000	\$15,500
Total	\$119,400	\$2,725	\$194,780	\$316,905
% of Total	38%	1%	61%	100%

Jacobs Engineering Group

End Market	Estimated Project Award Date (\$ in MM)			
	2012	2013	Unknown	Total
Oil & Gas	\$75,900	\$28,700	\$39,900	\$144,500
Power	\$0	\$0	\$0	\$0
Miscellaneous	\$5,400	\$17,900	\$8,000	\$31,300
Total	\$81,300	\$46,600	\$47,900	\$175,800
% of Total	46%	27%	27%	100%

KBR

End Market	Estimated Project Award Date (\$ in MM)			
	2012	2013	Unknown	Total
Oil & Gas	\$119,900	\$100,700	\$211,495	\$432,095
Power	\$1,200	\$2,725	\$9,080	\$13,005
Miscellaneous	\$5,500	\$20,300	\$18,000	\$43,800
Total	\$126,600	\$123,725	\$238,575	\$488,900
% of Total	26%	25%	49%	100%

McDermott

End Market	Estimated Project Award Date (\$ in MM)			
	2012	2013	Unknown	Total
Oil & Gas	\$47,800	\$48,000	\$41,750	\$137,550
Power	\$0	\$0	\$0	\$0
Miscellaneous	\$0	\$0	\$0	\$0
Total	\$47,800	\$48,000	\$41,750	\$137,550
% of Total	35%	35%	30%	100%

Shaw Group

End Market	Estimated Project Award Date (\$ in MM)			
	2012	2013	Unknown	Total
Oil & Gas	\$18,000	\$5,000	\$27,000	\$50,000
Power	\$1,200	\$2,725	\$31,780	\$35,705
Miscellaneous	\$2,500	\$0	\$12,000	\$14,500
Total	\$21,700	\$7,725	\$70,780	\$100,205
% of Total	22%	8%	71%	100%

Source: Citi Research

Contract Cheatsheets (Projects Already Won)

Figure 18. Most Recent Backlog Composition Data

	CBI	FLR	FWLT	JEC	KBR	MDR	SHAW
a Most Recent Backlog	\$10,014	\$43,002	\$3,142	\$15,601	\$15,238	\$5,747	\$18,188
b Contract Cheatsheet	\$4,880	\$17,375	\$937	\$4,494	\$7,449	\$2,630	\$11,785
=a-b Backlog ex-cheatsheet	\$5,134	\$25,627	\$2,205	\$11,107	\$7,789	\$3,117	\$6,403
Contract Cheatsheet (% of Total)	49%	40%	30%	29%	49%	46%	65%

Source: Citi Research

Figure 19. CBI Contract Cheatsheet (Announcements from 2007-Present)

Firm	Project Name	Location	Project Sponsor(s)	Original Amount in \$MM	Date Announced	Estimated Completion	2Q12 Est. % Remaining	Est. Amount Remaining (\$MM) Period Ending			
								1Q12	2Q12	3Q12	4Q12
CBI	Gas Storage Facility	Australia	AGL	\$225 ¹	6/30/2012	6/30/2015	100%	\$0	\$225	\$206	\$187
CBI	Kearl Oil Sands	Alberta, CA	Imperial Oil	\$300 ¹	6/30/2012	12/31/2013	100%	\$0	\$300	\$250	\$199
CBI	Ethylene FEED	Russia	NKNK	\$40 ¹	6/30/2012	6/30/2013	100%	\$0	\$40	\$30	\$20
CBI	Trans Mountain Pipeline	Alberta, CA	Trans Mountain	\$55 ¹	3/31/2012	12/31/2013	86%	\$55	\$47	\$39	\$31
CBI	Williams Petrochemicals	Louisiana	Williams	\$300 ¹	3/31/2012	12/31/2014	91%	\$300	\$273	\$245	\$218
CBI	Coke Drums	Canada	Unknown	\$50 ¹	3/31/2012	12/31/2014	91%	\$50	\$45	\$41	\$36
CBI	Kearl Oil Sands	Alberta, CA	Imperial Oil	\$750 ¹	3/31/2012	12/31/2014	91%	\$750	\$682	\$613	\$545
CBI	Asia Pac LNG Tanks	Asia Pacific	Unknown	\$500 ¹	7/21/2011	12/31/2015	79%	\$422	\$394	\$365	\$337
CBI	Gorgon LNG	Barrow Island, Australia	Chevron/Exxon/Shell	\$2,300 ¹	7/14/2011	12/31/2015	78%	\$1,932	\$1,804	\$1,674	\$1,544
CBI	Natural Gas Processing Plant	U.S.	Unknown	\$300 ¹	6/30/2011	12/31/2012	33%	\$150	\$100	\$50	\$0
CBI	Grand Bahamas Storage Tanks	Bahamas	Bahamas Oil Refining Company	\$40 ¹	6/30/2011	12/31/2012	33%	\$20	\$13	\$7	\$0
CBI	Golden Eagle Field	U.K.	Nexen Petroleum	\$150 ¹	6/30/2011	12/31/2012	33%	\$75	\$50	\$25	\$0
CBI	Integrated Aluminum Complex	Saudi Arabia	Ma'aden Bauxite and Alumina Company	\$60 ¹	7/21/2011	12/31/2014	73%	\$48	\$44	\$39	\$35
CBI	PNG LNG Storage Tanks	Papua New Guinea		\$190 ¹	9/30/2010	12/31/2013 ⁴	46%	\$102	\$88	\$73	\$58
CBI	Cartagena Refinery Expansion	Cartagena, Colombia	Refineria de Cartagena S.A. (REFICAR)	\$1,400 ¹	11/17/2009	12/31/2012 ⁴	16%	\$338	\$226	\$113	\$0
CBI +1	PNG LNG Hides Gas Conditioning Plan	Papua New Guinea	ExxonMobil/Oil Search Ltd./PNG gov't/Santos/Nippon/PNG landowr	\$650 ¹	12/9/2009	9/30/2013 ⁴	33%	\$256	\$214	\$171	\$128
CBI	Panveco Refinery Modernization	Serbia	NIS	\$70 ¹	9/17/2009	9/30/2012 ⁵	8%	\$12	\$6	\$0	\$0
CBI	Greater Gorgon LNG Tanks	Barrow Island, Australia	Chevron/Exxon/Shell	\$550 ¹	9/30/2009	9/30/2013 ¹	31%	\$206	\$172	\$137	\$103
CBI	Abu Dhabi Integrated Gas Development	Ruwais, UAE	GASCO	\$530 ¹	7/16/2009	9/30/2013 ⁴	30%	\$189	\$158	\$126	\$94
CBI	Suncor Voyager Storage Terminal	Fort McMurray, Canada	Suncor	\$400 ¹	7/28/2008	10/28/2011 ³	0%	\$0	\$0	\$0	\$0

Sources

- ¹ Company Press Release
² OGJ Construction Update
³ Suncor Press Release on 1/20/09
⁴ Citi Estimate
⁵ NIS Press Release

CBI Total	\$4,880
6/30/2012	\$10,014
Project Cheatsheet (% of Total)	49%

Source: Citi Research

Figure 20. FLR Contract Cheatsheet (Announcements from 2007-Present)

Firm	Project Name	Location	Project Sponsor(s)	Original Amount in \$MM	Date Announced	Estimated Completion	1Q12 Est. % Remaining	Est. Amount Remaining (\$MM) Period Ending			
								1Q12	2Q12	3Q12	4Q12
FLR	Automotive Sheet Facility	Saudi Arabia	Ma'aden/Alcoa	\$337 ¹	6/30/2012	6/30/2015 ²	100%	\$0	\$337	\$309	\$280
FLR	I-95 HOT Lanes	Virginia	VDOT	\$691 ¹	9/30/2012	12/31/2014 ²	0%	\$0	\$0	\$691	\$614
FLR	Offshore Production Platform	Gulf of Mexico	Pemex	\$48 ¹	6/30/2012	12/31/2013 ²	100%	\$0	\$48	\$40	\$32
FLR	Copper Mill Optimization	Brittish Columbia	Teck	\$397 ¹	3/31/2012	3/31/2015 ²	92%	\$397	\$364	\$331	\$297
FLR	Mildred Lake Mine	Alberta, Canada	Syncrude	\$1,500 ¹	12/31/2011	12/31/2014 ²	83%	\$1,375	\$1,251	\$1,125	\$999
FLR	Ferguson Replacement Project	Texas	LCRA	\$1,000 ²	11/14/2011	12/31/2014 ²	80%	\$879	\$800	\$719	\$639
FLR	Port Hedland Inner Harbor	Australia	BHP Billiton	\$2,700 ¹	6/30/2011	12/31/2015 ²	78%	\$2,249	\$2,099	\$1,948	\$1,797
FLR	Conga Mining Project	Peru	Newmont Mining	\$2,280 ¹	9/30/2011	12/31/2015 ²	82%	\$2,011	\$1,878	\$1,743	\$1,608
FLR	Port Hedland Inner Harbor	Australia	BHP Billiton	\$2,700 ¹	6/30/2011	12/31/2015 ²	78%	\$2,249	\$2,099	\$1,948	\$1,797
FLR	Al-Jubail	Saudi Arabia	Dow/Aramco	\$2,000 ¹	6/30/2011	12/31/2015 ¹	78%	\$1,666	\$1,555	\$1,443	\$1,331
FLR	Mt Milligan Copper Mine	Brittish Columbia	Thompson Creek Metals	\$375 ¹	6/30/2011	6/30/2014 ¹	67%	\$281	\$250	\$218	\$187
FLR	Sierra Gorda Mine	Chile	Mienera Quadra Chile Limitada	\$1,000 ¹	6/30/2011	6/30/2014 ¹	67%	\$749	\$666	\$582	\$498
FLR	Jimble Mine	Australia	BHP Billiton	\$3,000 ¹	3/31/2011	3/31/2014 ¹	58%	\$1,998	\$1,749	\$1,497	\$1,245
FLR	Denver FasTracks Eagle Rail	Denver, CO	Denver Transit Partners	\$1,000 ¹	9/30/2010	12/31/2015 ¹	67%	\$714	\$667	\$619	\$571
FLR	Oyu Tolgoi Copper-Gold Project	Mongolia	Oyu Tolgoi	\$1,000 ¹	7/22/2010	12/31/2013 ¹	44%	\$509	\$436	\$363	\$290
FLR	Caserones Copper Mine Project	Chile	Minera Lumina Copper Chile SA	\$1,300 ¹	6/29/2010	12/31/2013 ¹	43%	\$649	\$557	\$464	\$370
FLR	Ras Az Zawr Aluminum Complex	Saudi Arabia	Ma'aden/Alcoa	\$3,000 ¹	5/24/2010	12/31/2013 ¹	42%	\$1,458	\$1,251	\$1,041	\$831
FLR	Ras Laffan Gas Recovery	Ras Laffan, Qatar	Qatargas	\$1,000 ²	4/18/2010	12/31/2013 ²	41%	\$473	\$406	\$338	\$270
FLR	BP Whiting Modernization	Whiting, IN	BP	\$3,800 ¹	8/12/2008	12/31/2011 ¹	0%	\$0	\$0	\$0	\$0
FLR	Kearl Oil Sands Phase 1	Fort McMurray, Alberta	Imperial Oil	\$1,500 ¹	7/7/2009	12/31/2012 ¹	14%	\$324	\$217	\$108	\$0
FLR	Vale Inco Nickel Processing Plant	Long Harbor, Canada	Vale Inco	\$2,200 ²	8/10/2009	12/31/2011 ¹¹	0%	\$0	\$0	\$0	\$0
FLR	Sakhalin-1 Chayvo Onshore Processing Facility	Sakhalin Island, Russia	Consortium	\$700 ¹	5/11/2009	6/30/2012 ²	0%	\$56	\$0	\$0	\$0
FLR +	RGF 5 Iron Ore Project	Western Australia	BHP Billiton	\$2,400 ²	5/11/2009	12/31/2011 ²	0%	\$0	\$0	\$0	\$0
FLR	Al-Zour Refinery	Al-Zour, Kuwait	Kuwait National Petroleum Co.	\$2,100 ¹	12/31/2007	12/31/2012 ²	10%	\$316	\$211	\$106	\$0
FLR	Port Arthur Refinery Conversion	Port Arthur, TX	Total SA	\$1,900 ¹	3/10/2008	12/31/2011 ¹	0%	\$0	\$0	\$0	\$0
FLR	Greater Gabbard Wind Farm	Offshore East UK	Scottish & Southern Energy	\$1,800 ¹	5/14/2008	12/31/2011 ¹	0%	\$0	\$0	\$0	\$0
FLR	Virginia HOT Lanes (I 495) - Build & Operate	Northern Virginia	Virginia DOT	\$1,300 ¹	12/20/2007	6/30/2013 ¹	18%	\$294	\$235	\$176	\$117
FLR	Valero Hydrocracker Projects	St. Charles, LA & Port Arthur, TX	Valero	\$1,200 ¹	8/7/2008	12/31/2012 ⁶	11%	\$205	\$137	\$69	\$0
FLR	Detroit Refinery Expansion	Detroit, MI	Marathon Oil	\$1,600 ¹	1/4/2008	12/31/2012 ⁴	10%	\$241	\$161	\$81	\$0
FLR	Cartagena Refinery Expansion	Cartagena, Spain	Repsol YPF	\$1,300 ¹	2/26/2008	12/31/2011 ¹	0%	\$0	\$0	\$0	\$0
FLR	Oak Grove Power Plant	Robertson County, TX	Energy Future Holdings Corp. (Formerly 1	\$1,800 ¹	6/21/2007	6/30/2010 ¹	0%	\$0	\$0	\$0	\$0
FLR	Garyville Refinery Expansion	Garyville, LA	Marathon Oil	\$1,800 ¹	3/8/2007	12/31/2009 ¹²	0%	\$0	\$0	\$0	\$0
FLR +	BHP Billiton Mining Expansion JV	Western Australia	BHP Billiton	\$900 ¹	8/7/2007	3/31/2010 ¹	0%	\$0	\$0	\$0	\$0

Sources

¹ Company Press Release² CIRA Estimate³ OJ Construction Update⁴ Marathon Oil 2Q09 Conference Call⁵ USEC's American Centrifuge Website⁶ Valero's 1/27/09 4Q Conference Call⁷ Fluor removed \$850 million from backlog related to BP Whiting as a result of a scope adjustment.⁸ Fluor removed \$2.1 billion from backlog related to Al-Zour in 1Q09.⁹ Fluor removed \$580 million from backlog related to hydrocracker construction contracts from Valero in 1Q09.¹⁰ USEC suspended work on the plant on 7/28/09 after failing to secure a DOE loan guarantee.¹¹ CBC news article, November 2008¹² Marathon Oil 3Q09 Conference Call¹³ MEED

FLR Total	\$17,375
6/30/12 Backlog	\$43,002
Project Cheatsheet (% of Total)	40%

Figure 21. FWLT Contract Cheatsheet (Announcements from 2007-Present)

Firm	Project Name	Location	Project Sponsor(s)	Original Amount in \$MM	Date Announced	Estimated Completion	2Q12 Est. % Remaining	Est. Amount Remaining (\$MM) Period Ending			
								1Q12	2Q12	3Q12	4Q12
FWLT	35 Mwe CFB Boiler Island	Sweden	Lunds Energi	\$25 ¹	12/31/2011	6/30/2014 ¹	80%	\$23	\$20	\$17	\$15
FWLT	50MWe Steam Generator	China	Yangzhou	\$30 ¹	12/31/2011	6/30/2015 ¹	86%	\$28	\$26	\$24	\$21
FWLT	Four 250MWe Steam Generators	Vietnam	Vietnam Electricity	\$350 ¹	12/31/2011	6/30/2015 ¹	86%	\$325	\$300	\$275	\$250
FWLT	Four 150 MWe Steam Generators	India	Essar Projects Limited	\$250 ¹	6/30/2011	12/31/2014 ¹	71%	\$196	\$179	\$161	\$143
FWLT	Samcheok Green Power Project	Korea	Korea Southern Power Co., Ltd.	\$350 ⁴	6/30/2011	12/31/2014 ¹	71%	\$275	\$250	\$225	\$200
FWLT	Paradip Refinery EPC & PMC	Orissa, India	Indian Oil Corporation, Ltd.	\$1,252 ⁴	3/6/2009	12/31/2011 ¹	0%	\$0	\$0	\$0	\$0
FWLT	Cartagena PMC	Cartagena, Colombia	Ecopetrol	\$250 ¹	12/15/2009	12/31/2012 ¹	17%	\$62	\$41	\$21	\$0
FWLT/W	Pluto LNG - Onshore	Western Australia	Woodside	\$3,386 ¹	12/19/2007	12/31/2010 ¹	0%	\$0	\$0	\$0	\$0
FWLT	55 Mwe CFB Boiler Island	Poland	ZE PAK S.A.	\$87 ¹	9/8/2009	3/31/2012 ²	0%	\$0	\$0	\$0	\$0
FWLT	Two 292 MWe CFB Steam Generator	Virginia	Dominion Virginia City Hybrid Energy Center	\$322 ³	7/30/2008	6/30/2012 ²	0%	\$20	\$0	\$0	\$0
FWLT	538 MWe CFB Steam Generator	Louisiana (Little Gypsy)	Entergy	\$296 ³	3/31/2008	3/31/2012 ²	0%	\$0	\$0	\$0	\$0
FWLT	385 MWth CFB Boiler & Aux. Equipment	Finland	Kaukaan Voima Oy Helsinki	\$462 ³	5/8/2007	3/31/2010 ²	0%	\$0	\$0	\$0	\$0
FWLT	Two 120 MWe CFB Steam Generators	Argentina	Isolux Ingenieria S.A. y Tecna Proyectos y Operaciones	\$132 ³	8/5/2008	6/30/2012 ²	0%	\$8	\$0	\$0	\$0
FWLT	Two 150 MWe CFB Steam Generators	Vietnam	Harbin Power Engineering Company, Ltd	\$165 ³	1/21/2008	9/30/2010 ²	0%	\$0	\$0	\$0	\$0
FWLT	165 MWe CFB Steam Generator & Equip	Chile	UTE CT Mejillones	\$91 ³	1/10/2008	6/30/2010 ²	0%	\$0	\$0	\$0	\$0
FWLT	Two 50 MWe CFB Steam Generators	Taiwan	Yuen Foong Yu Paper Manufacturing Co	\$55 ³	11/4/2008	6/30/2011 ²	0%	\$0	\$0	\$0	\$0
FWLT	200 MWe CFB Boiler & Aux. Equipment	Finland	Jyvaskylan Energia Oy	\$110 ³	8/6/2007	3/31/2010 ²	0%	\$0	\$0	\$0	\$0
FWLT	165 MWe CFB Boiler Island	Chile	UTE CT Mejillones	\$91 ³	9/18/2007	6/30/2010 ²	0%	\$0	\$0	\$0	\$0
FWLT	Two 50 MWe CFB Steam Generators	South Korea	Hanwha Intn'l	\$55 ³	7/31/2008	6/30/2010 ²	0%	\$0	\$0	\$0	\$0
FWLT	84 MWth CFB Boiler & Aux Equipment	Sweden	E.ON Varne Sverige AB	\$46 ³	7/29/2008	9/30/2010 ²	0%	\$0	\$0	\$0	\$0
FWLT	Engineering Award for 165MWe CFB Pla	Chile	UTE CT Mejillones	\$62 ³	11/27/2007	6/30/2010 ²	0%	\$0	\$0	\$0	\$0
FWLT	70 MWe CFB Steam Generator	Romania	LUKOIL	\$39 ³	11/15/2007	3/31/2010 ²	0%	\$0	\$0	\$0	\$0
FWLT	66 MWe CFB Steam Generator	Poland	Fortum Heat Polska sp. z o.o.	\$36 ³	9/25/2007	3/31/2010 ²	0%	\$0	\$0	\$0	\$0
FWLT	26 MWe CFB Steam Generator	Belgium	A&S Energy	\$14 ³	7/24/2008	9/30/2010 ²	0%	\$0	\$0	\$0	\$0

Sources

¹ Citi Estimate² Company Press Release³ Value calculated based on a \$2,500/KW total cost, comprised of the following component costs:

Component	Cost (% of Total)	Component cost/KW
Flue Gas Cleanup	12%	\$300
Boiler/Steam Generator	22%	\$550
Steam Turbine Generator	15%	\$375
Feed Water System	6%	\$150
Building & Structure	8%	\$200

Source: Updated Cost and Performance Estimates for Fossil Fuel Power Plants with CO2 Removal, EPRI, 2002.

⁴ Citi Estimate of FWLT scope⁵ Foster Wheeler indicated it removed the project from backlog as a result of project cancellation

Source: Citi Research

FWLT Total	\$937
6/30/2012 Backlog	\$3,142
Project Cheatsheet (% of Total)	30%

Figure 22. JEC Contract Cheatsheet (Announcements from 2007-Present)

Firm	Project Name	Location	Project Sponsor(s)	Original	Date	Estimated	3Q12 Est.	Est. Amount Remaining (\$MM) Period Ending			
				Amount in \$MM	Announced	Completion	% Remaining	1Q12	2Q12	3Q12	4Q12
JEC	Methonal Production Facility	Louisiana	Methanex	\$250 ²	6/30/2012	12/31/2014 ¹	90%	\$0	\$250	\$225	\$200
JEC	Marshall Space Flight Center	Alabama	NASA	\$250 ¹	6/30/2012	6/30/2014	87%	\$0	\$250	\$218	\$187
JEC	US Air Force Contract	Colorada	Air Force	\$50 ¹	3/31/2012	9/30/2014 ¹	80%	\$50	\$45	\$40	\$35
JEC	US Army SETA	United States	US Army	\$157 ¹	3/31/2012	9/30/2014 ¹	80%	\$157	\$141	\$126	\$110
JEC	Sulfuric Acid Plant	British Columbia, Canada	Teck Metals	\$50 ¹	3/31/2012	3/31/2014 ²	75%	\$50	\$44	\$37	\$31
JEC	Michoud Assembly Facility	Louisiana	NASA	\$137 ¹	3/31/2012	3/31/2013 ¹	50%	\$137	\$103	\$68	\$34
JEC	Sulfuric Acid Plant	Saudi Arabia	Vale Canada	\$55 ¹	3/31/2012	3/31/2014 ²	75%	\$55	\$48	\$41	\$34
JEC	Polymers Production Plant	China	Solvay	\$9 ¹	12/31/2011	9/30/2014 ¹	73%	\$8	\$7	\$7	\$6
JEC	GSA Task Order	Ohio	US Air Force	\$8 ¹	12/31/2011	12/31/2012 ²	25%	\$6	\$4	\$2	\$0
JEC	Marine Corp. Logistics	USA	US Marine Corps	\$20 ¹	12/31/2011	9/30/2014 ¹	73%	\$18	\$16	\$15	\$13
JEC	Marafiq Integrated Project	Saudi Arabia	Marafiq	\$200 ²	9/30/2011	9/30/2014 ¹	67%	\$167	\$150	\$133	\$116
JEC	Canadian Oil Sands	Alberta, CA	Various	\$500 ²	9/30/2011	9/30/2014 ¹	67%	\$417	\$375	\$333	\$291
JEC	Fort Bliss Army Post Contract	Fort Worth, TX	U.S. Army Corps of Engineers	\$65 ¹	6/30/2011	6/30/2013 ¹	37%	\$41	\$32	\$24	\$16
JEC	RTD FasTracks Program	Denver, CO	Denver Regional Transportation District	\$17 ¹	3/31/2011	6/30/2017 ¹	76%	\$14	\$14	\$13	\$12
JEC	Mine Resistant Ambush Protected Vehicle	Warren, MI	US Army Tank-automotive and Armamen	\$63 ¹	3/31/2011	6/30/2014 ¹	54%	\$44	\$39	\$34	\$29
JEC	Wright-Patterson Air Force Base	Dayton, Ohio	Air Force Research Laboratory	\$23 ¹	3/31/2011	6/30/2016 ¹	71%	\$19	\$18	\$16	\$15
JEC	NASA's White Sands Test Facility	Las Cruces, NM	NASA	\$500 ¹	3/31/2011	6/30/2016 ¹	71%	\$405	\$381	\$357	\$333
JEC	Interstate 69	Indiana	Indiana Department of Transportation	\$84 ¹	3/31/2011	6/30/2015 ¹	65%	\$64	\$59	\$54	\$49
JEC	Trunk Highway 169/Interstate 494	Minnesota	Minnesota Department of Transportation	\$125 ²	3/31/2011	6/30/2015 ¹	65%	\$96	\$88	\$81	\$74
JEC	EnRoute Facilities	San Juan, Puerto Rico	Federal Aviation Administration	\$271 ¹	12/31/2011	6/30/2020 ¹	91%	\$263	\$255	\$247	\$239
JEC	Millennium Challenge Project	Africa, Asia, Latin America	Millennium Challenge Corporation	\$50 ¹	12/31/2011	6/30/2016 ¹	83%	\$47	\$44	\$42	\$39
JEC	Cavern Project	India	IOT Infrastructure & Energy Services	\$65 ¹	9/30/2010	6/30/2015 ¹	58%	\$44	\$41	\$38	\$34
JEC	Live Virtual Constructive Network	China Lake, CA	Naval Air Warfare Center Weapons Divisi	\$241 ¹	6/30/2010	6/30/2015 ¹	55%	\$157	\$145	\$132	\$120
JEC	GT Mickey Leland Federal Building	Houston, TX	US General Services Administration	\$70 ¹	6/30/2010	6/30/2015 ¹	55%	\$45	\$42	\$38	\$35
JEC	USSOCOM, Theater Special Operations Comm	Unknown	United States Special Operations Comma	\$1,500 ²	6/30/2010	6/30/2015 ¹	55%	\$974	\$900	\$824	\$748
JEC	EnRoute Facilities	San Juan, Puerto Rico	Federal Aviation Administration	\$99 ¹	12/31/2010	6/30/2020 ¹	82%	\$86	\$83	\$81	\$78
JEC	NASA Marshall Space Flight Center	Huntsville, Ala.	NASA	\$792 ¹	9/30/2009	6/30/2010 ¹	0%	\$0	\$0	\$0	\$0
JEC	Ames Research Center	Moffett Field, Calif.	NASA	\$200 ¹	6/30/2009	6/30/2014 ¹	35%	\$90	\$80	\$70	\$60
JEC	Naval Air Weapons Warfare Center	China Lake, CA	US Navy	\$171 ¹	6/30/2009	6/30/2014 ¹	35%	\$77	\$68	\$60	\$51
JEC	George C. Marshall Space Flight Center	New Orleans, LA	NASA	\$696 ¹	6/30/2009	6/30/2014 ¹	35%	\$313	\$278	\$243	\$208
JEC	Oint Equipment Assessment Program Contract	Albany, GA	US Marine Corps	\$89 ¹	12/31/2009	6/30/2013 ¹	21%	\$32	\$25	\$19	\$13
JEC	ALMBOS Contract	Unknown	USSOCOM	\$400	6/30/2008	6/30/2011 ¹	0%	\$0	\$0	\$0	\$0
JEC	STARS Contract	China Lake, CA	Naval Air Warfare Center	\$197	6/30/2008	6/30/2013 ¹	15%	\$49	\$39	\$29	\$20
JEC	East Side Access	New York City, NY	Metropolitan Transportation Authority Cap	\$75	6/30/2008	6/30/2015 ¹	39%	\$35	\$32	\$29	\$27
JEC	I-95 Pineda Causeway Extension	Brevard County, FL	Florida Department of Transportation	\$197	6/30/2008	6/30/2012 ¹	0%	\$12	\$0	\$0	\$0
JEC	Turnpike Extension	New Jersey	New Jersey Turnpike Authority	\$125	3/31/2008	6/30/2010 ¹	0%	\$0	\$0	\$0	\$0
JEC	Aberdeen Test Center	Aberdeen Proving Ground, MI	U.S. Army	\$492	3/31/2008	6/30/2013 ¹	14%	\$117	\$94	\$70	\$46
JEC	Hanscom Air Force Base	Massachusetts	U.S Air Force	\$480	3/31/2008	6/30/2011 ¹	0%	\$0	\$0	\$0	\$0
JEC	Stennis Space Center	St. Louis, Miss	NASA	\$561	9/30/2007	6/30/2017 ¹	49%	\$302	\$288	\$273	\$259
JEC	I-405 Widening	Washington	Washington State Department of Transpo	\$124	6/30/2007	6/30/2009 ¹	0%	\$0	\$0	\$0	\$0
JEC	Herbert C. Hoover Department of Commerce bu	Washington D.C.	U.S. General Services Administration	\$550	3/31/2007	6/30/2022 ¹	64%	\$370	\$361	\$352	\$342
JEC	USACE Environmental Cleanup	Sacramento, CA	U.S. Army Corps of Engineers	\$200	3/31/2007	6/30/2013 ¹	12%	\$40	\$32	\$24	\$16
JEC	Science Applications International Corporation	Unknown	U.S. Army Chemical Materials Agency	\$312	3/31/2007	6/30/2013 ¹	12%	\$62	\$50	\$37	\$25
JEC	US Air Force's Air Armament Center	Eglin Air Force Base, FL	U.S. Air Force	\$505	3/31/2007	6/30/2013 ¹	12%	\$101	\$81	\$60	\$40

Sources

¹ Company Press Release

² Citi Estimate

JEC Total	\$4,494
6/30/2012 Backlog	\$15,601
Project Cheatsheet (% of Total)	29%

Source: Citi Research

Figure 23. KBR Contract Cheatsheet (Announcements from 2007-Present)

Firm	Project Name	Location	Project Sponsor(s)	Original Amount in \$MM	Date Announced	Estimated Completion	2Q12 Est. % Remaining	Est. Amount Remaining (\$MM) Period Ending			
								1Q12	2Q12	3Q12	4Q12
KBR	Sadara PMC	Saudi Arabia	Dow/Aramco	\$300 ¹	3/31/2012	12/31/2014 ¹	91%	\$300	\$273	\$245	\$218
KBR	Ichthys LNG	Australia	Inpex/Total	\$5,600 ¹	3/31/2012	12/31/2015 ¹	93%	\$5,600	\$5,228	\$4,852	\$4,476
KBR	U.S. Army Support Contract	Europe	U.S. Government	\$245 ¹	12/31/2011	12/31/2016 ¹	90%	\$233	\$221	\$208	\$196
KBR	LogCap Task Order	Iraq	U.S. Government	\$500 ¹	8/2/2011	9/30/2012 ¹	22%	\$215	\$108	\$0	\$0
KBR	The Heritage at Georgia Avenue	Silver Spring, MD	Priderock Capital Partners	\$30 ¹	7/12/2011	6/30/2013 ¹	51%	\$19	\$15	\$11	\$8
KBR	Base Oil Expansion Project	Pascagoula, MS	Chevron Products Company	\$65 ¹	4/27/2011	12/31/2012 ¹	30%	\$29	\$19	\$10	\$0
KBR	Waste-to-Energy Facility	Palm Beach County, FL	Palm Beach County Solid Waste Authority	\$668 ¹	4/18/2011	6/30/2013 ¹	45%	\$379	\$303	\$227	\$150
KBR	Iron Ore Mine Construction	Western Australia	Minera Lumina Copper Chile SA	\$643 ¹	9/14/2010	12/31/2013 ¹	46%	\$342	\$293	\$244	\$195
KBR	Dental Sciences Building	Chapel Hill, NC	School of Dentistry at the University of No	\$87 ¹	6/7/2010	12/31/2011 ¹	0%	\$0	\$0	\$0	\$0
KBR	Piedmont Newnan Hospital	Newman, GA	Piedmont Healthcare	\$94 ²	3/9/2010	12/31/2011 ¹	0%	\$0	\$0	\$0	\$0
KBR	School of Dentistry	Augusta, Ga	Medical College of Georgia	\$112 ¹	2/16/2010	6/30/2011 ¹	0%	\$0	\$0	\$0	\$0
KBR	Pluto LNG	Australia	Woodside	\$24 ¹	10/11/2009	6/30/2011 ¹	0%	\$0	\$0	\$0	\$0
KBR	Turkey-Spain Base Operations	Turkey and Spain	United States Air Force	\$335 ¹	1/27/2010	6/30/2014 ¹	45%	\$170	\$151	\$132	\$113
KBR	Gorgon Project EPCM Contract	Barrow Island, Australia	Chevron Australia Pty Ltd	\$3,000 ¹	9/9/2009	12/31/2011 ¹	0%	\$0	\$0	\$0	\$0
KBR	Resource Recovery Facility	Palm Beach, FL	Solid Waste Authority of Palm Beach Cou	\$126 ¹	1/26/2009	12/31/2010 ¹	0%	\$0	\$0	\$0	\$0
KBR	Gorgon Project	Perth, Australia	Chevron Australia Pty Ltd	\$360 ²	9/17/2008	12/31/2010 ¹	0%	\$0	\$0	\$0	\$0
KBR	Red River Activated Carbon Plant	Red River Parish, Louisiana	ADA-ES, Inc	\$232 ¹	9/10/2008	12/31/2010 ¹	0%	\$0	\$0	\$0	\$0
KBR	Transformer Manufacturing Facility	Rincon, Georgia	EFACEC Power Transformers, Inc.	\$64 ¹	8/11/2008	9/30/2009 ¹	0%	\$0	\$0	\$0	\$0
KBR	Canadian Bitumen Refining	Sturgeon County, Alberta	North West Upgrading	\$275 ¹	5/28/2008	12/31/2010 ¹	0%	\$0	\$0	\$0	\$0
KBR	Canadian Gasifier	Edmonton, Alberta	Lurgi AG	\$225 ¹	12/31/2007	9/30/2010 ¹	0%	\$0	\$0	\$0	\$0
KBR	Karsto Gas Treatment	Stavanger, Norway	Statoil	\$175 ¹	7/23/2007	12/31/2011 ¹	0%	\$0	\$0	\$0	\$0
KBR	Sonatrach Skikda LNG	Skikda, Algeria	Sonatrach	\$2,800 ¹	7/9/2007	12/31/2012 ¹	9%	\$385	\$257	\$129	\$0
KBR	LogCap III/IV	Iraq	U.S. Government	\$5,000	1/1/2007	12/31/2012	8%	\$628	\$420	\$210	\$0
KBR	Lockheed Martin	Houston, TX	U.S. Naval Facilities Engineering Comma	\$125 ¹	6/5/2007	6/30/2012 ¹	0%	\$6	\$0	\$0	\$0
KBR	Escravos GTL	Escravos, Nigeria	Chevron Nigeria and NNPC	\$1,700	4/8/2005	3/31/2013	9%	\$213	\$160	\$106	\$53

Sources

¹ Company Press Release² UpStream Online

KBR Total	\$7,449
6/30/2012 Backlog	\$15,238
Project Cheatsheet (% of Total)	49%

Source: Citi Research

Figure 24. MDR Contract Cheatsheet (Announcements from 2007-Present)

Firm	Project Name	Location	Project Sponsor(s)	Original Amount in \$MM	Date Announced	Estimated Completion	2Q12 Est. % Remaining	Est. Amount Remaining (\$MM) Period Ending			
								1Q12	2Q12	3Q12	4Q12
MDR	Ayatsil-B Platform	Gulf of Mexico	PEMEX	\$100 ³	6/30/2012	6/30/2015 ¹	100%	\$0	\$100	\$92	\$83
MDR	Ichthys SURF	Australia	Inpex/Total	\$2,000 ²	3/31/2012	12/31/2015 ¹	93%	\$2,000	\$1,867	\$1,733	\$1,599
MDR	Hibiscus	Trinidad & Tobago	BG Group	\$50 ²	6/6/2011	12/31/2012 ¹	32%	\$24	\$16	\$8	\$0
MDR	Macedon	Australia	BHP	\$500 ¹	7/6/2011	6/30/2013 ¹	50%	\$314	\$252	\$188	\$125
MDR	Bay of Campeche	Gulf of Mexico	PEMEX	\$50 ²	5/31/2011	12/31/2012 ¹	32%	\$24	\$16	\$8	\$0
MDR	Lower Zakum Project	Abu Dhabi, UAE	ADMA-OPCO	\$350 ²	8/9/2010	12/31/2012 ²	21%	\$110	\$74	\$37	\$0
MDR	Safaniyah Oilfield Development	Saudi Arabia	Saudi Aramco	\$1,000 ¹	3/24/2010	6/30/2013 ¹	31%	\$382	\$306	\$229	\$152
MDR	Karan Gas Pipelines & Platforms	Saudi Arabia	Saudi Aramco	\$1,200 ¹	3/10/2009	12/31/2011 ¹	0%	\$0	\$0	\$0	\$0
MDR	Manifa Oilfield Development	Manifa Fields, Saudi Arabia	Saudi Aramco	\$800 ¹	5/29/2007	6/30/2011 ²	0%	\$0	\$0	\$0	\$0

* Excludes pre-announced project difficulties in Qatar of ~\$200MM (as of 12/31/09)

Sources

- ¹ Citi Estimate
² Company Press Release
³ Upstream

MDR Total	\$2,630
6/30/2012 Backlog	\$5,747
Project Cheatsheet (% of Total)	46%

Source: Citi Research

Figure 25. SHAW Contract Cheatsheet (Announcements from 2007-Present)

Firm	Project Name	Location	Project Sponsor(s)	Original Amount in \$MM	Date Announced	Estimated Completion	3Q12Est. % Remaining	Est. Amount Remaining (\$MM) Period Ending			
								1Q12	2Q12	3Q12	4Q12
SHAW	VC Summer Nuclear Plants	U.S.	SCANA	\$2,800 ¹	4/19/2012	12/31/2017 ³	98%	\$0	\$0	\$2,744	\$2,620
SHAW	Army Corp. of Engineers	U.S.	U.S. Army	\$60 ¹	2/7/2012	2/7/2017 ¹	94%	\$0	\$59	\$56	\$53
SHAW	Exelon Nuclear Fleet	U.S.	Exelon	\$1,200 ³	12/21/2011	12/21/2014 ³	85%	\$0	\$1,124	\$1,023	\$922
SHAW	Fabrication Project	U.S.	Private Company	\$100 ¹	8/2/2011	8/31/2014 ¹	73%	\$89	\$81	\$73	\$65
SHAW	Entergy Ninemile Plant	Louisiana	Entergy Corporation	\$500 ¹	6/28/2011	6/30/2015 ¹	77%	\$447	\$416	\$384	\$353
SHAW	Levy County Nuclear Plants	Levy, FL	Progress Energy	\$4,000 ¹	4/8/2009	6/30/2019 ¹	69%	\$2,965	\$2,869	\$2,769	\$2,671
SHAW	VC Summer Nuclear Plants	Fairfield, SC	SCANA/Santee Cooper	\$1,200 ³	4/8/2009	6/30/2017 ¹	62%	\$814	\$778	\$741	\$704
SHAW	Vogtle Nuclear Plants	Burke, GA	Southern Company	\$4,000 ¹	7/9/2009	6/30/2017 ¹	64%	\$2,800	\$2,676	\$2,549	\$2,422
SHAW	MOX Fuel Fabrication Facility	Savannah River, SC	US Department of Energy	\$2,000 ¹	5/22/2008	6/30/2016 ²	50%	\$1,131	\$1,070	\$1,007	\$945
SHAW	New 585MW CFB Plant	SW Virginia	Dominion	\$1,463 ³	4/5/2007	6/30/2012 ¹	2%	\$163	\$94	\$23	\$0
SHAW	Cliffside Modernization Project	Near Charlotte, NC	Duke Energy	\$1,290 ¹	7/18/2007	12/31/2012 ⁴	11%	\$257	\$199	\$139	\$79
SHAW	Little Gypsy Re-power & Emission Control	New Orleans, LA	Entergy Corporation	\$700 ¹	1/21/2008	Unknown	0%	\$0	\$0	\$0	\$0
SHAW	Four AP1000 Power Plants	China	SNPTC, Sanmen Nuclear Power Co, Shandong Nuclear Power, I	\$700 ¹	12/16/2006	12/31/2015 ¹	40%	\$316	\$297	\$277	\$258
SHAW	Hurricane Protection Project	Lake Borge, LA	US Army Corps of Engineers	\$700 ¹	4/4/2008	6/30/2011 ¹	0%	\$0	\$0	\$0	\$0
SHAW	John Turk Plant EPC Contract	Texarkana, AK	AEP	\$700 ¹	5/4/2007	6/30/2011 ¹	0%	\$0	\$0	\$0	\$0

Sources

¹ Company Press Release or Conference Call² NNSA Website³ Citi Research Estimate⁴ Duke Energy Conference Call

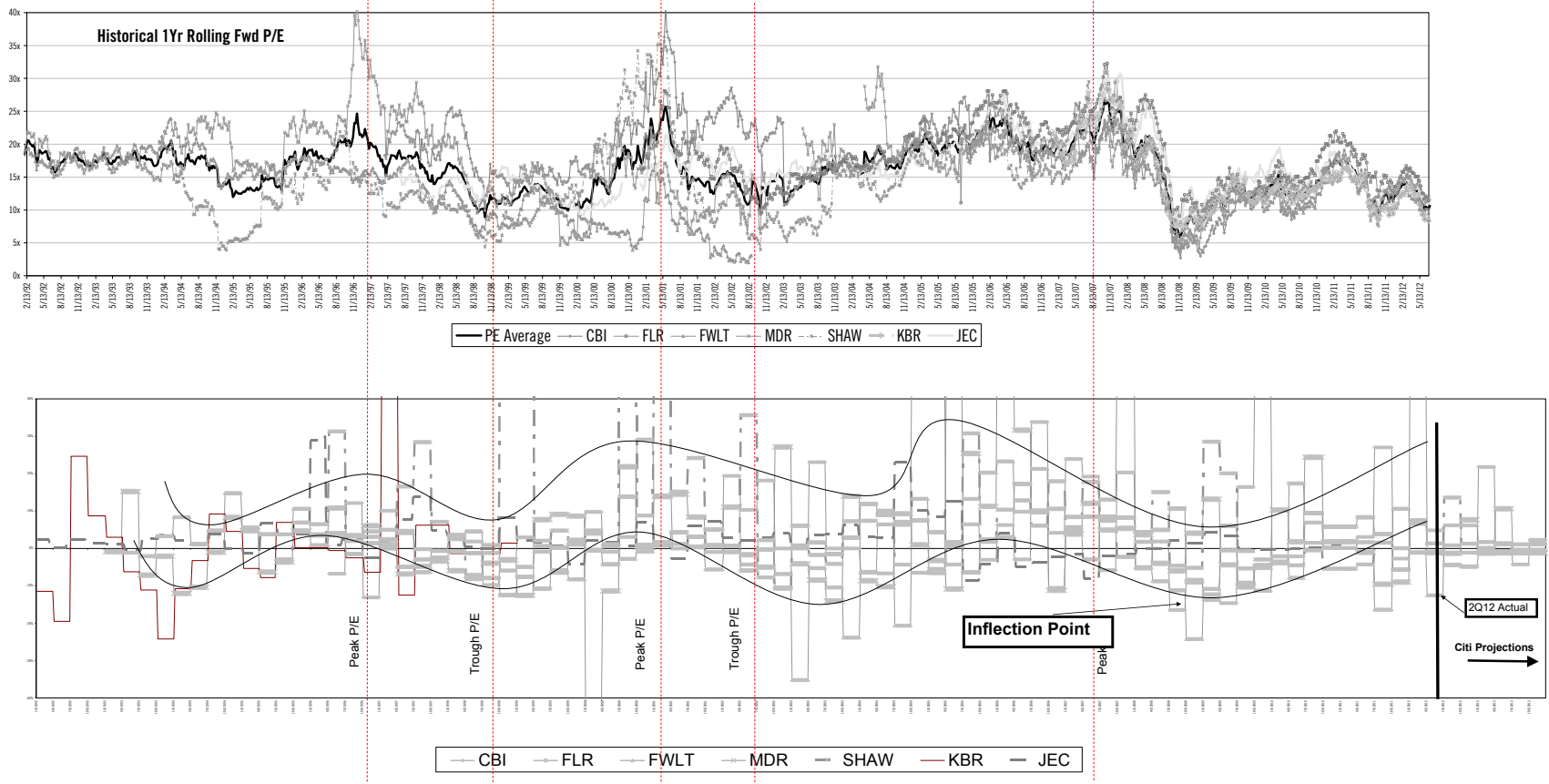
* Shaw Group announced it had removed this contract from backlog during the 2Q09 earnings presentation

SHAW Total	\$11,785
5/31/2012 Backlog	\$18,188
Project Cheatsheet (% of Total)	65%

Source: Citi Research

Cyclical Backlog Growth Patterns

Figure 26. Historical Average Rolling 1 Year Forward P/E (Consensus) & Sequential Q/Q Backlog Growth Rates with Quarterly Citi Projections Through 2013E



Source: Citi Research, Company Reports

The vertical red lines show periods when both valuations for E&C shares collapse *and* when commodity prices roll over.

Recent economic data has seemingly temporarily derailed the E&C recovery. Although management commentary has been positive and backlog growth has been positive, the capital market cycle is presenting a particularly challenging funding environment.

Oil Based Valuation – A Tactical Tool

Potential Pitfalls of Oil-Based Valuations

Covered E&Cs exposure to Oil & Gas end markets intuitively suggest valuation methodologies which incorporate oil prices. Indeed, as noted in the End Markets Mix section below, our group's revenues are roughly 60% tied to Oil & Gas based on company disclosures. However, the true exposure to Oil & Gas is likely higher because certain aspects of Power, such as new base load generation, are evaluated in the context of natural gas prices. Notably, Power projects account for approximately 20% of revenues for the E&Cs under coverage.

As a result, covered E&Cs are correctly viewed as an oil derivative, but we caution placing sole reliance on a crude-oil-based valuation methodology for several reasons: 1) the project sponsor decision process is the fundamental driver of new awards and is contingent upon general economic and financial conditions, not only commodity prices; importantly FIDs are based on an estimate of longer-term commodity price expectations (i.e. not based on short-term moves in prices), 2) the uncertain direction of oil prices trumps the observable level of oil prices, and 3) in the past, reliance on oil prices has yielded sub-par results over 12-month investment horizons (i.e. the basis for our target prices).

Notably, the correlation between NTM P/E and 12-month oil strip prices has fluctuated significantly with changing oil prices since the publication of our initial Engineering & Construction Biweekly on February 2, 2010 when the correlation was 84%. This compares to the current average correlation of 46% for covered companies. Notably, after oil prices dropped in mid-2010, the correlation did as well, which we believe suggests the decreased importance investors were placing on oil prices, and increased importance on the uncertain global economic recovery. As oil prices recovered in 2011 and the E&C cycle was gradually transitioning into a full recovery, correlations improved to 80% by June 2011. However, as broader market uncertainties (i.e. European sovereign debt crisis) temporarily derailed the E&C cycle, the relationship again dislocated. We believe the aforementioned fluctuation strengthens our cautionary stance on relying on an oil-based valuation method.

Crude Oil Price Drives Tactical Positioning & Sentiment

Putting aside the aforementioned pitfalls, we do see some benefits of giving consideration to crude oil prices in our valuation framework.

In a normalized environment, the 12-month oil strip and E&C P/E's on NTM consensus earnings often exhibit a tight relationship over shorter periods of time. As a result, running simple regressions over the past 12 months between these two metrics can provide some tactical insight.

Regression Analysis & Implied Oil Prices

Running a simple linear regression between P/E's and crude oil prices yields a different relationship for each stock. We believe the results make intuitive sense given the more energy leveraged names (CBI) have exhibited relatively tighter correlations with the 12-month oil strip; see Figure 27 below.

Figure 27. Regression Summary Between NTM P/E & 12-month Oil Strip

Company	NTM P/E Correlation w/ 12 Month Strip			Regression Equation (y = mx + b)
	Slope	Intercept	R ²	
Chicago Bridge & Iron Co NV	0.161	-2.59	0.76	P/E = 0.161*Strip -2.59
Fluor Corp	0.133	1.41	0.53	P/E = 0.133*Strip +1.41
Foster Wheeler AG	0.152	-3.72	0.64	P/E = 0.152*Strip +3.72
Jacobs Engineering Group	0.127	0.74	0.78	P/E = 0.127*Strip +0.74
KBR, Inc.	0.177	-6.09	0.76	P/E = 0.177*Strip +6.09
McDermott International Inc	0.167	-3.70	0.54	P/E = 0.167*Strip +3.7
Shaw Group Inc	0.145	-2.14	0.49	P/E = 0.145*Strip -2.14
Average	0.079	5.98	0.46	P/E = 0.079*Strip +5.98

Source: Citi Research, Bloomberg

These implied P/Es are useful when performing basic sensitivities to oil prices. For instance, applying an implied P/E to our current EPS projection yields an implied price and a corresponding upside or downside to specific oil price levels.

Additionally, we calculate an implied 12-month strip based on our current EPS estimates, current share prices, and linear regression data. As noted in Figure 28, the group overall (ex BWC) is pricing in a 12-month oil strip of roughly \$100.10 per barrel with significant dispersion among our covered group. In comparison, the current NYMEX Futures strip is at \$93.00 per barrel. We will monitor these implied calculations in conjunction with our end market analysis as a tactical supplement and sentiment gauge for the E&C group.

Figure 28. Implied 12-month Strip Oil Prices

Company	Current Price	Implied 12 Month Strip
Chicago Bridge & Iron Co NV	\$39.39	\$89.44
Fluor Corp	\$58.71	\$100.08
Foster Wheeler AG	\$24.16	\$103.70
Jacobs Engineering Group	\$42.79	\$98.27
KBR	\$30.50	\$94.58
McDermott International Inc	\$12.59	\$107.06
Shaw Group Inc	\$43.90	\$107.57
Average	-	\$100.10

Source: Citi Research. Prices as of 9/24/12 close

Figure 29. E&C Price Sensitivities to WTI 12-month Strip Oil Prices

\$83			
	Implied P/E	Implied Price	% Upside/(Downside)
CBI	10.8x	\$35.93	-8%
FLR	12.5x	\$49.65	-14%
FWLT	8.9x	\$17.84	-25%
JEC	11.3x	\$36.51	-13%
KBR	8.6x	\$24.63	-19%
MDR	10.2x	\$9.02	-27%
SHAW	9.9x	\$32.28	-26%
Average	10.3x	-	-19%

\$88			
	Implied P/E	Implied Price	% Upside/(Downside)
CBI	11.6x	\$38.62	-1%
FLR	13.2x	\$52.30	-10%
FWLT	9.6x	\$19.37	-19%
JEC	11.9x	\$38.57	-8%
KBR	9.5x	\$27.17	-10%
MDR	11.0x	\$9.76	-21%
SHAW	10.6x	\$34.65	-21%
Average	11.1x	-	-13%

\$93			
	Implied P/E	Implied Price	% Upside/(Downside)
CBI	12.4x	\$41.30	6%
FLR	13.8x	\$54.95	-5%
FWLT	10.4x	\$20.89	-13%
JEC	12.5x	\$40.62	-4%
KBR	10.4x	\$29.70	-2%
MDR	11.8x	\$10.51	-15%
SHAW	11.3x	\$37.01	-16%
Average	11.8x	-	-7%

\$98			
	Implied P/E	Implied Price	% Upside/(Downside)
CBI	13.2x	\$43.99	13%
FLR	14.5x	\$57.61	-1%
FWLT	11.1x	\$22.42	-6%
JEC	13.2x	\$42.68	1%
KBR	11.3x	\$32.24	6%
MDR	12.7x	\$11.25	-9%
SHAW	12.1x	\$39.37	-10%
Average	12.6x	-	-1%

\$103			
	Implied P/E	Implied Price	% Upside/(Downside)
CBI	14.0x	\$46.67	20%
FLR	15.2x	\$60.26	4%
FWLT	11.9x	\$23.95	0%
JEC	13.8x	\$44.73	6%
KBR	12.1x	\$34.77	15%
MDR	13.5x	\$11.99	-3%
SHAW	12.8x	\$41.74	-5%
Average	13.3x	-	5%

Source: Citi Research

Tracking the "Three Cycles"

We believe investors seeking to determine where we are in the current E&C cycle should gauge the current status and projected trajectory of project sponsor decisions. In our view, the impact of the commodity, capital markets, and economic cycles (the "Three Cycles") are the primary factors behind these decisions, thereby driving the E&C investment outlook. We currently believe we are approaching the full recovery phase of the current E&C cycle and continue to monitor key indicators affecting our view.

Capital Markets

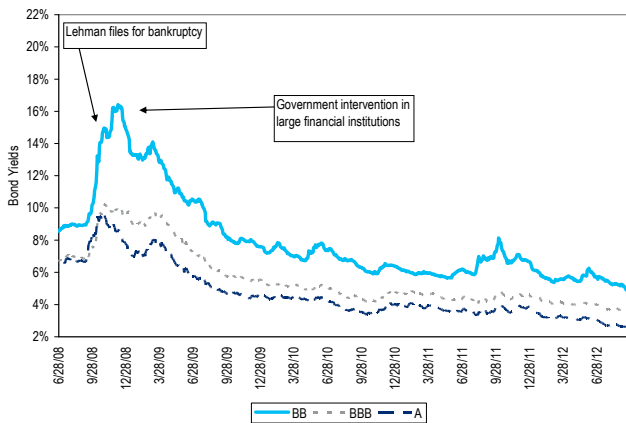
As it relates to the equity markets, the Citi Global Equity Strategy team forecasts flat global EPS in 2012, which compares to bottom-up consensus still predicting 10% growth. Even so, the Global Equity Strategy team thinks that global equity markets are already discounting a 20% contraction in global EPS, which they view as too pessimistic. In addition, the team expects interest rates to remain low, with 10-year Treasuries in the 1.75%-2.25% range in 1H12, but expect a gradual move upwards towards 3.00% later in the year.

As indicated by analyses performed by the Citi North American Equity Strategy team, bank lending has loosened significantly from the global recession and as a result, both loan activity to large firms and capital expenditures have increased.

According to the team, funding costs remain attractive. Specifically, financing costs for business entities with strong balance sheets are low by historical standards, and are substantively lower than the trend seen before the recession.

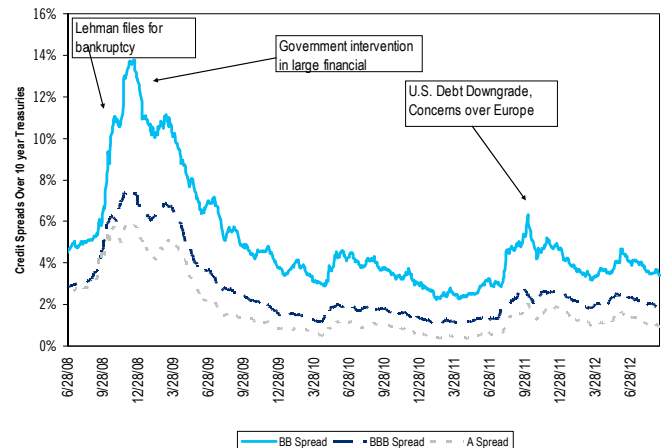
Since March 2009, bond yields declined steadily and are at or below pre-Lehman bankruptcy levels despite recent concerns over sovereign risks. The VIX index has decreased since the U.S. debt downgrade. Separately, short interest levels for BWC, FWLT and SHAW are below their respective 12 month averages.

Figure 30. Corporate Bond Yields



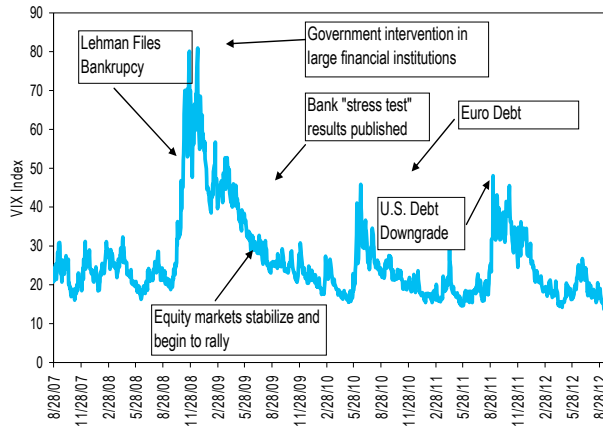
Source: Citi Research, Haver Analytics

Figure 31. Corporate Yield Spreads Over Treasuries For Selected Ratings



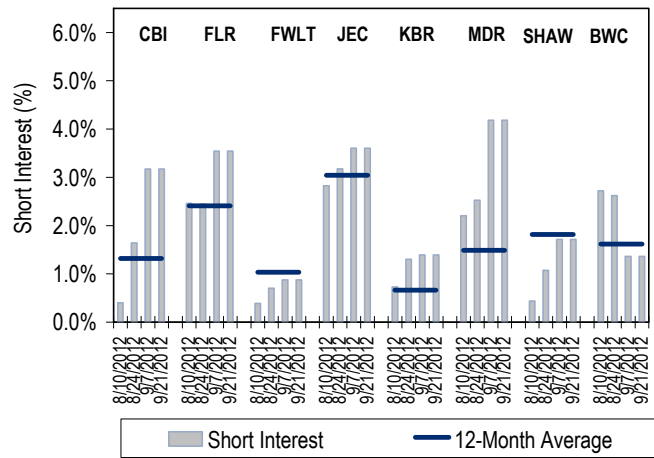
Source: Citi Research, Haver Analytics

Figure 32. VIX Index



Source: Citi Research, Bloomberg

Figure 33. E&C Short Interest

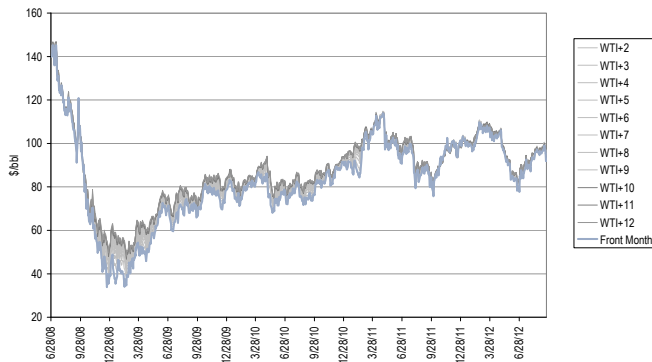


Source: Citi Research, Bloomberg

Commodity Markets

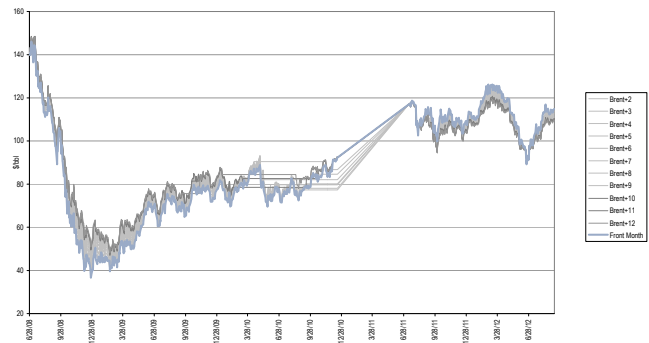
A wide variety of commodity prices have rebounded, yet continue to exhibit volatility. Recent economic data and forecasts of a slowing global economy have caused volatility in commodity prices.

Figure 34. West Texas Intermediate Oil Prices



Source: Citi Research, Bloomberg. Grey lines reflect forward oil prices, up to 12 month settlement.

Figure 35. Brent Crude Prices



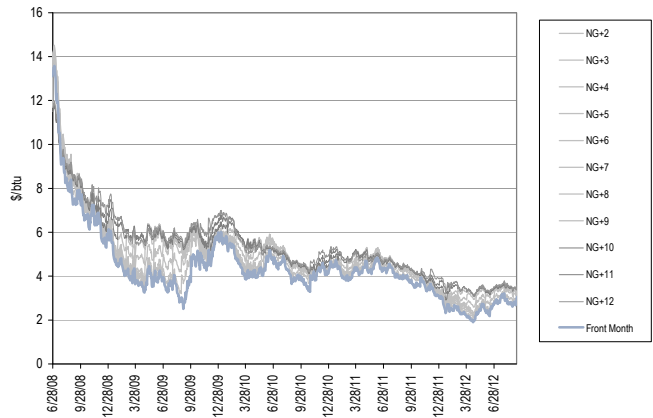
Source: Citi Research, Bloomberg. Grey lines reflect forward oil prices, up to 12 month settlement.

Figure 36. Dubai Oil Prices



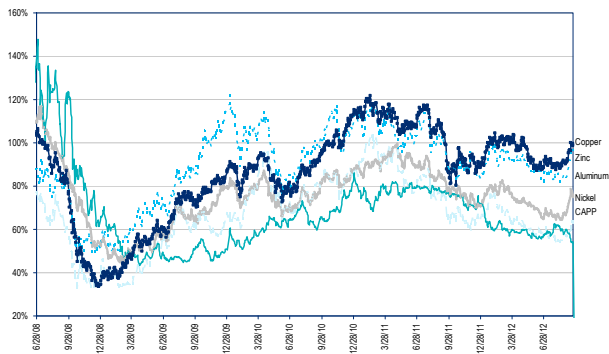
Source: Citi Research, Bloomberg. Grey lines reflect forward oil prices, up to 12 month settlement.

Figure 37. Henry Hub Natural Gas Prices



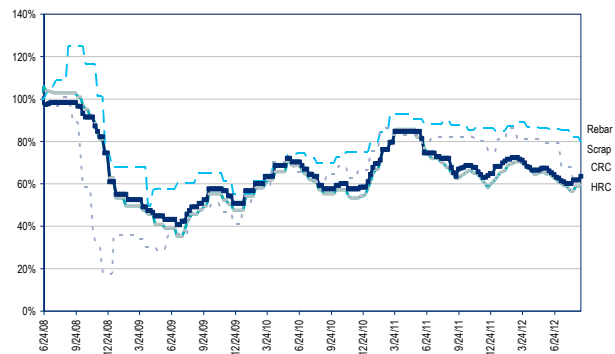
Source: Citi Research, Bloomberg. Grey lines reflect forward gas prices, up to 12 month settlement.

Figure 38. Base Metals and CAPP Coal Prices



Source: Citi Research, Bloomberg

Figure 39. U.S. Steel Prices



Source: Citi Research, AMM

End Market, Geographic, & Contract Mix

The eight companies in our coverage universe operate on a global scale across different end markets, often targeting hundreds of potential projects at once. The tables below provide further breakout of each firms' exposure to various industries and geographies, denoted by the respective revenue mix. We also delineate the contract mix in current backlog. Where possible, we have used the most recent company reports and presentations to assemble the data.

Figure 41. End Market Revenue Mix

Company	Ticker	Oil & Gas	Chemical	Ind. & Infr.	Gov/Defense	Global Services	Power	Other	TOTAL	
Babcock & Wilcox	BWC				34%		66%		100%	
Chicago Bridge & Iron Co	CBI	98%						2%	100%	
Fluor Corp	FLR	32%		47%	12%	6%	3%		100%	
Foster Wheeler AG	FWLT	71%					29%		100%	
Jacobs Engineering Group	JEC	31%	16%	16%	20%			18%	100%	
KBR, Inc.	KBR	54%		3%	13%		5%	25%	100%	
Shaw Group	SHAW	10%		31%			51%	8%	100%	
McDermott International	MDR	100%							100%	
Group Average		52%		12%	10%		1%	19%	7%	100%

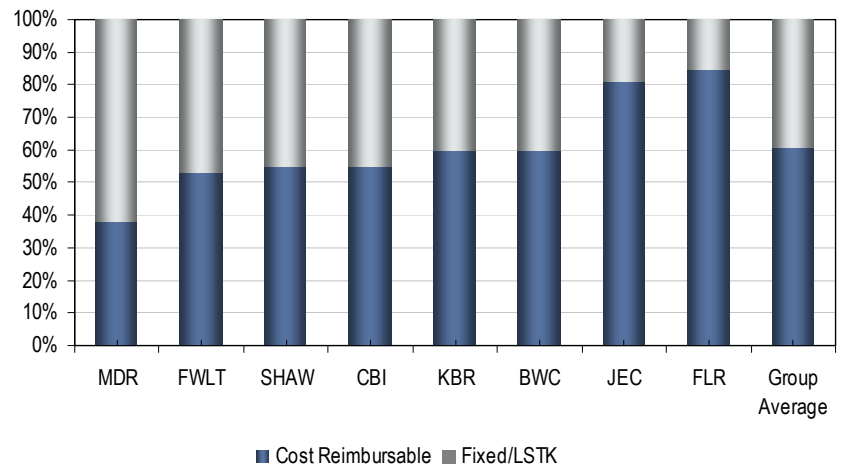
Source: Most recent company filings

Figure 42. Geographic Revenue Mix

Company	Ticker	Asia Pacific	Central/South Amer	EMEA	North America	Other	TOTAL
Babcock & Wilcox	BWC	2%	0%	6%	87%	4%	100%
Chicago Bridge & Iron Co	CBI	10%	15%	0%	29%	45%	100%
Fluor Corp	FLR	19%	12%	22%	47%	-	100%
Foster Wheeler AG	FWLT	39%	2%	33%	26%	-	100%
Jacobs Engineering Group	JEC	3%	1%	18%	78%	-	100%
KBR, Inc.	KBR	16%	0%	58%	22%	5%	100%
Shaw Group	SHAW	9%	1%	2%	86%	1%	100%
McDermott International	MDR	57%	2%	34%	2%	5%	100%
Group Average		19%	4%	22%	47%	8%	100%

Source: Most Recent Company Filing. Year to Date Results

Figure 43. Backlog Mix by Contract Type



Source: Citi Research, Company Reports

Notes

Notes

Appendix A-1

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