

New Business Opportunities



INTRODUCTION

The electricity industry is undergoing transformative changes, driven by the intersection of several factors such as:

- Increasing decentralization of power generation systems;
- Progress in energy storage technologies;
- The proliferation of digital technologies, which allow energy to be produced, transmitted, and consumed more intelligently and efficiently;
- Growth of variable renewable energy sources, such as wind and solar and
- The trend towards decarbonization of the energy system, as part of global efforts to mitigate climate change.

With a view to this set of changes, Cemig's ambition in the innovation area is to explore new technologies and new businesses in the energy industry. The strategic pillars for this are:

- Develop new avenues of growth based on transformations in the industry, regulation, and technology;
- Getting closer to innovation environments to create and explore an innovative culture in the Company;
- Create specialized cells for the development of new businesses or the implementation of innovations.

The Strategic Plan, approved in January 2024, by the Board of Directors, includes the 5 trends that are transforming the sector. Among these trends, those related to the theme of climate change stand out: energy transition and reinvention of traditional utilities. From this perspective, in a future scenario the Company is evaluating the offer of new services, such as storage and electric mobility, with investments of BRL 0.5 billion in Innovation.

The company has also already been investing in distributed generation, energy efficiency, micro-grids, among other subjects, as will be seen below.

1. Distributed Energy

1.1 Distributed Generation

In 2023, CEMIG SIM generated 161.50 GWh. Focused on innovation and energy solutions, Cemig Sim invested, in 2023, R\$212 million in the acquisition and participation in photovoltaic solar power generation plants in Minas Gerais. The company is looking to expand its installed capacity in line with Cemig's strategic planning, exploring the development of new projects (including 50 new solar

power plants) and planning to invest the equivalent of BRL 800 million in the period between 2024 and 2025 in the Distributed Generation segment.

Regarding generation, the Company has an installed capacity of 88MWp, through 23 solar farms, located in different regions of Minas Gerais. The company reached the milestone of 14,000 solar energy subscription consumer units in 2023, 50 new solar power plants are under construction and in prospecting, a strategy that aligns with the growth goals defined by the group's planning.

1.2 Home storage systems (<100 kWh)

Considered a milestone in the sector, SAEBS (Battery Energy Storage Systems), are equipment that uses batteries to store energy and return it to the electric grid.

SAEBS, as the name suggests, are equipment that uses batteries to store energy and return it to the electrical grid, thus providing various support services for this grid, in addition to improving your performance.

The start of operations of the pilot plant for battery energy storage systems was celebrated on 11/14/2023, on the Pampulha Campus of the Federal University of Minas Gerais (UFMG). Among the project's agenda were the technical contribution to the electricity sector and the possibilities of studying new business models.

The R&D Project D0722/D0727 (Phase I/Phase II) is part of Aneel Strategic Call No. 21/2016 – Technical and Commercial Arrangements for the Insertion of Energy Storage Systems in the Brazilian Electricity Sector.

From the development and implementation of the pilot plant, technical, regulatory and economic assessments will be made of energy storage systems connected directly to the medium voltage distribution network.



Image of representatives from Cemig's team getting to know the storage pilot plant

See more at: <https://inova.cemig.com.br/central-de-noticias/sistema-armazenamento-baterias/>.

1.3 Smart appliances/home systems, prosumer services

In 2023 73 thousand smart meters (AMI), of which 30 were installed in the metropolitan region of Belo Horizonte (reaching 362,733, an increase of 12% compared to the total number in 2022), providing benefits for meter reading, billing, energy recovery, and delinquency management (remote connection and disconnection). 3,56% of the 10,188,645 installed meters are smart meters.



Image of a smart meter

1.4 Information campaigns, audits, tariff measures

The Energy Efficiency Program visits present a number of opportunities for the beneficiaries, from clarifying doubts about energy efficiency and safety with the grid to the possibility for residents to signal their interest in registering for the Electricity Social Tariff and negotiating debts. In addition, the action promotes educational lectures and the allocation of mobile units to perform services.



Image of one of the Energy Efficiency Program events offered to the community

See more at: <https://www.cemig.com.br/en/actions-of-the-energy-efficiency-program/>.

1.5 Energy audits, energy management services

Energy Management Services: The Energy Efficiency Program provides orientation visits, evaluation and replacing of inefficient equipment, as well as working to regularize installations.

Additionally, there was a reduction of 15.33% in the amount of energy billed to industrial consumers, due to the migration of customers from the captive market to the free market and to distributed mini and microgeneration.

Long Term Contracts	Short-Term Contracts	Contracts for Monthly Balance Closing
with more than 12 months of supply, with freely negotiated prices and conditions.	with less than 12 months of supply, with freely negotiated prices and conditions.	to complement the quantity of energy consumed in a given month, with prices linked to the Settlement Price of Differences (PLD) and freely negotiated conditions.

Image of the most common types of contracts in the Free Market

See more at: <https://www.cemig.com.br/en/mercado-livre/>.

1.6 Electric vehicles/charging network

Cemig, through the Inova Cemig Lab, which is a program for the innovation ecosystem, to promote entrepreneurship, transformation and change, with the purpose of facing challenges and building an even more sustainable and efficient future for the Brazilian energy sector, has presented a challenge to implement vehicle charging infrastructure electrical equipment in Minas Gerais, which are reliable, efficient and sustainable. Startups are going to study the challenge and propose solutions in which Cemig might invest.

See more at: <https://inova.cemig.com.br/wp-content/uploads/2023/09/briefing-recarga.pdf>.

1.7 Natural Gas

In addition to the generation, transmission and distribution of electricity, Cemig also operates in the segment of commercialization and distribution of natural gas, through Gasmig. In 2023, Gasmig distributed 1,5 billion m³ of gas, of which 96% were destined for the industrial, commercial, and thermic segments. In the same year Gasmig invested amounts of around BRL 301.8 million and the focus of investments was on expanding its Natural Gas Distribution Networks (RDGNs) in the State of Minas Gerais, with its customer base increasing by 16%, reaching 82,582 consumer units in 2022 to 95,887 consumer units in 2023. The Company is focusing its

investments on expanding the gas distribution network in line with Cemig's Strategic Planning and plans to invest the equivalent of BRL 4.8 billion in the period between 2024 and 2033.

2. Demand-side Management

2.1 Energy audits, energy management services

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2.2 Lighting, appliances, HVAC systems, CHP, etc.

In 2023, Cemig, through the Energy Efficiency Program, promoted the replacement of lighting in Public Schools in Minas Gerais. With this initiative, the Company estimates savings of around 50% in lighting consumption at each beneficiary institution, in addition to improving lighting quality and reducing costs with maintenance and purchase of lamps. In 2023, 682 schools were served, with a total investment of BRL6,266,668.48 and energy savings of 4,362 MWh/year. Projects completed in 2023, which enabled energy savings of 102,090 MWh/ year, also included replacement of lighting, dryers, autoclaves, surgical lights at hospitals and replacement of high power points in public lighting.



Image of an electrician changing a light bulb for a low-income customer

See more at: <https://www.cemig.com.br/en/actions-of-the-energy-efficiency-program/>

2.3 Tariff measures, contracting for load reduction

The Hour-Seasonal Rates are a set of tariffs applied to energy consumption and contracted demand for group A customers, which is usually served by a substation with higher voltage and high energy consumption, such as industries, businesses and large condominiums.

The prices of the tariff vary according to the time the energy is consumed and according to the annual seasonality related to the rainy period. In other words: energy consumed during peak hours is more expensive and fares are also different for wet and dry periods during the year.

The main objective of this modality is to discourage energy consumption in the busiest hours, considered peak hours (PH), which usually range from 5 pm to 8 pm.

See more at <https://www.cemig.com.br/en/usina-do-conhecimento/mas-afinal-o-que-sao-as-tarifas-horo-sazonais/>.

2.4 Smart grid technology

In 2023 73 thousand smart meters (AMI), of which 30 were installed in the metropolitan region of Belo Horizonte (reaching 362,733, an increase of 12% compared to the total number in 2022), providing benefits for meter reading, billing, energy recovery, and delinquency management (remote connection and disconnection). 3,56% of the 10,188,645 installed meters are smart meters.



Image of a smart meter

2.5 Large-scale storage (>100 kWh)

Cemig has been carrying out a series of remote tests of battery energy storage systems in the electrical distribution network, directly from the Operation Center (COD), using the DERMS (Distributed Energy Resource Management System) tool (Energy). This system has the function of controlling new assets in the electricity sector, known as REDs (Distributed Energy Resources).

The initiative, unprecedented in Brazil, also includes several types of operations in storage systems, including distribution circuit islanding and the operation of equipment such as transformers and remote loads and isolated systems.

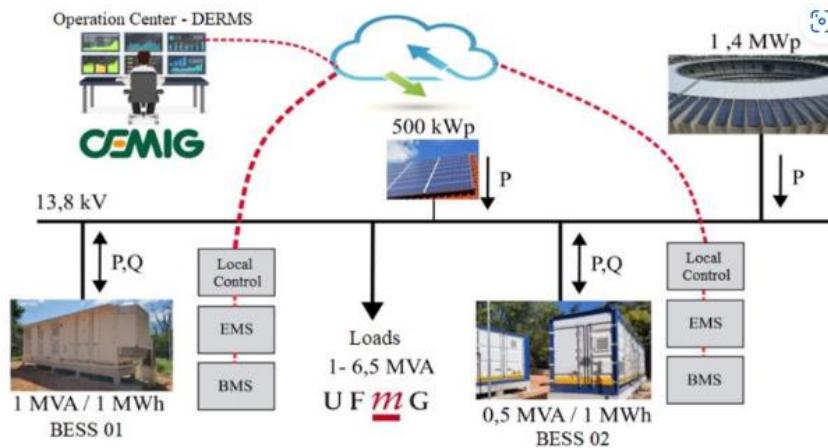
The project is carried out by Cemig in partnership with the Federal University of Minas Gerais (UFMG), the Foundation for Technological Innovations (FITec), Concert Technologies and the Edson Mororó Moura Institute of Technology (ITEMM).



Image of a storage unit

2.6 Micro-grids, virtual power plants

The Cemig/UFMG Micro Grid consists of two storage systems connected to the Cemig distribution network, operated remotely by COD through the DERMS system. It allows the batteries to inject energy into the distribution network, control the voltage in case of fluctuations, charge the batteries at low loads and inject at high loads, control the frequency of the distribution system and, in the event of a power outage, energy from Cemig sources, limit the islanding circuit and assume the load with battery systems.



Schematization of Cemig/UFMG Micro Grid

See more at: <https://inova.cemig.com.br/central-de-noticias/cemig-pioneira-operacao-derms/>