

Turnkey Nuclear Power Plant EPC Agreements: The Case for Price Certainty

By John Lamberski, Esq.*

There is increasing optimism that construction of new nuclear power plants will be undertaken in this country beginning in the next few years. A fair number of utility companies are in the throes of negotiating multi-billion dollar engineering, procurement and construction (“EPC”) agreements with nuclear reactor vendors and constructors. Most encouraging, one Southeast utility has successfully completed negotiation of a turnkey EPC agreement for a new advanced two-unit nuclear plant, although the proposed project remains subject to state regulatory approval, as well as receipt of an NRC combined operating license (“COL”).

Numerous, complex issues can be expected to arise in connection with the negotiation of a nuclear plant EPC agreement. Those issues will be affected by over-arching realities such as state regulatory processes (including request-for-proposal requirements and oversight by independent evaluators or monitors), the availability of financing and loan guaranties, negotiations with prospective co-owners, NRC COL considerations, lack of final designs for advanced reactors, and the short-term availability of financial incentives such as production tax credits. Generally speaking, the more significant issues that arise in a nuclear EPC agreement negotiation involve, in no particular order: price, price structure and price adjustment; change orders; schedule and performance guarantees and liquidated damages related thereto; minimum performance guarantees; limitations of liability; insurance; risk of loss; indemnification; warranties; termination rights; and credit support. Due to the page limitations of this article, I will focus my discussion on the significance of price certainty in nuclear EPC agreements; that is, the degree to which one can reasonably predict, as of the time an EPC agreement is executed, what will be the final cost of construction of the plant. I conclude that the volume of the near-term development of new nuclear power plants in the United States will be largely affected by the degree of price certainty achievable in nuclear plant EPC agreements.

The pricing provisions of EPC agreements are often complex and, as a result, misunderstood by those who are not intimately familiar with their details. They can be crafted literally in a hundred different variations, covering the full range of the spectrum from a high degree of price certainty to no price certainty at all. As discussed in more detail below, in

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today's environment, uncertainty in the price of new nuclear plants is problematic for prospective owners, especially for those regulated utilities that must seek state approval to recover in rates the price they pay for such projects. Even in the case of a merchant plant, it seems likely that financing such a plant will become more difficult as the EPC agreement price becomes less certain.

The pricing structures of EPC agreements typically involve a combination of one or more of the following components:

Fixed Pricing – meaning that the stated price is fixed for some portion of the work throughout the term of the agreement (subject to typical change orders, such as those based upon changes to the facility requested by the owner, force majeure events or changes in applicable legal requirements).

Indexed Pricing – meaning that the stated price for some portion of the work (which is also subject to typical change orders) is subject to adjustment over the course of the project based on the change in one or more indices.

Target Pricing – meaning that the contractor is reimbursed for all costs it incurs plus a fee (profit), subject to a sharing mechanism where such contractor receives a bonus if the final project costs are below a pre-established “Target Price” (which is also subject to typical change orders) and where the contractor's fee is reduced or eliminated if the final project costs are above the Target Price. Any number of variations in the cost-sharing mechanism can be negotiated. Significantly, Target Pricing often includes an absolute limit on the contractor's exposure to project cost overruns regardless of fault. That is, while the contractor may be willing to put its entire fee at risk, the owner will be responsible to reimburse the contractor for all cost overruns (even when such cost overruns are due to reasons within the contractor's control) once the contractor's fee at risk has been expended on project costs.

As one might guess, the more that an EPC agreement is based on Fixed Pricing, the more certain the price will be. A combination of Fixed Pricing and Indexed Pricing can also provide price certainty. Even if some portion of the work is subject to price adjustment based on the fluctuation of one or more indices, relative certainty of price exists to the extent that one can make reasonable projections of the fluctuations in such indices over the construction period of the project. Obviously, the longer the duration of the construction project, the less certain such projections are likely to become.

Price uncertainty for the owner increases dramatically when the Target Pricing concept is introduced. This is especially true when the Target Pricing provisions include an absolute limit on the contractor's responsibility for project cost overruns. On the other hand, if the Target Pricing provisions include an absolute cap or limit on the price that the owner must pay, then price certainty can be preserved, albeit subject to the risk associated with whatever is the owner's limited obligation to share in cost overruns. Of course, Target Pricing can also be designed such that there is no limit to the sharing of cost overruns to which both the owner and contractor are exposed; i.e., they share in the cost overruns equally, or based on another allocation, until the

project is completed. However, because this still exposes the owner to unlimited cost overruns, even though the contractor shares in that exposure, it lacks price certainty.

Price Certainty in a Regulated Environment

In a regulated environment, where a utility-owner's ability to recover in rates the price it pays pursuant to an EPC agreement is subject to state regulatory approval, price certainty in nuclear plant construction will receive considerable attention by decision-makers and regulators. Recent state regulatory agency rulings indicate that approval of nuclear plant projects will be based on estimated, projected, in-service total costs and will specify an approved in-service dollar amount. For example, approval will cover a specific amount for equipment, materials and construction that includes projections of price escalation and price adjustments based on fluctuations in applicable indices. These cases also indicate that the affected utilities will be required to obtain further approval from the state regulatory agency to recover any amounts in excess of its initial, approved projected cost of construction.

A recent case before the Virginia State Corporation Commission ("VSCC") concerning a proposed base-load coal generating plant illustrates the importance of price certainty. In an April 14, 2008 order ("APCo Order"), the VSCC denied the application of Appalachian Power Company ("APCo") for a rate adjustment clause for recovery of the portion of construction costs allocable to Virginia ratepayers (about \$1 billion of a total estimated cost of \$2.23 billion) of a new, carbon-capture compatible, integrated gasification combined cycle ("IGCC") generating facility, to be located in the State of West Virginia. The VSCC found APCo's cost estimate, which was prepared in the November 2006 time frame, was "not credible." The VSCC expressed concern that APCo "will not obtain actual or firm prices for components of the project until after receiving regulatory approval.... Indeed, APCo has no fixed price contract for any appreciable portion of the total construction costs; there are no meaningful price or performance guarantees or controls for this project at this time. This represents an extraordinary risk that we cannot allow the ratepayers of Virginia in APCo's service territory to assume. This risk is further compounded by the fact that, when APCo eventually attempts to obtain a turn-key contract with firm pricing, it likely will be a sole-source contract with one bidder."¹ APCo itself questioned its ability to obtain more firm pricing for the IGCC plant without paying an "exorbitant risk premium" due to, among other things, the complexity and long duration of this project.² Finally, the VSCC cited testimony that the uncertainty concerning capital costs is greater for the IGCC option because of its higher capital cost, longer construction and permitting times and untested track record.³

¹ APCo Order at 4-5.

² *Id.* at 5-6.

³ *Id.* at 8. APCo filed a petition for reconsideration and/or rehearing of the APCo Order on April 29, 2008 and the VSCC denied that petition and dismissed the case on May 29, 2008.

Challenges to Achieving Price Certainty

Nuclear power plant development presents a number of challenges which are similar to issues confronted by APCo respecting its IGCC plant. Nuclear plants are massive, complex structures that will require longer construction periods and the first units built will no doubt be presented with construction challenges. For example, work force issues are a concern. “[I]t is difficult to know today how much labor productivity can be obtained on the first nuclear islands, how quickly craftsmen can be trained to perform work to nuclear standards, how quickly craftsmen in the field will be able to construct the nuclear island, how many welds will pass inspection the first time, and how consistent the NRC inspectors are going to be in their requirements.”⁴ Also, while there is some debate about whether certain designs of new generation nuclear plants are fairly characterized as unproven technology, they will certainly contain some components that are as yet untested.

In addition, to preserve the option to construct a new nuclear plant, a utility must file an application with the NRC for a COL up to 4 years in advance of the scheduled first pouring of concrete. As many as 19 applications for 29 nuclear units are expected to be filed before the end of 2008, which is the current deadline for securing the benefits of production tax credits (“PTCs”). Many of these applicants are effectively faced with a sole-source contract with one reactor vendor bidder as in the case of the APCo IGCC project, at least so far as the selection of nuclear reactor technology is concerned. If these utilities could not reach agreeable terms and conditions with their reactor vendors, it could be potentially costly for these owners to switch reactor vendors due to loss of schedule, slippage in the NRC queue for review of the COL, cost of development of the COL, and potential loss of PTCs. Of course, these utilities will have other non-nuclear alternatives available to them to fill their capacity needs.

Moreover, Fixed Pricing and Indexed Pricing are difficult to achieve in the case of new, advanced reactor designs, where the design of such reactors is not final at the time of execution of the EPC agreement. When a project design is not finalized, the contractor is not able to develop a final cost estimate for the project. Final cost estimates necessarily require quotes from subcontractors and vendors for equipment and materials, which cannot be completely obtained if the design is not final. Absent a final cost estimate, a contractor will likely add to his price an increased contingency or risk premium to cover the uncertainty in his preliminary cost estimate. The greater the contingency or risk premium required to provide Fixed Pricing or Indexed Pricing, the less likely the contractor will be to offer such pricing due to the fear that the higher price will (a) make the project uncompetitive (against other non-nuclear alternatives available to the utility) or (b) make its reactor technology less desirable in the market place, compared to other reactor technology.

The Rock Meets the Hard Place

Notwithstanding the difficulty in achieving price certainty, I expect regulated utilities to be extremely averse to accepting pricing and other terms and conditions in turnkey nuclear EPC agreements that fail to provide price certainty at least to a degree that they can reasonably expect

⁴ *Nuclear Power International*, Vol. 1, No. 1, p. 25 (quoting Ron Pitts, Senior Vice President of Fluor Corporation’s nuclear power business unit).

will be approved by state regulatory agencies for recovery in rates. This is especially true for Target Pricing concepts that expose the owner to significant construction cost overruns. As mentioned above, such cost overruns will likely be the result of causes that are within the control of the contractor. Increased costs due to causes outside the control of the contractor typically entitle the contractor to a change order increasing the Target Price by an amount of the incremental, additional cost incurred by the contractor as a result of such causes. By contrast, a “cost overrun” is an amount of additional cost above the Target Price for which the contractor does not receive a change order.

Generally speaking, it seems reasonable for regulated utilities to assume that they will be permitted to recover in rates the additional price they must pay for EPC contract change orders when such change orders are based on unforeseen circumstances outside the reasonable control of the owner or the contractor. It also seems reasonable for regulated utilities to assume that they will be able to recover the additional price they must pay for increases in the EPC contract price that result from adjustments based on pre-established fixed escalation rates or formulaic application of pre-selected indices where such formulae are determined to be reasonable at the time the EPC agreement was entered into. (Although, in the case of runaway price increases for labor, equipment and/or materials, a prudent utility may need to seriously consider early termination of the project.)

However, the same cannot be said for cost overruns which are the result of causes within the control of the contractor. For those utilities who accept risk associated with such cost overruns, they will likely be required to seek approval after the fact from regulators to recover in rates cost overruns that were within the control of their contractor. In such a case, there is at least a fair chance that such cost overruns will be characterized as imprudent costs and that a regulated utility will be denied recovery of those cost overruns in its rates. In the face of this prospect, it seems unlikely that a regulated electric utility will accept any appreciable risk exposure to project cost overruns other than cost overruns that they believe can later be found to have been prudently incurred.

While there are very encouraging signs that the United States is on the verge of a wave of new nuclear plant development, challenges remain to be overcome. Not the least of these challenges is the fact that price certainty (at the time of execution of nuclear EPC agreements) for the construction of the first wave of new nuclear plants will be difficult to achieve, especially in the case of new reactor designs that are not finalized and are untested. However, price uncertainty will be difficult for regulated utilities to accept in light of state regulatory issues, creating a risk allocation game of “hot potato” between contractors and prospective owners. In the near term, this is likely to produce a number of failed transactions, where owners decide that the risks associated with price uncertainty in nuclear EPC agreements are not acceptable when compared to the risks associated with other non-nuclear alternatives available to the utility and where contractors refuse to accept such risks. As new reactor designs are finalized and the first wave of construction of these plants is completed (beginning in the 2016 to 2018 time frame), price certainty should become more widely achievable in nuclear power plant EPC agreements.