17. BRAZIL

(Statistics are estimates from www.eia.doe.gov)

Population (2001): 174.4 million
Electric Generation Capacity (2000): 68.8 GW (87% hydro)
Net Electricity Generation (2000): 342.3 billion kWh
Net Electricity Consumption (2000): 360.6 billion kWh

Mechanism:	1% of utility revenues must be spent on energy efficiency
Creation:	Regulatory
Duration:	Began July 1998; no sunset
Administration:	Utilities, with support from PROCEL and regulatory oversight
Budget:	~$200million/year
Name:	No name
Benefit Measure:	Utilities determine
Incentives:	None

Survey Questions

1. Process and Timeline

   In 1985, national legislation (Act 1877) established a national electricity conservation program known as PROCEL. In July 1998, as Brazil underwent utility sector restructuring, the new federal regulatory agency, the National Agency for Electrical Energy (ANEEL) announced it would require all distribution utilities to spend at least 1% of revenues on energy efficiency improvements (ANEEL resolution 242/98). Utilities began proposing projects in September 1998.

2. Organizational Structure

   ANEEL is responsible for defining efficiency priorities and approving utilities' annual plans. ANEEL is funded by an assessment on the utilities. ANEEL was created in 1997.

   ANEEL reached an agreement with PROCEL that it would provide technical support to analyze the plans. PROCEL is assisting utilities with preparation of EE plans and certifying that utilities are carrying out adequate programs. PROCEL is a federal agency funded by the government with more than 15 years' experience in funding and developing energy conservation programs. It is housed in Eletrobras, the former federal electricity monopoly, which now is responsible for the integration of Brazil's electricity sector. PROCEL also receives assistance from and cooperates with European, Canadian, US and international agencies and experts.

   More than 60 distribution utilities are responsible for program design and implementation in their service territories.

3. Funding mechanisms

   From 1985 until 1998 PROCEL was funded by the federal government. It also leveraged funds from a variety of sources. It provided direct investments and low-interest financing for major energy efficiency projects from a loan fund known as RGR. PROCEL continues to leverage grants and loans to finance its activities.

   Beginning in 1998, all distribution utilities must spend at least 1% of their revenues on energy efficiency improvements. This requirement is included in the concession contracts ANEEL signs with utilities. ANEEL determines priorities. Initially at least 25% must be spent on end-use efficiency projects. Ten percent must be invested in research and development. The rest (65%) is available for supply side improvement. The utilities keep the funds and specify their investment plans.

4. Association with a long run resources plan

   Electricity expansion plans now made in market environment by private sector. The new National Energy Policy Council is a government entity that should be very influential in determining overall energy policies on energy conservation and its role in the macro-energy policies. As of 1999 it was not operational.

5. Guidelines for program effectiveness and success

   PROCEL's goal is to save 77 TWh/year by 2010, equivalent to approximately 15% of projected electricity use in Brazil in 2010 without efficiency improvements. Utilities submit their goals to ANEEL for approval.

6. Pre-implementation program evaluation guidance

   Initially utilities proposed projects that met their cost-effectiveness guidelines. According to Mancuso da Cunha the financial benefits of the saved energy had to pay for the funds invested.

   USAID has recently worked with ANEEL to develop new guidelines for EE projects proposed by utilities that were more focused in measurement, verification and evaluation of results.

7. Results of program evaluation

   PROCEL's 1998 Results, according to PROCEL, summarized by Geller:
   5.3 TWh/year saved;
   1.4 TWh additional power production due to plant improvements;
   1560 MW new capacity avoided; and
   Avoided investment (US$) $3.1billion in new power plants and T&D.

There is no independent verification of results built into the new 1% of revenue program. However, Dr. Jannuzzi, professor at the State University of Campinas in Sao Paolo planned to independently evaluate projects funded by the 1% "to analyze their nature, quality and objectives."

8. Financial or performance incentives

As of 1998 (Geller) federal regulations allowed utilities to recover DSM program costs in tariffs, but in practice it was not occurring. Utilities could not recover net loss revenues. Now, there are no incentives and there may be disincentives due to fixed distribution tariffs and multi-year agreements. "Under rate systems commonly in effect, even modest changes in the level of consumption by a distribution company's customers will have dramatic effects on the rate of return earned by the company's owners." *Energia: Recommendacoes para uma estrategia nacional de comate ao desperdicio,* Chapter 8, USAID-Brasil (August 2001)

Issues and Special Situations

The utilities can use 65% of the efficiency funds to improve their own supply side efficiency. According to Jannuzzi, in a deregulated, competitive environment it seems utilities would choose to invest their own funds in these improvements. This large diversion of the 1% makes it less likely that alternative plans that are less financially interesting to utilities, but with potentially greater societal benefits, will be proposed. There has been very little debate about the "issues of governance, administration and public policy strategies associated with the use of such funds."

Jannuzzi notes:

It is likely that only programs that present favorable cost-benefit ratios from the utility point of view will be proposed and implemented by the utilities, unless ANEEL considers public benefits more prominently.

It will limit R&D to short-term and proprietary research, rather than public interest research.

Regional disparities will be aggravated. The more profitable utilities are in the southeastern part of the country along with the higher per capita income. End-use efficiency programs could have greater societal benefits in other parts of the country but won't have the same access to funding.

Some of the priorities stated by ANEEL would be done any way by profit motivated utilities. This fund could be used for investments not favored by market forces.

RAP notes:

Funds available for EE through ANEEL's mandate might be more effective if pooled for national and regional programs.

Utilities need incentives. Consider revenue caps instead of price caps.

Resources

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