

Clean Power Generation Advisory

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TECO, Nuon Cancellations Underscore IGCC's Woes

Much of the momentum building behind IGCC has waned in 2007 as rising capital costs, stabilizing natural gas prices, and an uncertain carbon policy outlook have undermined IGCC's competitiveness for power generation. Highlighting this trend, two substantial regional utilities—Nuon in the Netherlands, and Tampa Electric in the US—have recently scuttled plans to build second generation IGCC projects. The fact that these companies—which have prior significant IGCC operating experience—have been unable to justify their projects' financial and planning risks highlights IGCC's deteriorating near-term commercial outlook.

BACKGROUND

After two years of deliberation and project evaluation, on 18 September 2007 major Dutch utility Nuon tabled its proposed 1,200 MW IGCC project in Eemshaven, Netherlands. The project would have been a scaled-up version of Nuon's 253 MW IGCC plant—the world's first commercial coal IGCC demonstration project—which Nuon built and has owned and operated since 1994.

On the heels of this announcement, regional Florida utility Tampa Electric (TECO) announced on 4 October 2007 that it is shelving plans to proceed with a 630 MW IGCC project. TECO owns and operates the 250 MW Polk IGCC project in Tampa, one of two coal- and petcoke-fired IGCC plants operating in the US. TECO had been awarded over \$130 million in tax credits in 2006 from the US government to build the project, which it now must forfeit.

Both companies remain supportive of IGCC as an attractive, relatively clean option to meet future baseload requirements; but, unless market conditions change, these cancellations are a very clear indication of the widespread challenges facing IGCC over the next two to five years.

Exhibit 1: TECO & Nuon Overview and Involvement with IGCC

		NUON	TECO
Company Overview	Business	Generation, transmission, distribution of power and gas	Generation, transmission, distribution of power and gas
	Turnover	€5.6 billion	\$3.5 billion
	Core Markets	Netherlands	Florida, US
Existing IGCC Experience	Project	Buggenum	Polk – Unit 1
	Capacity	253 MW	250 MW
	Year of Start-up	1994	1996
	Company Involvement	Build, own, operate	Own and operate
IGCC Project Cancelled in 2007	Project	Magnum	Polk – Unit 6
	Date Previously Expected to Start-up	2013	2013
	Capacity	1,200 MW	630 MW
	Project Comments	Intended to co-fire significant quantities of biomass	Awarded \$130 million in US federal tax credits

Source: Companies, Emerging Energy Research

ANALYSIS

TECO latest setback for IGCC in the US. While the US remains the hottest global IGCC development market, with over 17,000 MW actively in planning, the last year has seen significant numbers of IGCC projects shelved or stalled as developers, IPPs, and utilities have

been unable to justify IGCC investments in the context of spiraling capital costs, lack of satisfactory technology performance guarantees, unavailability of lump sum turnkey contracts, and an uncertain carbon policy environment (see **Exhibit 2**).

Exhibit 2: Prominent US IGCC Projects Cancelled or Facing Challenges in 2007

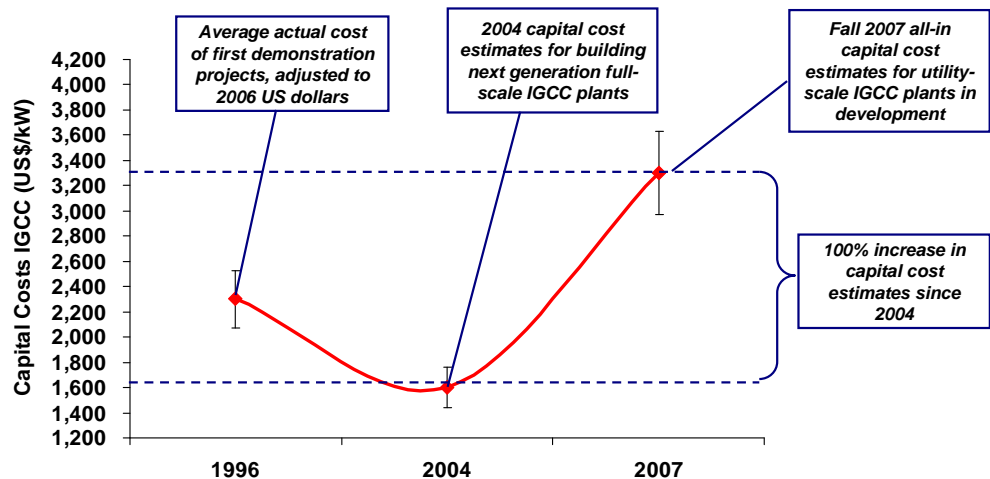
Developer	US State	Status	Reasons for Stalling
NRG	Connecticut	Canceled	Could not meet RFP timeline for delivery
TECO	Florida	Canceled	State carbon policy uncertainty, rising costs
Tondu Corp	Texas	Canceled	Rising costs, limited technology guarantees
Bowie Power	Arizona	Canceled	Delayed local planning process, environmental opposition
Buffalo Energy Partners	Wyoming	Canceled	Transmission constraints, rising costs, limited available technology guarantees and unsuccessful bid for funding
Mesaba	Minnesota	On hold	Increased costs have caused regulators to force renegotiation of costs
Madison Power	Illinois	On hold	Construction of a nearby supercritical coal plant has hindered power demand and tied up transmission and coal transport infrastructure
Tenaska, ERORA	Illinois	On hold	Local opposition to IGCC without carbon capture hampering regulatory proceedings
NRG	New York	On hold	Must find cost reductions to maintain state-awarded financial support

Source: Emerging Energy Research

Of the many companies that announced IGCC projects in the past few years, TECO seemed one of the best positioned to navigate the significant commercial challenges. The company has been able to leverage 10 years of improving operational experience at its existing plant, a close working relationship with key technology suppliers, and a successful bid in 2006 for over \$130 million in tax incentives from the US federal government.

However, with costs escalating—estimated at a 30% to 50% increase since the beginning of 2006, and as much as a 100% increase since 2004—TECO could not justify the risk return profile of the project, even considering its financial support (see **Exhibit 3**).

Exhibit 3: IGCC Capital Cost Increases, 1990s–2007



Source: Emerging Energy Research

Adding to TECO's decision to cancel the project was the mounting uncertainty over carbon policy, both at the state and federal level. Earlier in the year, Florida Governor Charlie Crist signed legislation to establish a target to reduce the state's greenhouse gas emissions from 1990 levels by 80% in 2050. In response, TECO stepped up the consideration of capturing and sequestering CO₂ from the plant, but the high associated costs, technology uncertainty, and liability risks made relying on CCS unfeasible for meeting potential future carbon restrictions. Still, with a need for 600 MW of baseload capacity forecasted in 2013, TECO is re-evaluating other generation options, which it will decide upon in 2008.

Nuon shifts project to CCGT, seeks sequestration demonstration. Also siting the considerably increased costs of late, Nuon has decided to build a 1,200 MW CCGT plant, while delaying the decision to proceed with IGCC by two years. This new project will be located in the Groningen region, approximately 160 miles north of its existing Buggenum IGCC facility.

Nuon is perhaps the world's biggest utility proponent of IGCC, having operated and continually invested in its 253 MW Buggenum IGCC project. Unique to Nuon's IGCC experience has been the steady increase of biomass co-firing at Buggenum, which has enabled the company to access significant Dutch-specific renewable energy subsidies.

Nuon's original intention was to build a 1,200 MW multi-fuel project at Groningen, with 60% of the output derived from co-gasification of biomass and coal and the remaining 40% derived from natural gas. This configuration would have allowed increased flexibility to provide coal-derived baseload power generation, while leveraging biomass and natural gas to moderate climate emissions and adjust for peak load requirements.

However, given the significant cost barriers for the IGCC component, Nuon has changed course, shifting the 1,200 MW to all natural gas with plans to re-evaluate integrating a gasification element with the new power blocks in 2009, depending on how gas prices and carbon legislation evolve.

Carbon sequestration will also be a key consideration for Nuon regarding proceeding with its gasification plant. To foster its understanding of the costs and challenges, Nuon is initiating a pilot-scale capture and sequestration trial at its Buggenum plant, which it hopes will help determine the viability of this option to address future European climate change regulations.

IGCC's outlook could sour further in the short-term. The key factors dampening IGCC's short-term outlook—technology uncertainty, high commodity prices, a tight EPC labor market, and a lack of meaningful carbon policies—seem unlikely to shift significantly in the next 12 months. Considering IGCC's three- to four-year construction cycle, the technology can expect to experience barriers for meeting baseload generation capacity until 2012.

For IGCC plant suppliers such as Mitsubishi, GE, and Siemens, this is unlikely to pose a significant concern as efforts remain focused on standardizing plant designs, integrating newly acquired technologies, and building a select few initial full-scale demonstration projects to define and improve IGCC's operating parameters for future roll-out beyond 2012.

However, with conventional coal combustion stalled virtually everywhere in the developed world due to climate change concerns, and nuclear projects facing very long lead times, utilities in Europe and North America seem certain to continue relying on a combination of CCGT and renewables to plug capacity needs for the next few years. Moreover, as baseload capacity shortfalls mount and concerns of overexposure to natural gas rise, utilities can be expected to pressure carbon policy makers to move forward with legislation to lessen the substantial uncertainty facing the industry.

ADDITIONAL EER RESOURCES

Babcock & Brown Explores IGCC to Balance Wind in Texas. On Point, 30 August 2007
EOR Demand Brightens CCS Prospects in North America. On Point, 15 August 2007.
Carbon Sequestration Challenges Drive Downstream Strategies. Market Brief, 8 August 2007.
Global Power Industry Targets Carbon Capture. Market Brief, 31 July 2007.
Goldman Sachs Stokes IGCC Growth. On Point, 13 April 2007.
IGCC Prospects in US Power Generation. Market Brief, 13 February 2007.