

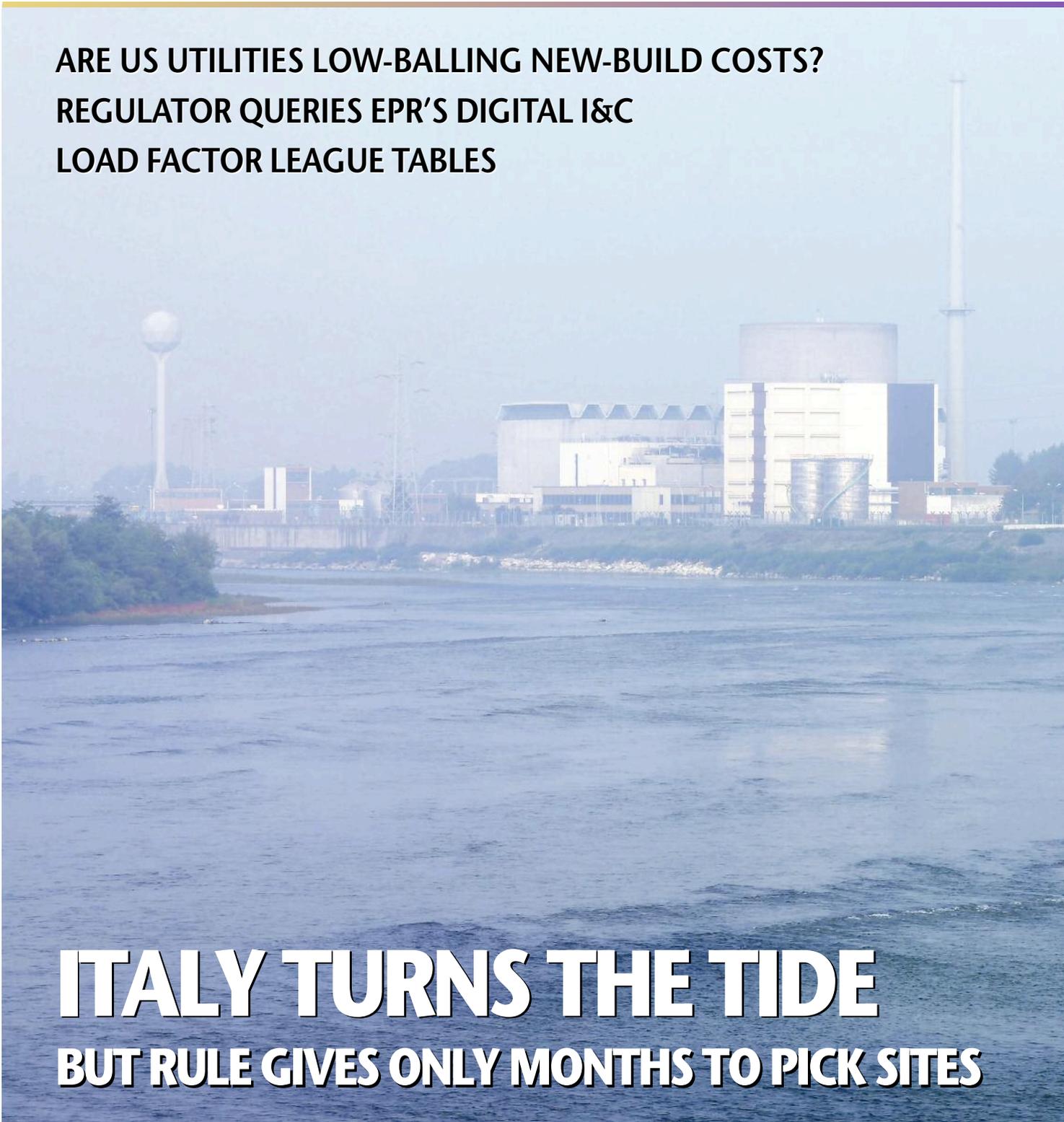
# NUCLEAR ENGINEERING

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ARE US UTILITIES LOW-BALLING NEW-BUILD COSTS?  
REGULATOR QUERIES EPR'S DIGITAL I&C  
LOAD FACTOR LEAGUE TABLES



**ITALY TURNS THE TIDE  
BUT RULE GIVES ONLY MONTHS TO PICK SITES**

## Back end

# What France got wrong

The problem with past and current energy policies is that we keep asking the wrong questions. As a result we get the wrong answers. Steve Kidd's comment on "Nuclear in France" [*NEI* July 2009, pp. 14-15] is unfortunately yet another example.

Any sound energy policy must ensure that citizens get affordable, reliable, and sustainable energy services. The question is not how many kWh a system generates nor how many barrels of oil it extracts, but whether people have access to cooked food, light, heat and cold, communication, mobility and motor torque. These energy services should be provided in a way that is healthful and environmentally sound today and doesn't constrain future generations' options.

In the aftermath of the 1973 oil shock, France launched its first large series of nuclear reactors as a reaction to energy shortages. Energy conservation was to help in the short term, but nuclear power

services. Even before the recession, the National Housing Agency (ANAH) found that 'three million French are cold in winter.' With energy poverty now widespread, requests for social assistance to pay energy bills is rising 15% per year. Almost one household in four cannot pay its power, gas, water or phone bills.

Electric space heating was heavily promoted and now equips three-quarters of new housing, in particular multi-family homes. Electric heat is not just inefficient end-to-end, it is very costly for the user and creates severe distortion of the power system, with daily peak loads in the winter three times those of summer loads. This in turn leads to increasing use of old oil- and coal-fired power plants and to significant power imports.

Contrary to Steve Kidd's claims, since 2002 net French power exports have been falling – by 2008 down 39% to 47TWh, the lowest level since 1990. During 2002-08, gross exports fell 12% while imports more than doubled to

than in other European countries, but not by much: Italy, Spain and the whole EU are around 10, the UK 11 and Germany 12. Direct greenhouse gas emissions from the French energy sector have not decreased since 1985, while transport emissions have risen 20% since 1990 alone.

French nuclear policy is neither green nor sustainable. The decision to separate and use plutonium – which French and UK accounts show at zero book value and negative market value – entails a radiological impact equivalent to all other nuclear activities in Europe combined. Interest of foreign clients in the plutonium business shrank to anecdotal levels. By the end of 2008, the 1700t-capacity Areva plant at La Hague had a total of 0.6t of foreign spent fuel left in storage awaiting reprocessing. That will hardly make it 'a major export earner,' as Kidd wrote.

How France will attain its legal target of fourfold lower carbon emissions by 2050 remains a mystery. Minor identifiable reductions over previous years all seem to be linked to non-energy issues, such as the shift from industry to service and displacement of heavy industry. Housing is extremely inefficient; a French household consumes about 30% more energy than a Dutch one. Efficiency implementation capacity is low; the renewable energy industry was destroyed; and few urban planners and architects know anything about sustainable cities and net-energy-positive buildings.

For least cost and greatest security, the energy future lies in affordable, distributed, superefficient technologies, smart grids and sustainable urbanism. France's centralised, autocratic nuclear policy symbolizes the opposite. It is a point of pride with its planners – not with the French people – that their energy policy hasn't changed a whit in 35 years, under 14 prime ministers and five presidents. But everything else in energy has changed everywhere. France's energy establishment is extraordinarily elitist, invariant, and impervious to input. That approach will hardly serve France well in a world that, more than ever, requires fast and profound change. ■

“*French per capita consumption of oil is higher than in non-nuclear Italy- hardly proof of oil independence.*”

was supposed to bring the country independence from oil in the longer run.

The strategy was dubious from the start, because the power sector was responsible for less than 12% of the total oil consumed in France in 1973. The key oil problem was not in electric generation but in transport and inefficient buildings, and those uses were neglected. The result three decades later is stunning. French per capita consumption of oil is higher than in non-nuclear Italy, nuclear phase-out Germany or the EU on average – hardly proof of an enviable level of oil independence.

France's nearly exclusive focus on (nuclear) energy supply has meanwhile eroded access to affordable energy

35TWh. The very day I write this *The Times* is reporting massive power flows from Britain to France, mainly because about a third of French nuclear capacity is offline for maintenance, refueling, or insufficient cooling water. Thermal power plants account for over half of France's freshwater withdrawals or about one-tenth of precipitation.

Moreover, peak-power imports are priced far above baseload exports. Cheap power was to make French industry competitive; however, as well as reaching a record trade deficit of EUR58 billion, France has even become a net importer of German coal-based power. The power-trade trend thus not only further degrades the French trade imbalance but also increases the carbon content of the kWh consumed in France, wherever it's produced. Per capita greenhouse gas emissions in France, about 9t CO<sub>2</sub>-equivalent in 2006, are lower

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