



An Electronic Newsletter
of EEA's Environmental
Consulting Activities

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EEA services include
Phase I ESAs, Haz-Mat
Testing and Remediation,
Wetlands Delineation
and Creation, Natural
Resources Inventories,
Marine Ecology Studies,
Air Quality and Noise
studies, and Environmental
Management System (ISO
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Environmental Consulting

INSIGHTS



Nuclear Power and Wind Energy Get New Push



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EEA is actively involved in alternative energy and in improving the effectiveness of non-carbon emission generation. The increasing cost of oil and gas and desire for less energy dependence on foreign resources has resulted in renewed interest in sustainable sources of energy. The following discusses two viable options: nuclear power and Wind Energy.



Nuclear by Jim McAleer

In many parts of the country the jury of public opinion is still out on nuclear energy but in the climate of global warming many are taking an entirely new look at its carbonless generating capacity. Warren Buffett sunk nearly five billion in



Warren Buffet

the acquisition of Constellation Energy at the end of September and eyebrows were raised. It wasn't long before his intentions were made clear when associate Greg Abel, CEO of the Buffett owned MidAmerican Energy Holding Company spoke enthusiastically about their commitment to new nuclear.

Certainly a three page section in the Wall Street Journal did little to diminish interest in the energy source that supplies up to 70% of Europe's clean energy while new means of re-burning spent fuel are rapidly being explored. At EEA interest in nuclear has not been an entirely new development and our attention and study appears to be bearing new fruit.

In mid-summer we were asked to present at an [EPA/DOE Workshop at Regional Headquarters in lower Manhattan](#). The focus was to bring energy professionals together to consider

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Founded in 1979

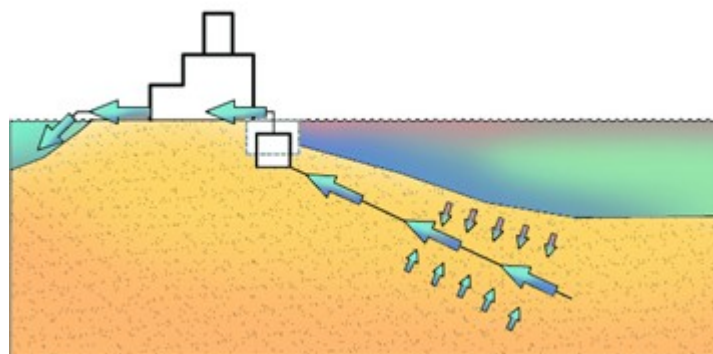
Principals

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Vice President

future energy policies in light of ever increasing carbon restrictions. It was an honor to be invited and we owe a great deal of gratitude to National Grid's Robert Teetz for recommending us to Regional Director Alan Steinberg and Special Assistant Charles Harewood. Our subject matter was Nuclear Energy: Intake Entrainment and Thermal Water Discharge and our panel included the Director, License Renewal, Nuclear Regulatory Commission, Deputy Assistant Secretary for Nuclear Deployment, Department of Energy; and Director, Office of Civilian Radio Active Waste Management, Department of Energy. In this arena, the primary thrust of our argument - an analysis of the cost of adopting compliant nuclear cooling - was not lost on our audience.

EEA developed and patented a *Substratum Intake System (SIS)*; a method of providing large volumes of high-quality industrial cooling water.



SIS Concept

Patented in 2007, it was designed to meet compliance demands associated with the Clean Water Act of 1972; CWA Sections 316 a. and 316 b. Over the last twelve months we have found a very promising potential market for SIS in nuclear power generation. It began early in the year when we were approached to provide a plan to feed make-up water for a closed-cycle-cooling system (CCC) commonly thought of as large cooling towers, to be erected along with two new reactors. The location is a very environmentally sensitive area and the owners have considered SIS to be one of a very small number of potential solutions. By August, we were making another presentation to a nuclear utility that was trying to address a different situation, also in an environmentally sensitive area. Both stations are in NPDES states that have become increasingly stringent in their enforcement of CWA 316 in the past few years.

It was apparent that, from their point of view, they should look toward the future and investigate their options should the U.S. Supreme Court uphold the Riverkeeper v. EPA decision of January 2007. In that decision, US Appellate

[Roy R. Stoecker, Ph.D.](#)
Vice President

***EEA's SIS:
High-quality
Industrial Cooling
- ADVANTAGES -***

**Coupling SIS with
Nuclear Power ...**

- ◆ Maintains low carbon footprint
- ◆ Costs less to build
- ◆ Costs less to operate and maintain
- ◆ Never needs replacement
- ◆ No shutdown during construction

***CCC: Closed
Cycle Cooling
- DISADVANTAGES -***

**Coupling CCC with
Nuclear Power ...**

- ◆ Creates a new carbon footprint
- ◆ Costs more to build
- ◆ Costs more to operate and maintain
- ◆ Needs replacement in 15-20 years
- ◆ Requires shutdown

Court in NY declared that the EPA had failed to enforce the rules to the extent of the law and henceforth would be required to do so. The appeal will be heard next month and should the decision stand, many generation stations in the country using Once-Through-Cooling, or OTC, will need a compliant technology to replace it. For that reason many are considering options long before licenses expire as it is widely believed that the only solution capable of meeting the conditions under CWA 316 is CCC. At a time when the country is making every effort to reduce wasteful energy consumption and erase carbon footprints CCC has serious drawbacks.

Nowhere are these drawbacks more evident than in nuclear power. Simply stated, replacing OTC with CCC can cost upwards to one billion dollars in capital expenditure. Once construction is concluded maintenance and operation of the CCC will drain approximately 5% of the plant's capacity to produce electricity for the life of the reactor. There's more.

Replacing the 5% will be in the form of new fossil fuel generation simply because it is impractical to build new replacement reactors at \$6 billion each. Thus, the creation of a carbon footprint of significant size where none had existed before. Of course, under carbon cap & trade customers will then pick up a new fee (some call it a tax), on the generation required to replace the 5% capacity lost. Confusing, well yes, but I know you want to keep on going.

For a variety of technical reasons, mostly chemical, a CCC's life expectancy is rather short...15-20 years. Even if it is rebuilt it will cost \$50-\$80 million in today's dollars to fix it and so a customer will never escape a continuing escalation in operation and maintenance costs.

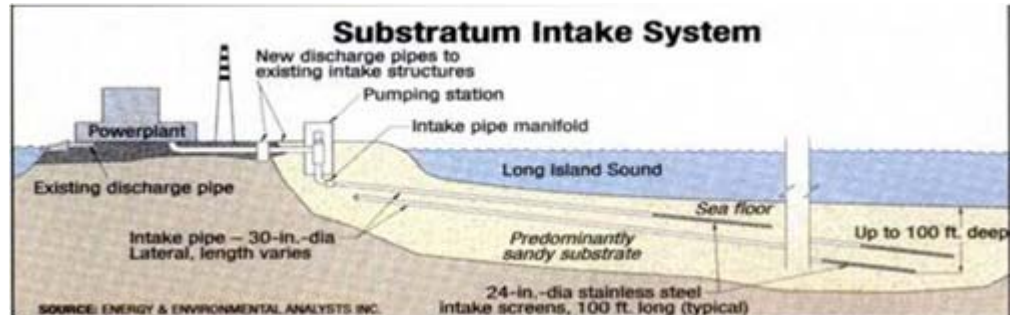
Nuclear power is at a disadvantage during the conversion process because of the cost of shutting reactors down. Like all generation units it cannot generate power during the conversion process. Customers will depend on the grid to operate at a greater capacity during the conversion or their supplier will have to buy power from outside the grid to make up the loss. Because of added distribution costs that energy will come at a higher price. It will take six months to a year per reactor to complete the retrofit. The plant owners will pay from \$200 - \$500 million to build the CCC during a period when they are losing enormous revenues. Someone will have to make up for those losses.

These are the reasons why generation companies, especially nuclear owners, are looking for alternatives...a system that will cost less to build, less to operate and maintain; one that will never need replacement during the life of the plant, and beyond; and not require the plant to shut down during

during construction

construction. Our solution, which is in final testing, is expected to do all that. It's our system; we call it SIS, short for Substratum Intake System and that is why nuclear operators are so interested to learn more about it. Want to learn more, go to our website at:

www.SISWaterSystems.com



UPDATE

Long Island's Offshore Wind Park Project

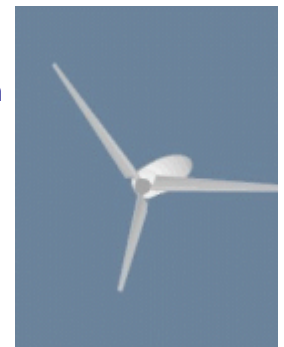
The results of the study, "Long Island's Offshore Wind Energy Development Potential: A Preliminary Assessment" were so encouraging that LIPA initiated a project for the construction of a moderately sized Offshore Wind Farm capable of generating approximately 140 MW, enough to power 44,000 homes.

While common in Europe, LIPA's wind park could be the first such project to actually be operating in the United States.

The Long Island Offshore Wind Initiative (LIOWI) coalition of local, state, and national environmental organizations worked with LIPA to help advance the use of offshore wind technology for the region's energy needs

Wind Energy

T Boon Pickens has been widely publicizing his plan to achieve energy independence with vastly increased wind energy generation and conversion of vehicle fuel to natural gas. Link to [PickensPlan: The Plan](#) for the full story. Many companies such as BP are advertising that they are supporting the expansion of wind energy.



At present, the United States has an operating wind power capacity of 20,400 MW with an annual growth rate of 20%. In the US, Texas has the largest share of wind capacity with 5,800 MW followed by California, Iowa and Minnesota. Worldwide, the wind power capacity is 105,700 MW. Germany, the US and Spain account for approximately 60% of the total.

Offshore Wind Energy

A greater interest is emerging for offshore wind energy. One reason...wind regimes are more stable which is important in an energy generation. Offshore wind velocities are higher than onshore due to lack of friction from trees, building and terrain features. The Cape Wind project in Massachusetts is the most advanced offshore wind project in the US with the FEIS expected to be issued in the near future. The project encountered significant opposition, largely from political people with shorefront holdings.

and environmental benefit.

In January '03, LIPA issued an RFP seeking proposals to build, own and operate an offshore wind park. LIPA selected FPL Energy to build and operate the 40 turbines (3.6MGW) in a cluster design several miles SW of Robert Moses State Park.

In August of 2007, LIPA Chairman Kevin Law confirmed his decision to shelve the 40-turbine wind farm. Although the project has been suspended, the project is considered to be reopened in the near future.



Looking at another advanced project, Delmarva Power in Delaware has signed a Purchase Power Agreement (PPA) with Blue Water Wind to build turbines with total capacity of 200 MW off the coast of Delaware, with expected completion in 2011.

Recently, LIPA and Consolidated Edison Company, on Long Island and New York City, propose to build 80 turbines (300 MW capacity) approximately ten miles offshore of the Rockaway Peninsula. Mayor Bloomberg of NYC has become an outspoken advocate of wind energy.

Other EEA Utility Studies:

- Offshore Wind Energy: LIPA, Keyspan, Atlantic Renewable, Bluewater Wind
- Underwater High Pressure Gas Pipeline: Consortium
- Tidal Energy: Verdant Power
- Cross Bay Electric Transmission Cable: Keyspan
- Creation of Offshore Island: PANJNY
- Waste to Energy: American Ref-Fuel

EEA's Michelle Nannen, Senior Marine Ecologist and Dr. Roy Stoecker attended and presented at the AWEA Wind Power Workshop in Delaware, Sept. 9-10. Her paper was entitled "Long Island's Offshore Wind Park: Transmission Cable Environmental Studies." Link to the conference details at [AWEA Offshore Wind Power Workshop](#)



Helpful Links

- [EPA/DOE Workshop at Regional Headquarters in lower Manhattan](#)
- www.SISWaterSystems.com
- [AWEA Offshore Wind Power Workshop](#)
- [Other EEA Utility Studies](#)

10/28/08