

# Argentine Electricity Sector

Awaiting Structural Reform  
Special Report

**Structural Sector Weakness:** The Argentine electricity sector is highly exposed to regulatory and government interference risk, which is considered to be the most significant threat to the system's long-term viability. Since the country's 2001–2002 economic crisis, the electricity sector has been characterized by frozen electricity tariffs for end-users and a lack of structural changes attractive to private investment. This has resulted in low private energy infrastructure investment and high dependence on government subsidies to cover tariff deficits.

**Reliance on Subsidies:** The electricity sector relies heavily on government subsidies as the system suffers from increasing generation costs due to relatively low energy infrastructure investments and a tariff structure that does not reflect generation costs. Fitch Ratings expects government subsidies to the sector to remain substantial in the short to medium term, although the government has recently enacted some positive adjustments to remuneration mechanisms.

**Important 2015 Elections:** In Fitch's view, 2016 will be seen as a turning point for Argentine corporates, especially the power sector, which is in dire need of reform. The 2015 presidential elections could bring a more market-friendly administration into power, which could tackle the structural weakness inherent in the electrical system.

**New Administration's Challenges:** Key policy challenges for the new administration include reaching a deal with the sovereign debt holdouts and the gradual easing of currency controls. In addition to improved policy consistency and predictability, these two items could pave the way for Argentina to gain access to international financing, which is needed to fund large infrastructure investments in Argentine industries, including in the power sector.

**Gradual Change in Power Sector:** Price controls have negatively affected electric sector players across the value chain, with distribution companies forced to bear much of this burden with minimal government support. The system needs relief and new investment, but in a best-case scenario Fitch believes price adjustments will be gradual and not dramatic. New major investment in the sector does not look likely in the sector until 2017 at the earliest, and only after price distortions are removed.

## Related Research

2015 Outlook: Latin America Power  
(Stability Despite Economic  
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Latin America Utilities Dashboard  
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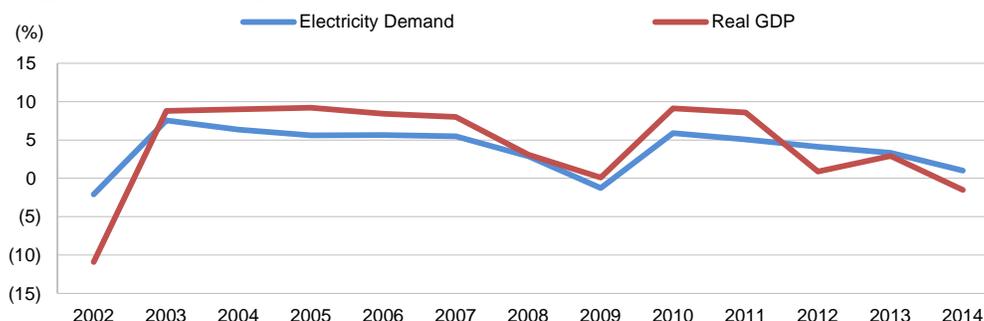
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## Argentina Electricity Demand versus GDP Growth



Source: CAMMESA, World Bank.

## Primary Market Considerations

### Growth Prospects

Growth prospects for the Argentine power sector continue to be constrained by

- a high degree of government intervention;
- macroeconomic weakness; and
- a lack of interest from private investors.

Argentine electricity consumption growth is primarily supported by commercial and industrial activity, accounting for approximately 59% of consumption. In the short to medium term, electricity supply growth will continue to rely upon the availability of imported gas and fuel oil. Long-term supply prospects will rely upon the discovery and development of unconventional gas reservoirs in Vaca Muerta and the installation of other sources of generation (nuclear, solar, wind and biomass, among others) to substitute the country's high level of dependence on imported fossil fuels.

The country will require approximately 500 MW of new installed capacity per year and associated transmission infrastructure to maintain a balanced supply and demand market over the next decade. Given scarce interest from private investment in the sector over the last decade, the most relevant capacity additions were undertaken by the Argentine government, although there have been some recent privately funded major projects. Major investments in new thermoelectric and nuclear generation capacity have been funded by state-owned companies Energía Argentina S.A. (ENARSA) and Nucleoeléctrica Argentina S.A., respectively.

### 2016 Could Represent Turning Point

In Fitch's view, 2016 will be seen as a turning point for Argentine corporates, especially the power sector, which is in dire need of reform given the three aforementioned factors constraining growth prospects. Presidential elections in Argentina are scheduled for Oct. 25, 2015, with a possible runoff taking place on Nov. 24, 2015. The three major candidates for the presidency, Mauricio Macri, Sergio Massa and, to a lesser degree, ruling party candidate Daniel Scioli, are generally perceived as more business friendly than the current administration. President Cristina Fernandez de Kircher, and Nestor Kircher before her, have ruled Argentina since 2003 based on a state-led development model that has created challenges to private business growth.

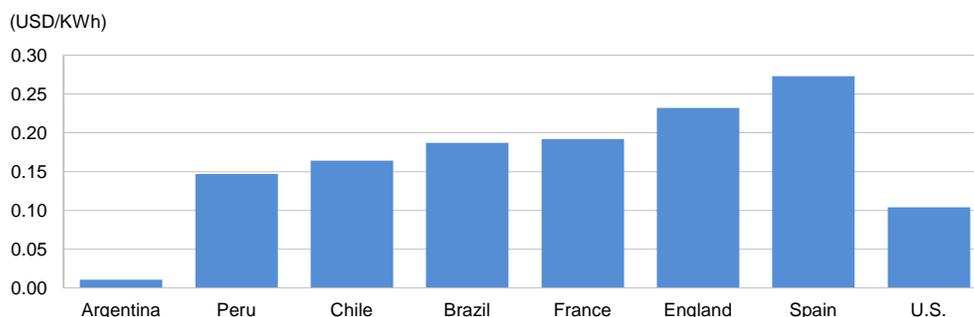
Key policy challenges for the new administration include reaching a deal with the sovereign debt holdouts and the gradual easing of currency controls. Argentina's long-term foreign currency Issuer Default Rating (IDR) is currently 'RD' (Restricted Default) with a country ceiling of 'CCC'. In addition to improved policy consistency and predictability, these two items could pave the way for Argentina to gain access to international financing, which is needed to fund large infrastructure investments in Argentine industries, including the power sector.

To cope with high inflationary pressure since the 2001–2002 economic crisis, the Argentine government has kept electricity tariffs for end users relatively unchanged. Argentina's unofficial exchange rate currently sits at approximately ARS13/USD1 since abandoning the dollarization of its currency, which means that Argentina's residential consumers are paying among the lowest electricity prices in the region. In many cases individual electricity consumers in Buenos Aires are paying as little as USD1/month in electric bills. Electricity prices have only been allowed to increase in cases when new capacity is added, to attract at least some level of private investment in generation.

Price controls for the natural gas market have historically deterred investment, although prices have recently increased though not to the point that an efficient market would dictate. As a result of the structural weakness of the Argentine electricity sector, the economic weakness of Argentina and a recent history of negative government intervention in the private sector, Argentine power corporate ratings are constrained by the 'CCC' country ceiling.

Given the price controls affecting the electric sector, distribution, transmission and generation companies have suffered significantly. Distribution companies have been forced to bear much of this burden, with minimal government support, and the system will need relief and further investment when the new administration takes office. In a best-case scenario, Fitch does not believe the price adjustments will be rapid and large, but gradual. New major investment in the sector and possible new major corporate issuances do not look likely in the sector until 2017 at the earliest, and only after price distortions are removed.

### Residential Tariff: Positioning Within the International Market



Source: CAMMESA/EDENOR/EIA.

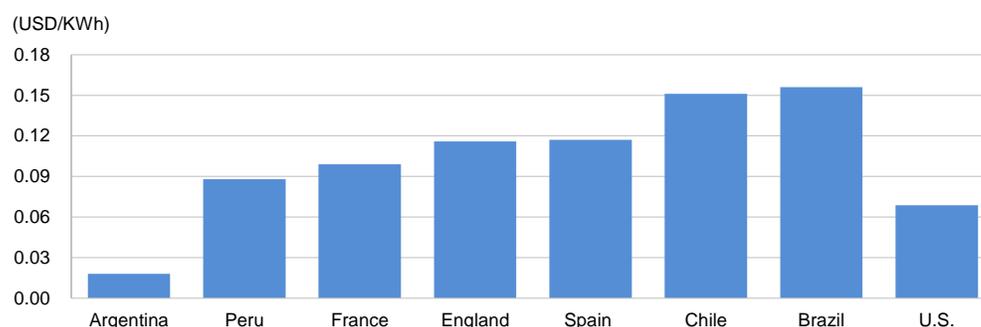
In the Argentine electricity sector, Fitch rates power generator Capex S.A.'s foreign currency IDR in line with the country ceiling of 'CCC'. The company's ratings are constrained by the sovereign ratings and the high regulatory risks associated with operating in the electricity sector in Argentina. The ratings also reflect exposure to devaluation risk (currency mismatch between peso-denominated cash flows and dollar-denominated debt) and the long-term need to pursue an aggressive capex plan to sustain the company's vertically integrated business model. Positively, capex saw slightly constructive regulatory moves by the Argentine government in the gas/electric sectors in 2013. More significant positive moves in the form of aggressive tariff reforms are needed, in both the electricity and natural gas marketplaces, to allow companies to increase from at best merely trading water. Other Fitch-rated companies that would benefit from a reform in the Argentine electrical system are:

- Empresa Nacional de Electricidad S.A. (Endesa-Chile, BBB+/Stable) and Enersis S.A. (Enersis, BBB+/Stable): 4,522 MW of installed capacity (14% market share); 2.5 million distribution clients. Companies have minority stakes in three additional plants with total aggregate capacity of 2,247 MW.
- AES Gener S.A. (BBB-, Stable): 643 MW of installed capacity (2% market share).

## Pricing

Following the Argentine devaluation of 2001–2002, the Argentine government froze all regulated transmission and distribution tariffs and revoked all price adjustment provisions and inflation indexation mechanisms. This has led to Argentina's residential/industrial tariff rates, which are significantly below those of most Western countries. Spot prices were set to be calculated based on the price of natural gas, which is regulated by the Argentine government, even if a plant uses more expensive fuels, causing the system to ignore supply and demand dynamics and resulting in distorted pricing. This contrasts with the pre-crisis years, in which Compañía Administradora del Mercado Mayorista Eléctrico S.A. (CAMMESA) determined the spot price based on the marginal cost of the last unit to be dispatched.

### Industrial Tariff: Positioning in the International Market



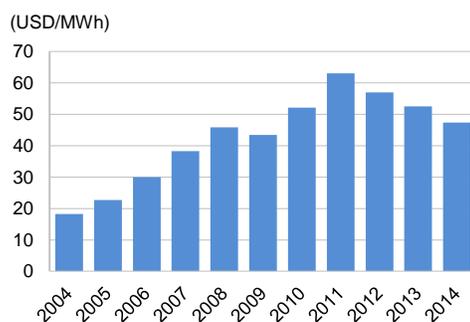
Source: CAMMESA/EDENOR/EIA.

The short-term marginal cost for many plants has been set at ARS120/MWh (USD14/MWh at current official exchange rates) since 2002. As a point of contrast, the average marginal breakeven marginal cost in 2014, which includes power capacity fees, the cost of generation with liquid fuels and other minor items, was ARS550/MWh (USD67/MWh).

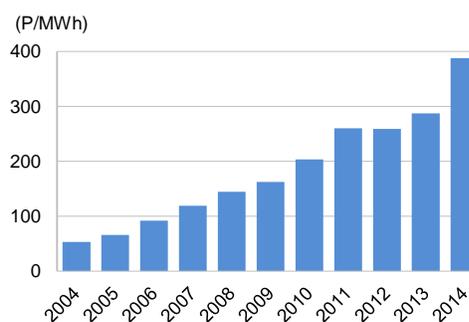
The generation sector pricing scheme was reorganized by Argentine regulators in March 2013, moving from a margin-based system to a regulated system, in which generators' income is driven by regulated revenues. Previously, independent generation companies would sell their output in the Argentine Wholesale Electricity Market (WEM), through private contracts with purchasers in the Argentine WEM (typically large industrial users) or to CAMMESA through special transactions. CAMMESA is the entity in charge of operating the WEM.

CAMMESA became the single buyer/seller of fuel needed to operate power plants after March 2013 and free bilateral trading was suspended. After bilateral trading was suspended, large buyers would have to buy electricity directly from CAMMESA. Generators moved to regulated remuneration, which was expected to cover fixed and variable costs and include an additional return:

- Fixed costs: capacity remuneration based on target availability.
- Variable costs: remuneration for operation and maintenance costs, as electricity generators are not supposed to incur fuel costs.
- Additional remuneration: Partly paid by cash paid to the generators with the remainder accumulated in a fund that will be used to finance generation investments.

**Monomic Spot Prices (Dollar Basis)**

Source: CAMMESA.

**Monomic Spot Prices (Peso Basis)**

Source: CAMMESA.

A stabilization fund, managed by CAMMESA, is designed to stabilize prices to end users. The fund is financed from the difference between the regulated and spot prices. The stabilization fund is used when spot prices exceed the regulated price and replenished when the regulated price exceeds the spot price. Although the stabilization fund is supposed to balance in the long run, the fund has traditionally run a substantial deficit. This deficit resulted from the emergency regulation implemented by the country, which modified the spot price calculation and adjusted the regulated price to below the spot price. The deficit has been covered with subsidies from the Argentine government. In 2014, CAMMESA received approximately USD8.7 billion in funds from the Argentine treasury, which was a significant increase from the USD6.6 billion injection in 2013.

The transmission sector operates under monopoly conditions, with transmission companies authorized to charge different tolls for their services. Distributors are regarded as a public service operating under monopoly conditions and have regulated tariffs that are subject to quality of service specifications. Distribution companies may obtain electricity on the Argentine WEM at a seasonal price, which is defined by the Argentine Secretariat of Energy as the cap for the costs of electricity bought by distributors that can be passed through to regulated customers. Argentine regulators' neglect to fully review electricity tariffs and fully recognize cost increases has negatively affected both distribution and transmission companies, which has reduced investment in these important market segments.

**Recent Events*****February 2015 — Two Major Generation Projects Operational***

The Atucha II Dr. Nestor Carlos Kirchner nuclear power plant (Atucha II, 745 MW of installed capacity) and the Central Termoelectrica Vuelta de Obligado nuclear power plant (560 MW of installed capacity) became operational. The Atucha II plant began construction in 1981, but construction was suspended in 1994 until 2006, when the government decided to fund completion of the plant. Termoelectrica Vuela de Obligado is a power plant developed by Sociedad Argentina de Energia S.A. (SADESA, 56%), Endesa-Chile (41%) and Duke Energy Corporation (3%). Within one year, the plant's capacity will increase to 810 MW when the combined cycle is closed.

***May 2014 — Resolution 529/2014***

Retroactive to February 2014, the government modified the remuneration scheme set forth in Resolution 95/2013 by adding payments for generators intended to compensate for inflationary and nonrecurring maintenance costs.

**March 2013 — Resolution 95/2013**

This is a landmark resolution, as the generation market was reorganized from a competitive market to become effectively controlled by CAMMESA. Under the resolution, the new remuneration scheme, effective from February 2013 to January 2014, was organized as follows:

- CAMMESA, the market operator, became the single buyer/seller for the fuel needed for plant operations.
- Free bilateral trading was suspended, with large customers having to buy electricity directly from CAMMESA (this did not affect the supply of electricity for residential customers, as they are still served by distribution companies).
- Generators received regulated remuneration, which is expected to cover fixed and variable costs, including an additional remuneration.

The new tariff regime had two effects on power generators in the sector. Given the resolution is aiming to optimize and minimize the costs of fuel supplies for power generators, CAMMESA is now responsible for the commercial aspects of these fuel supplies. The new tariff regime has also been slightly positive for sector generators' EBITDA results. However, further tariff adjustments will be needed in the future for this trend to continue, and given the unpredictability of the Argentine government/regulators this is far from certain.

**Regulatory Framework**

The Argentine electricity sector is governed by the Electric Regulatory Framework law of 1992 to promote efficiency and competition in the industry. This law allows for private-sector participation and separates the electricity services into generation, transmission and distribution activities. It also comprises the creation of a competitive wholesale electricity market and transmission and distribution monopolies that reward efficient operators. These last two activities are regulated by the government and as such, require a concession to operate.

**Regulatory Bodies**

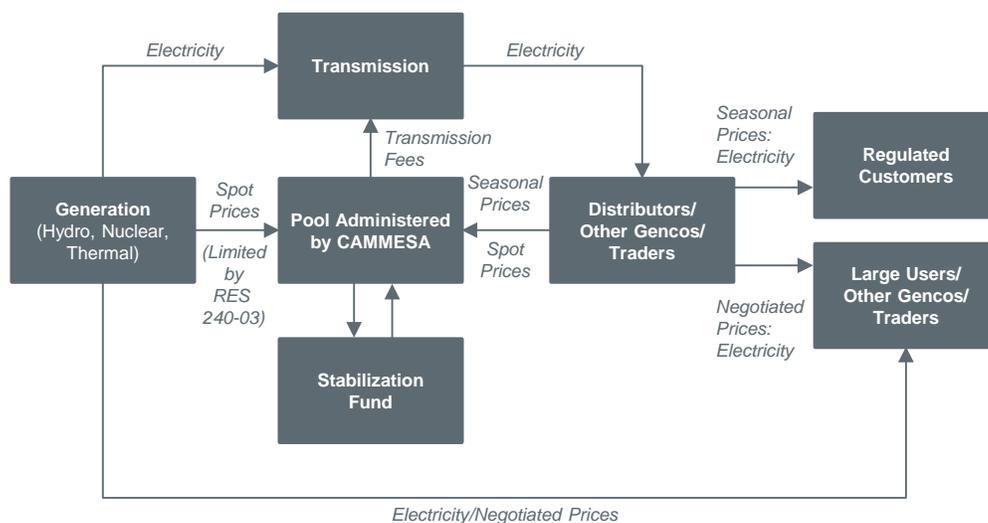
The Secretaria de Energia (SE) oversees the Argentine electric industry by developing and coordinating the government's plans and policies for the sector. In addition, the SE grants and renews operating concessions for generation, distribution or transmission and regulates the supply of electricity.

Ente Nacional Regulador de la Electricidad (ENRE) is the entity responsible for regulating distribution and transmission companies, and establishing the basis for the electricity tariffs. It monitors and supervises public service companies, enforces regulatory initiatives and maintains safety and environmental standards for the country's electricity sector.

CAMMESA manages the electricity wholesale market by coordinating the electricity dispatch, ensuring the system's stability and the overall operation of the WEM. CAMMESA is a mixed capital company 20%-owned by the Argentine government, with the remaining balance by market participants (generation, transmission and distribution companies and large industrial customers).

## Industry Structure

### Wholesale Electric Market (WEM)



RES – Resolution. Gencos – Generation companies.  
Source: Endesa-Chile 20-F filing.

The Argentine electricity sector is organized along three major market activities, generation, transmission and distribution, with all electricity transactions are conducted through the WEM, which acts as a clearinghouse for electricity trading.

### Generation

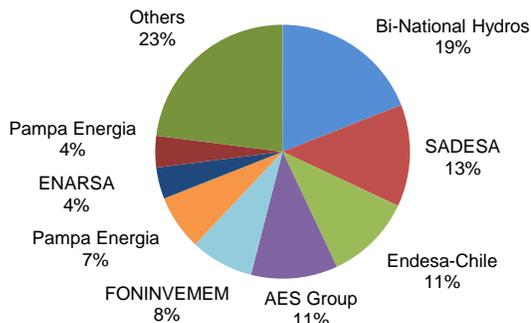
CAMMESA dispatches generation plants based on the lowest marginal cost available. Run-of-the-river hydroelectric units have the highest dispatch priority because of their extremely low marginal cost. Dam-based hydro units also have the ability to store energy and release it when needed. As the theoretical marginal cost of a dam-based hydro unit increases during dry seasons, thermal power may be dispatched before a dam-based hydro unit. The inverse would hold true in an extremely wet year.

Generators declare their marginal costs semiannually. In addition, on a weekly basis, thermoelectric generators provide CAMMESA with expected available capacity, fuel costs and other information. For dam-based hydroelectric generators, marginal cost includes an estimated water values based on reservoir levels.

Using the semiannual marginal cost declarations from both thermal and hydro generators, CAMMESA determines seasonal dispatch schedules to minimize energy cost in the spot market. Then, using weekly indicators of capacity availability and fuel costs, CAMMESA determines weekly dispatch schedules to minimize the total production cost and risk of system failures.

As of December 2014, installed generation capacity in Argentina totaled 31,404 MW. The principal generation groups in the country are Entidad Binacional Yacretá (public bi-national company), Endesa-Chile (private), AES Corporation (private), SADESA (private) and Pampa Energia S.A. (private).

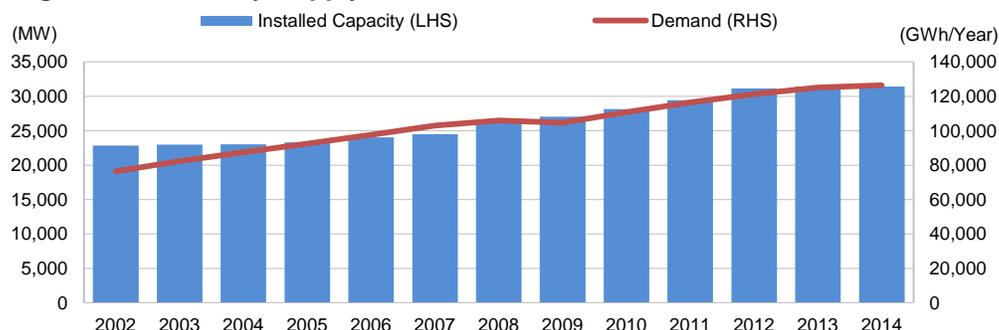
**Net Electricity Generation — Market Share**



Source: CAMMESA.

Argentine electricity demand growth is closely correlated with the country's GDP growth. Between 2010 and 2014, electricity demand grew by 4%/year, although it registered only 1% growth during 2014 as the country's GDP declined for the year. The uneconomical nature of the Argentine electricity system has deterred private investment in new capacity, with new capacity additions mainly funded by the government.

**Argentina Electricity Supply and Demand Balance**



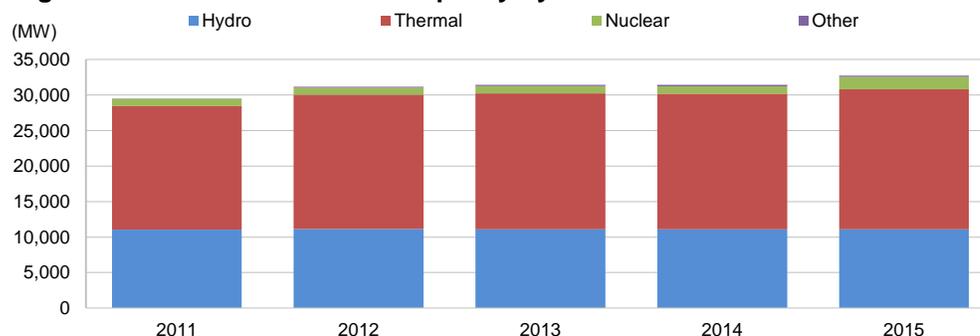
Source: CAMMESA, Secretariat of Energy.

Today, most relevant capacity additions have been undertaken by the Argentine government, through the state-owned company ENARSA. The private sector is modestly investing on the back of long-term power purchase agreements (PPAs) with ENARSA and CAMMESA at prices above the spot market. The main concern for developing generation projects in Argentina is counterparty risk. Counterparty risk in power projects' PPAs is concentrated in CAMMESA, whose credit quality is closely linked to that of the sovereign, as the electric system relies on public subsidies to fulfill its obligations. Although all new generation projects benefit from the highest priority in CAMMESA's waterfall of payments, the significant increase of payments to new projects could pressure CAMMESA's ability to fulfill its obligations in an adverse economic environment.

Argentina's generation installed capacity has grown by 11% between year-end 2011 and March 2015, from 29,443 MW to 32,728 MW. Installed capacity grew by 4% in 2015 as notable generation projects, Atucha II and Central Termoelectrica Vuelta de Obligado, became operational. The government has attempted to increase nuclear, hydroelectric and other renewable generation capacity in the country, but as shown in the *Argentina Generation Installed Capacity by Power Source* chart on page 9, the country remains highly reliant on thermal generation. In 2014, 65% of generation output utilized thermal fuels as a generation source fuel, compared with 30% of hydroelectric, 4% of nuclear and a small balance from other renewable generation sources.

Argentina has a natural gas supply and demand imbalance, depending on natural gas imports from Bolivia and two liquefied natural gas terminals in the provinces of Buenos Aires and Bahia Blanca to offset the imbalances. Gas supply for thermoelectric generation plants is limited to the most efficient plants during the winter season. Natural gas supply for thermoelectric generators is a concern given the lack of investment in recent years and the country's prioritization of residential demand over thermoelectric generation. YPF S.A.'s USD6 billion/year investment plan to increase/develop its hydrocarbon reserves is a positive step for the country's gas supply. However, the energy sector will require a larger investment to explore and develop new reserves. Development of the Vaca Muerta unconventional hydrocarbons formation has been estimated to require an annual investment of USD20 billion/year for the next decade. However, the investment is currently running at one-quarter of this amount. During periods of low gas availability for thermoelectric generators, companies rely on more expensive liquid fuels that pressure the generators' profitability.

### Argentina Generation Installed Capacity by Power Source



Source: CAMMESA.

### Distribution

Distribution companies purchase, resell and deliver electricity to end users: residential, commercial and industrial customers. Distributors purchase electricity from either the WEM or through long-term contracts with generators. Each company operates in a specific geographical area according to a framework provided by a concession contract. The largest electricity distribution companies in Argentina are Empresa Distribuidora Sur S.A. (Edesur, controlled by Enersis) and Empresa de Distribuidora Norte S.A. (Edenor, controlled by Pampa Energia S.A.).

Distribution companies operate under concession agreements that establish concession areas, quality standards, permitted rates and require concession operators to meet electricity demand from end users. As the ultimate supplier to end users, distribution companies are responsible for collecting generation and transmission fees. Distribution companies then transfer these fees to CAMMESA, which in turn pays generation and transmission companies.

Argentine distribution companies' cash flows are significantly exposed to volatility due to the country's inflationary environment, which, combined with a weak regulatory framework, have significantly pressured distributors' profitability since the 2001–2002 crisis. Historically, the cost component of the tariff adjustments for distribution companies has not been implemented automatically, according to the regulations in place. Instead, pass-through allowances for distribution companies lag electricity costs and inflationary pressures.

Distribution companies in Argentina have used a significant portion of their cash flow generation to fund capital investments needed to maintain service quality. As a result of this,

distribution companies' FCF generation remains low and could continue to be under pressure for the foreseeable future without reform. The weak regulatory framework within the distribution sector is a concern that offsets improvements in productivity, such as reductions in energy losses and electricity theft. Delays in adjustments to cost increases, pending full tariff reviews and continued inflationary pressures, have eroded profitability in the sector.

### **Transmission**

Transmission is a regulated activity that provides open access to the system for all market players in the electric industry. Transmission companies earn a fee or toll for transmitting electricity. Transener S.A., indirectly controlled by Pampa Energia S.A., owns most of the transmission lines in the country, with the remaining portions owned by regional transmission companies. Transmission companies operate as natural monopolies and receive a fee or toll for transporting electricity. They also must allow open access to transmission capacity and are not allowed to buy or sell electricity. The Argentine electricity grid is connected to Brazil, Uruguay and Paraguay's transmission systems, which allows the countries to import and export electricity when required.

The transmission system in Argentina is divided into two systems: The high voltage transmission system and the regional distribution system. While the first one operates at 500kV and transports electricity between regions, the second one operates at 130kV–220kV and connects market agents within the same region. Argentina's National Interconnected System (SIN) covers approximately 90% of Argentina's population. Transmission companies hold government concessions to operate according to security and technical standards set by ENRE. While transmission companies are responsible for the operation and maintenance of their infrastructure, users are the ones that pay for the new capacity required. The SIN is linked through supply points to distribution systems.

The electricity transmission infrastructure plays a key role in the Argentine electricity industry given the size of the country and the long distances between generation and consumption centers. Private investment in the sector will continue to lack interest given the weak regulatory framework through the federal plan, despite the significant expansions of the 500kV network during 2010–2011.

### Argentina Facts Sheet

#### Installed Capacity (MW)

Hydro	11,108
Thermal	19,074
Nuclear	1,010
Other	212
<b>Total</b>	<b>31,404</b>

#### Electricity Demand

GWh/Year	126,421
Residential (%)	40.9
Industrial (%)	30.3
Commercial/Other (%)	28.8
Peak Demand (MW)	24,034
Consumption Per Capita (KWh)	3,050
GDP (USD Mil.)	609,900
GDP Per Capita (USD)	14,714

#### Oil and Gas

Natural Gas Reserves (Trillion Cubic Meters)	11
Natural Gas Production (Billion Cubic Meters)	36
Natural Gas Consumption (Billion Cubic Meters)	48
Oil Reserves (kbbbl)	2,400
Oil Production (kbbbl)	656
Oil Consumption (kbbbl)	636
Net Oil Imports (kbbbl)	NM
Crude Refining Capacity (kbpdd)	663

Bbl – Barrel. Bpd – Barrels per day. GWh – Gigawatt-hour. KWh – Kilowatt-hour. Kbbbl – Thousand barrels. Kbpdd – Thousand barrels per day.

Source: CAMMESA, Fitch, BP Statistical Review.

### Argentinian Regulatory Framework Evaluation

Independence from Central Government	Balance Between End Users and Companies	Transparency of Tariff	Recourse of Law
<p><b>Weak</b> — Regulatory framework is subject to supervision by the Argentine Executive Branch through the Ministry of Federal Planning Public Investment and Services.</p> <p>Members are proposed by the Ministry of Federal Planning Public Investment and Services through a recruitment process. Rulings can and have been overwritten by the Executive Branch.</p>	<p><b>Favors end users</b> — Since enactment of the Public Emergency law in 2002, electric tariffs have been frozen, creating a severe imbalance between electric tariffs and actual costs.</p> <p>The government has modified regulations, resulting in a weakened regulatory framework where electric tariffs are still insufficient to cover all real costs of generation, while subsidies to cover the cost of the system continue to increase.</p>	<p><b>Weak</b> — Very little independence from the government.</p> <p>Transparency of tariffs is not supported by clear tariff-setting procedures. Full tariff reviews present delays, and adjustments for cost monitoring are not automatic, usually lagging inflationary pressures.</p>	<p><b>Moderate</b> — There are clear procedures to appeal regulatory rulings, but appeals often have long processing periods. Companies can oppose or comment on regulations.</p>

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