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## **Contract Plant Operators: Stepping Stone to New Nuclear Investment in a Liberalized Electric Energy Market**

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### **Introduction**

New nuclear electric generating plants, a Nuclear Renaissance, will require substantial new investment of the order of one billion US dollars for each new nuclear plant. To expand the existing world fleet of nuclear plants by even 5% per year will require an annual infusion of new capital on the order of US\$20 billion per year. This is a serious amount of money. Sellers of nuclear technology seeking this investment will be competing in the capital markets with every other possible form of investment opportunity. Investors looking for investment opportunities will be weighing their opportunity for reward with the corresponding risks.

US experience, based on the sale of existing nuclear plants to new owners, provides encouragement that nuclear plants can attract new investment.

It is crucial to note, however, that the new investment has occurred only in states that have liberalized their electric energy economic regulation to rely on markets for pricing of electricity. There has been no sale of nuclear plants, no investment by new owners, in any state that still relies on the historically familiar, and still prevalent in most states, 'cost-of-service' form of electric energy economic regulation. The 'cost-of-service' formula, with its emphasis on a fixed return to investors and the pass through of any operating cost and production benefit to customers, not investors, is simply too unattractive to investors given their many other choices.

In short, the tremendous improvements in safety, production and cost, for which the nuclear industry can be so justifiably proud, have all gone to the benefit of customers, not investors, courtesy of 'cost-of-service' economic regulation.

It is in the opportunity to bring improved rewards to investors and correspondingly therefore the opportunity to attract new investment to the nuclear industry, that liberalization of electric energy regulation is so crucial. Liberalization as seen in the UK, selected US states, and European discussions on the same topic represent the best hope for creating a business environment that will attract the new investment necessary for new nuclear plants.

But liberalization in the US has stalled and discussions in Europe may turn out to be little more than that, discussions. California, 11 September, Enron and other significant events have had a profound impact on the US appetite for liberalization. No doubt, questions in the US are shared elsewhere. The future is uncertain.

Given the general environment of uncertainty, can we improve investor confidence in nuclear performance? Improve reliability? Provide greater financial stability? Can we give investors flexibility, positioning them for any number of potential future developments? Can we take the initiative in the face of uncertainty?

The answers are yes.

There is no question about the nuclear industry's ability to improve. One of the options available, a contract operator, can help further improve and sustain safety, production and economic performance. The results can be a more operationally reliable, financially stable nuclear operation. The unbundling of nuclear plant operation from owners further provides an important step toward flexibility in the sale of and new investment in nuclear plants.

A group of utilities in the US are taking bold steps to test and refine the opportunities provided by a contract nuclear plant operator.

### **Contract Operator – Nuclear Management Company**

Four US corporations joined together to create and implement a new company, the Nuclear Management Company, LLC (NMC) for the purpose of operating the nuclear plants that they own and operated. These four corporations, in total, represented ownership and operating responsibility of seven nuclear plants at five sites in three US states.

Alliant Energy was one of the four pioneering companies. Alliant Energy, through its utility subsidiary, Interstate Power and Light (IP&L), was the operator and is the majority owner of the Duane Arnold Energy Center (DAEC), the only nuclear power plant in the US state of Iowa.

A fifth corporation has joined the effort subsequent to the startup effort by the original four.

This is a first-of-a-kind effort and there is no other company like NMC in terms of the breadth and complexity of relationships that it represents and the potential opportunity it provides for the future of each corporation's nuclear ownership interests. While each corporation has its own motivations for this joint effort, a mutual interest in sustaining and improving safety, production and economic performance has helped drive the effort forward. This joint effort has survived dramatically changing circumstances, a testimony to the strength of the original ideas that motivated it. Because of the first-of-a-kind nature of this company and the potential it provides, it is useful to understand its history, the motivations and expectations of those involved, its legal form and relationships, its formation and implementation issues, the experience to date and expectations for the future.

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It is equally important to consider how this experience may apply to the opportunity for new nuclear investment and the essential role of liberalization in Europe and other markets, as seen in the US experience with liberalization among some of its states.

### **NMC – History, motivation and expectations**

Representatives of the original four corporations first met in early 1998 to provide an answer to a challenge from their CEOs to come up with a better way to manage the various nuclear plants that they owned and operated. Issues driving the CEOs included concerns over liberalization in some of their states, performance problems or anticipated problems at some plants, and a general feeling that there should be a better way to help manage the day-to-day demands of nuclear management responsibilities.

The CEOs were all interested in taking the initiative in response to anticipated change.

The representatives recommended that the four corporations seek closer cooperation and once that was endorsed, work began in earnest to develop plans. The concept of a new company as a 'business platform' was developed. The new company could be developed and grown into a variety of forms for the future, including using it as a service company, an operating company, and potentially even a generating company. In late 1998, the four corporations announced the formation of a cooperative alliance between their nuclear plants for information and resource sharing.

Work on the new 'business platform' culminated in the formation of Nuclear Management Company, LLC in February 1999. Formal service agreements were signed between NMC and four 'customers', the nuclear plant owning and operating utility subsidiaries (utilities) of the Parent corporations (Parents). These service agreements provided a common legal basis for transactions between the utilities through the NMC. In parallel, applications to the US Nuclear Regulatory Commission for transfer of operating authority from the existing utility operators to the NMC were prepared. Also, an operating services agreement was drafted that would replace the services agreement at the time the operating authority transfer was effective.

The NRC approved transfer of operating authority from the utility operators to the NMC in early August 2000. The operating service agreements and operation of the power plants by NMC were made effective on 7 August 2000.

Expectations were high for the success of the new company. While there were numerous individual expectations, the collective expectation in the utilities centred around a general lifting of the burden of nuclear management and easing of the burdens associated with nuclear plant ownership and operation.

Alliant Energy's expectations focused on improving and sustaining regulatory and operational performance while helping mitigate upward pressure on costs. There was also a strong belief that combining the individual plant staffs into a

consolidated talent pool would facilitate recruitment and retention of new employees to replace an aging work force as older employees retired.

Initially, the operation of the plants by NMC was little more than in name only, as all the plant staffs continued to be employed by the original utilities. However, an NMC headquarters had been established in mid 2000 and was rapidly getting up to speed to be a full fledged company.

The beginning of January 2001 saw the transition of all non-union employees to the NMC. Purchasing and similar operational functions were established. A new management structure began to emerge that showed the promise of dedicated nuclear management.

It was at this time a fifth company sought out the services of the NMC for operation of its nuclear plant, thereby adding an eighth reactor, a sixth site and a fourth state to NMC's scope of responsibilities.

In January 2002, Alliant Energy added its union employees to the ranks of NMC employees, thereby completing the transition of all its nuclear related employees to the NMC. The timing of the transition of other utilities' union employees will vary depending upon their specific union agreements.

Overall, NMC has largely made the transition from an idea on a piece of paper into a live functioning company, transacting substantially all the nuclear related business as operator of the nuclear plants previously operated by its utility customers.

### **NMC – Legal form and relationships**

As suggested earlier, NMC is worthy of examination due to the uniqueness of its circumstances. Understanding NMC's legal form and its relationships is essential to understanding what has been accomplished to date and what opportunities exist for the future.

NMC was established as a limited liability company. This was the easiest form to provide a legal identity while providing substantial flexibility for conducting business, e.g. 'the business platform'. A 'non-profit' was considered but ultimately considered to be too limiting, given the desire for future flexibility. NMC has a dual relationship with each corporation/utility subsidiary that is an owner and former operator of each nuclear plant operated by NMC.

The first and most significant relationship is between NMC, as a supplier of nuclear plant operating services, and the utility subsidiary, as a customer that owns and previously operated the nuclear plant. The terms of this relationship are defined in the operating services agreement that was developed starting in 1999 and made effective on 7 August 2000. The operating agreement, in addition to spelling out many details as to how the business relationship between NMC the supplier and the utility customer will be handled, also appoints NMC as an agent for the utility in all matters related to operation of their nuclear power plant. Basically, the operating services agreement stipulates that NMC will operate the utility's nuclear power plant 'at cost'. NMC has no financial risk. Ownership of

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the power plant and electrical output has not changed, and all financial responsibility, including decommissioning costs, stays with the utility. The operating services agreement further defines how the agreement may be terminated and provides for representation from the utility to the NMC by a designated 'contracting owner' representative.

The second relationship is between NMC as a non-utility subsidiary of the Parent corporations. Each of the five Parent corporations owns a 20% stake in NMC. The corporate governance and control of NMC by its five owners is determined by the 'membership' agreement established at the time NMC was formed in February 1999. The four original Parent 'members' each had a 25% ownership stake in NMC, which was diluted to 20% membership stakes when the fifth Parent 'member' joined in 2001 at the same time that its utility subsidiary became the fifth 'customer' of NMC.

In the case of DAEC, there were two minority owners in addition to IP&L. There is an agreement between the three owners from the time of original plant construction that assigned operating responsibility for the DAEC to IP&L. This agreement was not modified by the contract between IP&L and NMC. In a broad sense, NMC became a subcontractor to IP&L, with IP&L continuing to fulfill its responsibility as operator on behalf of the two minority owners.

In summary, NMC is a wholly owned non-utility subsidiary of each of the 'Parent' corporations, with each 'Parent' having an equal ownership share in NMC. At the same time, NMC is a supplier of operating services for each utility's nuclear power plant. The fact that each Parent is both an owner of NMC and through a subsidiary, a customer of NMC, drives the 'at-cost' aspect of the business relationship. US and state laws strictly regulate business deals between utility subsidiaries of corporations and other parts of the same corporation.

While this dual relationship has become the common model for doing NMC business, the structure of NMC and its customer relationships do not require the dual relation. NMC could have customers that are not investors/members of NMC and, correspondingly, NMC could have investors/members that are not customers. In either case, there would be no restrictions on NMC's ability to charge more than 'cost' for its services.

### **NMC – Formation and implementation issues**

The conception and legal creation of NMC, while difficult, was simple compared to the challenges of actually implementing the new company and turning it into a real functioning company.

Legal approval for the creation of NMC and then for the customer relationships required action at the state level for three of the four original Parent/Utility Customers and at the US Federal level for Alliant Energy due to its status of doing substantial business in more than one state. The Federal approval from the US Securities and Exchange Commission (SEC) ended up taking longer than expected, requiring special agreements between Alliant Energy and the other companies to keep NMC moving ahead.

Approval from the US Nuclear Regulatory Commission, while certainly an important effort, was also something clearly regarded as desirable by both the utilities and the NRC. The NRC early on saw NMC as an opportunity to improve the management and, therefore, the safety focus of nuclear plant operators. Once the continued full financial backing of the utility owners was made clear, NRC approval became relatively straightforward.

NMC initially had no credit or financial standing. This was resolved by initial capital contributions by its Parents providing a pool of working capital and by some selected financial guarantees by its Parents. Most vendors that previously supplied materials and services to the utilities have been satisfied to transfer their business to NMC. However, some vendors have insisted on more specific definitions of NMC's role as an agent for the utility. These have been resolved on a case-by-case basis. While NMC provides its services to its customers 'at cost', it does have a large cash flow to manage, given its intermediary role. Improving the timing of billings to its utility customers has minimized the financing requirements of this cash flow.

Bringing together employees from five different companies, in particular the treatment of salaries and benefits, has been a major challenge. Every employee is quick to notice whether he feels he has gained slightly or lost slightly (and any perceived loss is magnified into a big loss!) and these individual perceptions quickly add up to site-wide perceptions as to which employee group gained or lost the most. The role of site leadership has been extremely key in this area, the important message being that employees need to focus on how NMC is improving the future viability of their site and how employee cooperation is essential in making it happen. When given a choice, most employees have retained their ties to the retirement/pension plans managed by the Parents. These links will diminish over time, as employees with the historical ties to the Parents retire and are replaced by new employees with links only to NMC. A second area of major linkage back to the Parents is with the union employees. In all cases, with the exception of Alliant Energy, the union contracts have included provisions that complicated the transfer of union employees from the utility to NMC. This arrangement of union employees at the power plants employed by the utilities but being supervised by NMC salaried employees is workable, but it is a continuing complication in budgeting and financial planning activities. This continually forces accounting, finance and other staff to work in multiple systems to provide costing data, etc.

Formation of the NMC and then turning over the operating authority to them for multiple sites has been a cultural test of the highest order. The personnel at each site operated by NMC have well established, deeply embedded cultures on how work is done and how to go about operating the plant. These transcend the regulations of the US Nuclear Regulatory Commission, the operational evaluations of the Institute of Nuclear Power Operators and the emphasis everywhere on benchmarking and the pursuit of best practices. The resistance to any change can be enormous and this opposition can take place openly or quietly. Again, the role of leadership is key. Not everything can or should be changed. However, change in the right areas and in the right amounts is critical to making the longer-term adjustments necessary for sustaining and improving plant performance. In some cases, changes in leadership have been necessary. While

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this can be painful, it can also provide opportunities for promotion and fresh ideas and approaches that may have been previously stifled.

The creation of NMC created the need for a new company infrastructure. This cost has generally been greater than expected, and the expected savings in the Parent infrastructure were generally exaggerated. This circumstance should not, however, be regarded as discouraging to others contemplating creation or utilization of a contract operator. Rather, it should be regarded as an opportunity to learn. Given the importance of the infrastructure that includes the finance and accounting systems, purchasing and material management systems, payroll and benefits systems, and the fundamental information technology computer network, hardware and software, this effort deserves high priority and development in a high quality manner. Things as simple as the company e-mail system and a good company logo quickly become tools to build common strength, while the lack thereof becomes a point of divisiveness and weakness.

### **NMC – Experience to date**

Experience to date has been encouraging, with a balance of benefits and areas still needing improvement. A key lesson is that the interests of NMC's owners and customers can change over time and the external business environment can have a significant impact on those expectations. Changes in the business environment have moved the vision of a generating company further into the future. This requires an adjustment in the NMC management approaches and strategies that presumed a quicker move to some form of generation company. While Alliant Energy saw NMC as providing mitigation of cost increases, other customers see NMC as a mechanism for cost reduction.

In all cases, the transition to a common nuclear management structure revealed previously unrecognized strengths and weaknesses at each plant. In some cases this forced changes in NMC priorities. Management of customer/owner expectations of NMC has been revealed as an area of significant ongoing importance.

### **NMC – Expectations for the future**

Alliant Energy continues to have high expectations for NMC operation of its Duane Arnold Energy Center. NMC is expected to perfect its fleetwide approach to operation with the benefits of learning from all sites and the economies of scale of larger purchasing power. The expectations are high for NMC to demonstrate its ability to provide stability in both power production and cost, while sustaining high safety and regulatory standards. While the long term vision remains of NMC providing a path to a restructured ownership platform for Alliant Energy's nuclear interests, the expectation for the foreseeable future is for NMC to work on building its skills as a supplier of excellent operating services to its current and prospective utility customers in more of a supplier/customer context.

## **Contract Plant Operation – Stepping stone to new nuclear investment in a liberalized electric energy market**

What does the NMC experience mean for other nuclear power plant owners and operators in contemplation of liberalization of their electric energy markets?

The contract operator model described above represents a credible and transferable model for improving and sustaining nuclear power plant performance. The complexity and variety of owner and operator relationships in the US is comparable to Europe and other parts of the world. There are large companies owning and operating multiple plants at multiple sites. There are single plants owned by multiple companies, operated by one. There are multiple jurisdictions with varying forms of electric energy market regulation.

The contract operator model, refined for each application, represents a powerful tool for the complex and emotional process of unbundling of nuclear plant operations from owners prior to actual liberalization opportunities. Consequently, the nuclear plant owners are positioned to act more quickly and more confidently when liberalization opportunities present themselves. For new investors, the contract operated plant should represent a better-understood, more stable and more reliable operation, with greater financial certainty. Companies providing contract operation should strive for their involvement to be seen ultimately as a seal of approval, something that can be counted on at the bank, by prospective new investors.

Contract operation does not solve the problem of a lack of a liberalized electric energy market, but it does position the nuclear plant owner and investors interested in new nuclear plant investment to be ready to act more quickly and effectively when the opportunity presents itself.