

Lights out

Whether or not there is a risk that electricity will be rationed, the debate about the electric power supply exposes the fragility of electric power sector and the need to use energy more efficiently and to better regulate the market.

Kalinka Iaquinto

IN LATE 2013 AND EARLY THIS YEAR, Brazil experienced high temperatures and little rain, both of which had a direct impact on the power supply and raised questions about government energy policy—especially the 20% reduction in the price of electricity. The problems also raised the specter of rationing of the type the country faced in 2001.

Government rejects the idea that energy might be rationed, and points to the expanded numbers of plants and transmission lines as well as adding new energy sources, such as wind and solar. However, independent experts stress the need to conserve energy because, as incomes rise, giving consumers access to appliances and electronics, consumption of electricity increases rapidly. The fact is that whether or not there is a real risk of rationing, the mere mention of it suggests that there are short circuits to be fixed by, for instance, more efficient and rational use of energy and clearer rules for the energy market.

Lavinia Holanda, FGV coordinator of research on energy, says that it is time to look into both financial and energy issues. The financial issue results from the involuntary exposure of distributors to high market prices. “This is having a major financial impact on distributors of electricity. That is why the government came up with measures to help them,” she says. The Treasury has provided US\$5 billion to distributors of electricity. Holanda also argues that the electric power problem is deep and structural: “The electricity



sector is very complex and requires planning, not only for short-term initiatives but also medium- and long-term ones." She suggests it is time for clearer regulations, pointing out that "There are opportunities for technologies and regulation to bring new ways of generating energy."

The electric sector by the numbers

Expansion of power capacity

- Between 1996 and 2000, consumption grew 26.5% and installed power plant capacity increased by 24.6%.
- Between 2001 and 2013, consumption grew by 50.8% and installed generation capacity grew 72.4%.

Diversification of energy sources

- Between 2001 and 2013 the installed capacity of conventional thermal power plants (fossil fuel) grew 351%.
- In 2005 thermal biomass accounted for 1,755 MW of power. In 2014 it represented 10,114 MW—a more than sixfold increase.
- In 2005 wind energy produced 29 MW. By the end of 2013 it produced 2,202 MW. The forecast for 2014 is 4,286 MW and for 2015 9,383 MW.

Thermal power

- In 2002, thermal accounted for 16% of total Brazilian energy. In 2013, it was 29%.

Expansion of transmission lines

- Between 1996 and 2002 every year 1,562 km of transmission lines were installed. Between 2003 and 2013 installation rose to 3,710 km per year.

Source: Company for Energy Research (EPE).

"The electricity sector is very complex and requires planning, not only for short-term initiatives but also medium- and long-term ones."

Lavinia Holanda

Regarding how electricity is used, most experts agree that it is possible to educate Brazilians on how to use energy efficiently. Appeals to consumers to save energy, financial incentives through discounts for those who reduce consumption, higher tariffs, and consumption quotas are some of the suggestions that have been made. "The population reacts with maturity when the situation is explained clearly, and their cooperation is the best way to get through this difficult period with minimal problems," says Mário Veiga, president of PSR Consulting.

FGV's Holanda notes that the electricity sector has not used the electricity price to moderate consumption more often. "The idea that residential consumers will not adjust their consumption of electricity if the electricity price is raised or there is a different price for hours when the system is overloaded, is an idea from the past, when people had fewer appliances and electronic devices at home," she says.

"We believe that electricity price is the main market indicator for balancing supply and demand," Reginaldo Almeida de Medeiros, CEO of the Brazilian Association of Energy Traders (ABRACEEL), agrees. He argues that residential customers should also have access to a free market in electricity, which is currently available only for large commercial enterprises, which pay the costs, including the cost of thermal plants. Prices change for residential consumers only annually. When there is a mismatch

“The population reacts with maturity when the situation is explained clearly, and their cooperation is the best way to get through this difficult period with minimal problems.”

Mário Veiga

between costs and prices, as there is today, the law provides for an extraordinary tariff review to restore the cash flow of distributors of electricity.

Electric energy is very expensive today in large part because of the cost overruns of thermal power plants. Moreover, the prices distributors charge are outdated. To correct the distortion, in 2013 the National Electric Energy Agency (ANEEL) proposed disclosing the costs of residential energy according to electric system loads. “This would be a signal to alert consumers that energy is very expensive and they should reduce consumption,” Medeiros explains. He believes the best solution would be to raise tariffs or immediately adopt differential pricing according to system loads. That was initially scheduled to be introduced this year but has been postponed to 2015. Maurício Tolmasquin, president of the Company for Energy Research (EPE), noted that the government plans to create electricity rates differentiated by three hydrological levels. However, Veiga points out, “The concern is that as time passes and no action is taken, the range of options will progressively narrow, which increases the possibility of greater losses for the economy.”

Fear of rationing

Carlos Otavio Quintella, executive director of the FGV Center for Energy Studies, points out that losses are already being felt because companies

that need additional electricity this year will have to pay more per megawatt-hour. But the problems do not stop there, he says: “Worried about inflation and popularity, the government tries to prevent the higher costs of producing electricity from spilling over into the regulated market, which includes residential consumers. When the bill is not presented to the consumer, the taxpayer pays the bill, since the Treasury is bankrolling the freeze in electricity rates.”

Quintella notes all possibilities are being used to maintain the supply of electricity. “The situation has required the operation of thermal power plants at full capacity in an attempt to mitigate the reduction in the supply of electricity generated by hydropower plants,” he says. Thermal power plants are more expensive and depend on the availability of gas supply and their capacity to produce energy continuously. “Low precipitation and the heat wave have revealed the weaknesses the electric power sector has accumulated in recent years,” he concludes. “With dwindling reservoirs, thermal power plants running at full capacity, and record consumption, the country faces the biggest seasonal blackouts in seven years and the possibility of rationing. The soaring cost of generation sooner or later will hit consumers’ electricity bills.”

The April 2014 Energy Data Report from PSR Consulting highlighted how precarious Brazilian energy security is. The PSR simulations suggest there is a 46% chance that hydroelectric reservoirs will fall below 10%. “If that happens,” Veiga says, “The government probably would declare an emergency and sharply reduce consumption, which would have a negative impact on the economy. ... That is why we recommend a preventive reduction of 6% in consumption, which would minimize losses for the economy.”

The government challenges these alarming views. Although the country has been facing the worst hydrological conditions in 81 years, EPE’s Tolmasquin

believes the country will manage through 2014 and face no major risks in 2015. “Our power system has a much more robust structural balance than in the past,” he says. “The risk of [rationing] is low—just one-sixth of what was recorded in 2001, when we had rationing.” Tomasquin argues that there are three factors that make rationing less likely today than in 2001: expansion of power capacity, diversification of sources of energy, and expanding trade in energy between regions.

The number of transmission lines has more than doubled since 2001. According to the EPE, in 2001 the Southern region could send only 2,600 MW to the Southeast region. Today capacity can reach 5,800 MW. In 2001 the Northern region could send only 900 MW to the Southeast and 1,100 MW to the Northeast; today it can send 4,100 MW southeast and 3,300 MW northeast.

Electric sector deadlocks

It is undeniable that since 2004 better laws and the creation of the EPE—which has had a major role in drafting the Decennial Expansion Plans and conducting procurement auctions—provide better support for the electricity sector. However, difficulties remain. The government was criticized in 2012 for not

“When the bill is not presented to the consumer, the taxpayer pays the bill, since the Treasury is bankrolling the freeze in electricity rates.”

Carlos Otavio Quintella

carrying out the auction of energy contracts required by law. The auction did take place in 2013, but it was not successful. In 2014, the government carried out an extraordinary auction and had to accept prices far above the usual: US\$43 per megawatt-hour, up from US\$11 per megawatt-hour.

As for the electric power supply, the problems lie in planning flaws and inadequate monitoring. The prime example is the fact that many power plant projects have been completed before there were transmission lines ready to transport their energy to consumers. Ironically, what has helped keep electricity supply and demand somewhat in balance in 2013 and 2014 is the underperformance of the economy. Five years ago, planners envisaged much higher consumption than there actually is today.

