Introduction

According to a study conducted by the U.S. Engineering Academy regarding the world’s major scientific personalities, the massive electrification of cities was the supreme work of engineering in the twentieth century for the great impact it caused to the people’s quality of life and to the scientific and technological progress of humanity.

Today, electricity is typically produced or generated far from the large centers and transmitted at high voltage to the cities, where it is lowered to an intermediate voltage and conducted at the top of posts or through underground networks, along the streets down to final consumers, where transformers once again lower the voltage to the tariff we use in our homes.

All service delivery involves the need for displacement of teams to deliver the service: If a customer faces lack of electricity, the company needs to send a truck to his/her house to repair the defect. If the customer did not pay the bill, the company also needs to send a truck to his/her house to stop the service. Most activities of the electricity companies today, more than in other sectors, involves the need for displacement of people, and the activities take considerably long periods of time to be completed. This is true from the meter reading (conducted only once a month for each customer) to the services restoration after a major storm, as explained above. The need for displacement of vehicles and people for each service is not compatible with the current demand for services by the digital society, which operates in real time.

In summary, despite the huge impact in the transformation and comfort of modern society, the electricity service has not yet benefited from the amazing technological breakthrough it provided to humanity.

Smart Grid is the general and popular name given to set of technologies available to modernize and improve electricity services that are currently provided by electricity companies worldwide. Such technologies include the incorporation of sensing components (monitoring or measurement), telecommunication components, and processing capabilities components (information technology) in the power assets.

These technologies will enable a range of rather different features, not currently available for the vast majority of people in the world, such as:

- Smarter and more intelligent equipments that consume much less power than current equipments, reducing the amount of power spent to perform the same activities. Examples are the LED lamps, which can consume up to 5 times less than the electronic compact ones, which in turn have already replaced the old incandescent lamps, consuming up to 4 times less power for the same luminance;
- Electronic measurement in homes and the possibility of using differentiated rates, such as prepaid, with plans for each reality of consumption, with costs that vary throughout the year and the day;
- Possibility of synchronization of home appliances with such tariff signals, for example, blocking certain uses or appliances during specific time periods;
- Power generation and storage within the consumer’s home using gas, ethanol, biodiesel, mini wind turbines, or photovoltaic cells, and the production and use of such power can be optimized among consumers from the same block or neighborhood;
- Electrical vehicles, far less pollutants, more power-efficient and quieter, will also be able to store enough power to partially supply the consumer’s residence in the most critical hours, when there is no wind or sun.

In many countries worldwide, including the United States, Canada, Australia, England, Spain, Italy, Sweden, Germany, Japan, China, Korea, and others, these modern networks with embedded intelligence are being implemented with support and strategic insight of Governments that understand Energy is a fundamental and essential asset for the safety and comfort of modern society.

Smart Grid Latin American Forum

The Smart Grid Latin American Forum was created in 2008 as a pioneer initiative aimed at assessing how the new power technologies can bring benefits to Latin American society, through regular and systematic exchange of information with professionals from other regions of world that already started projects or research in the area.

The Forum focus on the institutional synthesis and coordination of such technologies, and the structured evaluation of their impact, benefits and costs. The approach adopted is driven by value rather than only by technology, i.e., the Forum seeks to address the potential value Smart Grid-related technologies can bring to the countries of Latin America. The Forum seeks to act in collaboration with other similar initiatives around the world, since these technologies are being developed within a global view, thus differing in its application, which must be adapted to the reality of each region or country.

The Forum is a neutral, independent, and comprehensive vehicle aimed at mobilizing the widest possible range of
stakeholders, i.e., it is not intended to be another association that promotes debates and studies on Smart Grid technologies. The Forum is an initiative that seeks to bring any existing associations representing the various stakeholder groups, such as regulators, public policy makers, financial market participants, consumers and representative bodies, and companies providing solutions for the energy industry, socializing professionals who are active in the stakeholder groups, as well as independent professionals and ordinary citizens, so they can share different views and discuss how these technologies can improve comfort, security and provide access to high quality energy at reasonable price for the Latin American society.

The Forum, as an initiative, charges no fees from its stakeholders: The meetings and the site (www.smartgrid.com.br) are maintained with the funds raised in an annual International Conference, which is already part of the global circuit of conferences on the subject. The 5th edition, in 2012, will be held from 27 to 29 November, in São Paulo, Brazil. For its 5th consecutive year, the Forum will bring the greatest names, authorities and leaders of Smart Grid research, implementation and development worldwide to discuss the implementation of such technologies in Latin America.

The Forum conducts significant efforts of mobilization and articulation of a broad institutional basis with ample support, not involving the allocation of resources by Government or supporting entities. The annual conference funds the Forum activities, and allows the Forum to remain active, independent and to keep pace with the relevant developments in the area through the contact with various local and international entities. The technological monitoring enables the annual conference to always recruit the world’s best experts on the subjects. To that end, the Forum has an advisory board that operates and supports industry players, and normative and regulatory agencies. In the 2011 event, for example, the Forum had the institutional support of ANEEL, ANATEL and INMETRO, which are official Brazilian entities (Regulatory Agencies of Electricity, Telecommunications and the Metrologic Organization, respectively) that had executives participating. The Forum also had the support of ABRADEE, the Brazilian association of the Power distribution companies, that currently leads the strategic R&D on the subject.

In addition, the Forum has international collaborators and supporters, such as ADEERA, the association of Power distributors in Argentina, and CIER, the Regional Electric Integration Committee that brings together all the countries of Central and South America. Other international noteworthy supporters include: Edson Electric Institute, an associative entity of power companies that operates throughout the world and is based in the United States; IEEE, the largest professional entity in the world, which gathers Electrical and Electronic engineers; JSCE, the Smart Grid association in Japan; and finally, Smart Grid Australia, congener organization in the country. The Latin American Forum of Smart Grid is the entity with the broadest base of international support in its region.

Last, but not least, the Conference has sponsors that participate in the Exhibition of technologies associated with the event. Those are companies that have products, services, solutions, and expertise in the subject and, ultimately, have an essential contribution to the event’s economical feasibility, ensuring the presence of the world’s most important leaders in the field.

A lot of progress was made, specifically in Brazil over the last 5 years, but still lacking government policies

Since the Forum creation and the realization of the first event, in 2008, there has been much progress, especially in Brazil.

ANEEL, the electricity services regulatory Agency, has adopted an extremely progressive attitude on the regulation of technologies in the field, leading actions closely related to the subject, such as: discussion on the standardization of electronic meters; regulation of telecom services exploration by power companies; complete review of the tariff structure; definition of rules for the connection of micro-generation to public power networks; improvement of rules for periodic review of the power distributors tariffs, now in the 3rd cycle.

All these new regulatory provisions have been conducted, however, without the guidance of a proper National Energy Policy, that exists today but still currently focuses on conventional engineering practices, based on traditional bulk generation plants expanding the system’s capacity, to face demand growth. Unlike most part of the world, Brazilian energy policies considers energy efficiency as a second priority, since there is still significant room for growth in individual consumption, particularly for residential customers, as the population’s income levels improve. The average residential consumption in Brazil is around 150 kWh/month, while in Europe the houses consume an average of 800 kWh/month and in the United States, around 1,100 kWh/month: Excluding the climatic differences that could justify part of this difference, there is still much room for growth in comfort in the Brazilian homes.

Additionally, the current and nearly exclusive focus of government policies on expanding the energy supply can also be explained by the experience of power rationing occurred in many regions of Brazil during 2001, when people and companies were forced to reduce their consumption, coupled with a large yet untapped hydraulic (wind, biomass, solar, etc.) potential available in the country.

On the other hand, the low priority of the quest for energy efficiency can be understood by the fact that the country’s electricity matrix is already widely cleaner than the rest of the world, with about 85% of the electricity coming from renewable sources - mainly hydropower and biomass - while the rest of the world seeks to reduce fossil fuel emissions and to transform its matrix at all costs.

However, in Brazil the total losses amount to around 17% of
the electric energy generated, while in Europe and the United States the same ratio reaches 7% and 8%, respectively. In most cases it is possible to significantly reduce the commercial losses arising from theft and fraud in the energy measurement, which is the most elementary way of pursuing energy efficiency. However, the balance of rights and obligations of customers results in distributors becoming weaker, since it creates political friction and should be supported by the Federal Government with serious programs deployed through effective actions at state and municipal level. Energy theft and waste walk hand in hand, and the opportunity and benefits of recovering losses can effectively provide lower tariffs in the short term and slow down the construction of new power plants and enterprises, while reducing the environmental impact.

Brazil has excellent examples of successful programs in public services conducted with appropriate governmental policies, such as in telecommunications, which had great progress in recent years due to the arrival of the mobile technology, where prepaid services enabled comprehensive, inclusive, and popular services to be delivered for the least favored. Other examples in the energy area are the country’s leadership in bio-fuel’s research and production, uranium enrichment and, most recently, oil exploration in deep waters, which resulted in the discovery of significant reserves of oil and gas.

Just like the examples above, governmental policies regarding the smart grid are required to guide its regulation, and no such policies were being built until the end of last year. The Conference organized by the Forum in 2011 deeply discussed these issues, launching a debate about the future of the energy policy, so far focused only on the grid expansion: **The Challenge of growing or upgrading was the main topic of the Forum’s 2011 Conference.**

Only in the beginning of 2012 the Brazilian Government started an integrated action, integrating various ministries, such as: MCTI - Science, Technology and Innovation; MME - Energy and Mines; MDIC - Industry and Commerce; IPEA - Institute of Applied Economic Research; ABDI - Brazilian Agency for Industrial Development; and other government agencies and industrial institutions, such as ANEEL, EPE - Energy Agency for Industrial Development; and other government agencies and institutional entities, such as ANEEL, EPE - Energy Research Company, and ONS - National System Operator. Coordination within the government scope should be conducted through the Civil House of the Presidency of Republic.

ANEEL has not yet been guided to start breaking the link between distributors’ tariffs and its sales volume, creating real incentives to ensure the companies start to modernize their services and adopt effective strategies to promote energy efficiency. Without breaking the tariffs link, the distributors’ efforts towards energy efficiency and service modernization shall remain rather limited.

However, until the Government sets incentive policies and the regulators break the tariffs link, almost every company is quietly: implementing new IT platforms; strengthening owned and subcontracted telecommunication networks; advancing in other fronts, especially in automation, which had a major boost in 2010/2011 after severe criticisms of society regarding the services provided by distributors to customers increasingly dependent on energy; deploying pilot projects to cover different features and estimate the benefits of smart grid technologies; deploying “intelligent” cities in several regions of the country...

All utilities, whether to a greater or lesser extent, are now quietly studying and including smart grid technologies in their regular plans. For businesses, despite the insufficient incentives, it is also essential to **MODERNIZE** as a means of keeping up with the larger and growing complexity of regulation. Few years ago companies were evaluated by a few collective indicators, such as the DEC - Equivalent Duration of Interruption, the FEC - Equivalent Frequency of Interruption, and the TMA - Average Service Restoration Time. Today, in addition to the aggregate indicators, there are more than two dozen indicators of various natures, which individually may give rise to substantial fines, if not observed. Legacy systems make it impossible to address this growing complexity of regulation, which increasingly demands management systems also more complex and integrated - the motivation today, however, and unfortunately, is almost exclusively grounded in reducing results, rates, and imposition of fines by regulators, rather than proactive incentives to the companies improve their services.

**Brief history of the changes in Brazilian legislation for the Smart Grid**

As already mentioned, ANEEL launched many initiatives to improve regulatory procedures regarding the new smart grid technologies, even without the necessary support of National Policies.

In March 2009, ANEEL launched a public consultation regarding electronic metering, embracing an innovative regulation systematic, through which the Agency firstly put forward an open survey amongst the stakeholders, asking for contributions in the area, and only then, based on the survey results, brought up for discussion a Resolution protocol, which is still currently to be published, probably waiting for the results of the studies on strategic R&D ordered by ANEEL to Instituto ABRADEE.

Later, in August 2009, the Agency published the Regulation for data transmission through the power grid of Energy companies, determining that the operation of this area should be always performed by a Telecommunication company, and a significant part of the revenue earned by distributors in the field should be reversed in favor of reasonable rates, preventing electricity customers from funding services for other areas. However, the same resolution approved the use of such infrastructure to operate electricity services.

Afterwards, in April 2010, a Work Group was established by Decree 440/2010, issued by the MME, stipulating that within six months a Policy for the development of smart grids in Brazil would be set. This work led to substantial mobilization and lots of trips abroad, but up to now the Work Group has not yet published any conclusion or recommendation.
In 2010, ANEEL published the public call number 11 for the development of a strategic R&D, which in 6 months should also establish a Public Policy for the development of Intelligent Networks in Brazil. The R&D was started nearly six months later, in early 2011, coordinated by the Instituto ABRADEE with the participation of Research Centers, Universities, and Consultancies. Completed in December 2011, the R&D was expected to motivate the publication of two books on the subject. In the end, the project offered some general recommendations and presented a few possible scenarios for penetration of these technologies, as well as estimated potential benefits within each of those scenarios. However, within the results achieved, work is richer in collective learning and technological and functional mapping rather than strictly on direct recommendations of effective public policies. In response to a request of ANEEL, this study shall further investigate the scenarios during 2012, and then serve as the starting point for the efforts of the Government and the Ministries that shall be initiated.

In parallel with these efforts, another four topics will be evaluated in more detail below: tariff Structure Methodology Review; Pre-payment Regulation; Small-scale distributed generation (Resolution 482/2012); and Methodology of the 3rd Cycle of the Distributors Tariff Revision.

Tariff Structure Methodological Review
Since 2008, through a study developed in five stages, also in the form of a strategic R&D, ANEEL has been evaluating the entire tariff structure employed in Brazil, which was developed in the 90’s based on marginal costs. This evaluation covers both vertical (supply costs at each voltage level) and horizontal (supply costs at different times of the day) rates.

Such studies resulted in a proposal to significantly reduce the peak signs in relation to the off-peak signs for the large Power consumers, supplied at high voltage, of the so-called A4, A3 and A2 subgroups. This reduction in the Distribution System Usage Tariff (TUSD) in peak demand hours, when the system is forced to make new investments for expansion, will also cause an increase in TUSD on off-peak demand hours, when in theory the system can supply at lower cost. The possible impact on the tariffs currently in force will be a lower incentive to modulation of demand for large customers, and a significant increase in tariffs for consumers supplied at low voltage in the medium and short term.

Such effects bring to mind the inevitable question about the economic basis and the policies for cost allocation among consumers from various voltage classes and across different times of the day: Was the economic basis for such a change correctly evaluated?

The new Tariff flags
In the new tariff structure the so-called tariff flags were created with red, yellow, and green signs, aiming to allow a better mirroring of the energy market price to the open market, the PLD (Difference Settlement Price, that is the electricity spot price) reflecting the availability and, consequently, the cost of Power generation.

In times of climate changes and replacing the traditionally known tariff signals, characterized by dry (autumn and winter) and wet (spring and summer) seasons with the reservoirs of hydroelectric plants indicating greater or smaller supply capacity, the tariff flags will reflect like a traffic light signal the levels of power availability: Green for energy available in appropriate conditions; yellow for risk of shortages in the medium term; and red in months when there is no water available in reservoirs and the thermal sources, more polluting and more expensive, must be activated.

However, the incremental amounts of the red and yellow tariffs were pre-defined on fixed levels with increases of R$ 30.00/MWh and R$ 15.00/MWh, respectively. Again, the fundamental question that arises is whether these pre-defined figures are really justified on an economic basis, with a single model for a country like Brazil, with continental dimensions and large regional differences. That is, what is the economic base for the analysis?

The low-voltage tariff types - the new white rate
Another significant change is the creation of a white tariff for low voltage, also a single-part tariff as the tariff currently used, i.e., only with cost per consumption (kWh) and no cost per demand (KW), as the tariffs in force for high-voltage customers. Thus there will be two types of rate:

- The current, with a single price per kWh irrespective of time.
- And the White rate, also a single-part rate, with 3 prices in R$/kWh and 3 tariff levels, as detailed below:
  - Peak - period of 3 consecutive hours per day, except on Saturdays, Sundays and national holidays. The peak is different for each utility, depending on several factors related to the region and the market served.
  - Intermediate - Period composed by the hour immediately preceding and the hour immediately after the peak period, totaling 2 hours per day.
  - Off-peak - Period comprised of 19 hours complementary to Peak and Intermediate periods, as well as Saturdays, Sundays and Holidays.

Again, after the publication of the new structure, the economic impact of the change is still unknown. The initial regulations predicted the beginning of a trial period in 2013, and the new tariff is expected to take effect starting in 2014.

In Brazil, once again the regulation pre-defined a number of
factors for the whole country:

- Peak/Off-peak prices relation: 5 times the Off-peak
- Intermediate/Off-peak prices relation: 3 times the Off-peak
- Relation among white and standard off-peak rates: Shall be established in each company’s Tariff Revision
- Duration and relations: Each utility may propose changes

The adoption of tariffs that indicate the customers the different costs of supply is undoubtedly a breakthrough, but in countries and regions where such tariffs have already been implemented, assessments and previous studies of elasticity, price and response to demand are usually carried out. These responses to prices vary greatly from region to region due to cultural habits, income levels, average temperatures, and a range of factors. Given the great diversity across the regions of Brazil, it would be helpful to review these fixed levels of relation between peak, intermediate and off-peak demands.

Furthermore, there is still room for final considerations about the new white rate. ANEEL determined the new white tariff will be mandatory for customers consuming over 500 kWh/month, but optional (or “opt in”) for customers consuming more than 200 kWh/month, i.e., the tariff shall only be applied to customers wishing to modulate their loads and use. This, in practice, breaks isonomy and potentially discourages a significant mass of customers to manage their consumption. Only those who see an economic opportunity will manage consumption, favoring personal individual gains rather than benefits to the system. The potential benefits of a greater optimal use of the existing system will not take effect, since only customers who can easily modulate and benefit from this tariff will accept to join. Furthermore, we should not forget that part of the stimulus to modulation, existing in the current tariffs for large customers, is also being changed.

All these changes involve standardizing and enabling the approval of a new generation of smart meters, which has not yet occurred. After publication of the minimal features and specifications required by regulation, all manufacturers shall have their equipment - not only hardware but also software - and prototypes certified by INMETRO, which will require time and investment of the industry.

Distribution Utilities will also have to prepare their computer systems to the new rules, and make significant investments in replacement of meters to smart ones, and associated systems. Furthermore, after some time there will be increased costs and management complexity, and medium-term risks of loss of revenue, since in the retail market only the customers who can reduce their bills shall join the new system. In particular, companies should give special attention to possible losses increase since electronic meters and the new tariffs will surely bring new types of fraud, more sophisticated and made only at certain time periods, in the “modulation” of the most expensive rates.

**Prepayment - still undefined**

While the regulation continues to create new rules that require sophisticated and costly changes, Brazil continues to leave behind important tools and solutions, such as the prepayment technology.

Only in September 2011, the subject, overlooked for many years, was put back on the regulation agenda at a seminar held by ANEEL, bringing international experiences. The energy prepayment is an old, already tested and approved method by several utilities in Brazil.

The system is appreciated both by customers who have experienced it and the utilities. Not only for low-income customers or customers with a history of insolvency: Since the 90’s, there are implementations in Brazil with a high level of acceptance among medium- and high-income customers and utilities.

Additionally, the prepayment method promotes energy efficiency, since it is simple and flexible to use and indicates the customers their use tariff and consumption status, similarly to a fuel level panel in all existing vehicles.

Widely used in several countries in Latin America, ANEEL recently authorized the realization of new tests in some utilities, but the Agency should consider to quickly anticipate large-scale implementation of the system in Brazil, since it is unacceptable that the topic remains without regulation, despite the international experience and the general agreement that the system is appropriate and suitable to Brazil’s reality.

**A recent milestone - the regulation of small-sized distributed generation**

Extremely conservative in prepayment and very progressive in other topics, Brazil writes its name as the pioneer in the regulation of small-sized distributed generation, including hydro, wind, and solar installations, always renewable, with up to 1 MW.

Micro-generation is a unit of up to 100 KW that is directly connected to the consumer unit in the distribution system; mini-generation is a unit of 100 to 1000 KW (1 MW), also connected to the consumer unit.

Energy consumers will be able to easily build their own power generation facilities to partially or fully supply their consumption, keeping connection with the distributor to receive energy services from the public network when their generator fail or work partially. If there is excess generation, the surplus may be injected into the energy distributor system in order to be used to supply other customers.

To promote and encourage the use of such methods, ANEEL established a compensation system, also called “Net Metering”,...
The customer’s energy production is still to be defined by the Federal Revenue Service and the Treasury Departments of the states. This is something that can effectively undermine the practical application of new regulation.

This new regulation provides, in practice, the need to adapt procedures, processes and systems, as well as new concerns for distributors, especially regarding the appropriate remuneration for their systems and services, which should be guaranteed only by the cost of availability. If the compensation is not appropriate, there may be additional charges to consumers, as it must certainly occur with the TUSD, which will no longer be collected because of the discount in the ventures of the sources with photovoltaic solar origin.

Furthermore, since those technologies are still in maturing and dissemination stage, it will be hard to predict and control the amounts being installed, and it will be necessary to anticipate measurement to avoid the potential increase in fraud and commercial losses, with consumers claiming that their consumption decreased due to the installation of their own Generation Source.

Efficient solutions for energy storage are growing substantially worldwide, and shall be available shortly. This will make the individual generation even more attractive in a residential scale, because the customer will be able to generate energy during the day to use at night, in the most costly hours, for example. This should make the captive market further restricted in the coming years, substantially changing the future role of the energy distribution. With the popularization of micro-generation and energy storage, the distributors, which are today the only electricity supplier in the regulated markets, will then supply only the surplus. They should, however, explore new value-added services and management, as allowed by regulation.

**Major shifts in the 3rd cycle of Tariff Revision**

Lastly, other important changes are being introduced in the 3rd cycle of tariff revision of the electricity distributors, which will directly affect the revenues of the utilities, and hence their investment capacity.

Among many important changes, to the scope of this article the following will be highlighted:

- There will be direct capture of the quality of service rendered in factor X - companies that do not render a good service within the criteria defined by the regulator in each individual case will be fined in up to 1% of revenues approved in portion B, having a lower rate. Conversely, companies that used to have indexes below ANEEL expectations and currently present improvements can have their revenue increased by up to 1% of portion B. The ranking established by ANEEL to classify distributors, though, not only monitors calculated indexes, but also tracks the limits deemed appropriate by the Agency for each company. Such indexes are fairly questioned, since they are not established by a reproducible methodology, comparable between the companies. Furthermore, companies that used to have much
better performance than the recommended as limits by ANEEL, and deteriorate such current levels, shall be penalized under the same rule, because the agency will progressively reduce these limits.

- Until the 2nd tariff revision cycle, ANEEL used the concept to compare each distribution company O&M costs structure with a “reference company”, which ideally would be a model company with similar service area, assets and market structures. For the third cycle the reference company was frozen, i.e., the costs of business for the operation of services were frozen, while the contract obligations grew steadily in recent years, including the introduction of new indexes to be calculated, associated with progressive fines for limit exceeding.

- The adoption of excellence benchmarks looking at the collective past of the distributors - rather than the individual future of the market and the circumstances of each company - the Agency started to adopt comparisons between companies, foreseeing costs adequate for the future, and that changed the whole logic of the business, since the models are not able to consider the significant increase in obligations that has been systematically attributed to the companies.

- The reduction of the net WACC – weight average capital costs - from 9.95% to 7.5% - i.e., the profitability approved for the remuneration of the companies’ equity will be reduced, among other reasons, due to the understanding that there was significant reduction in the country risk (although, due to the fruitful creativity for creating new rules and obligations, according to the understanding of many, did not reduce the actual regulatory risk), and ANEEL is thereby signaling to society in search for greater reasonability of rates.

- The capture of other revenues than electricity services will also be destined to reduce the rates, a fact that discourages companies to seek other revenues in the new business arising from the smart grid modernization, since those other revenues will be 90% intended to the reasonability rate. Here ANEEL is missing the sensitivity to review this position and start breaking the tariffs link, so that companies can accomplish the modernization of their systems and anticipate a minimum security of guaranteed returns and stability of rules, relying only on the risks of their investment in technology and the regulatory certainty of their potential recovery, in case the business plan proves hopeful.

Of all these rules, the significant reduction in revenue and, consequently, in the investment and indebtedness capacity required to enable technological transformation, and the reduction in incentives for business transformation with the generation of other revenues are very strong barriers established in regulation, which can and surely will jeopardize the implementation of intelligent networks in the country, unless they are revised.

- Among necessary recommendations for Brazil, the number one priority is the consideration of new smart grid technologies in the National Energy Plan, seeking to establish GOVERNMENTAL STRATEGIES, VISION and COMMITMENT in the long-term, involving various Ministries, with the presence of a sponsor. Taking as example several countries that elected the energy and its efficient use as an absolute priority for safety, comfort and development, the Brazilian President, Dilma Roussef, considering her past as a professional in the energy sector, should be a major mentor and sponsor of this view.

All regulation arising from this governmental strategy should be preceded by an economic impact assessment and absolute transparency in the allocation of costs, responsibilities, opportunities, and benefits throughout the sector’s production chain, a fact that requires, before implementation, enhancement and complementation in some regulations already published.

One foundation for the transformation and modernization is the stability of rules and regulation, so that the companies may be sure of the return on investments required for the infrastructure, which are significant in amount, but depreciated only in the long run. Likewise, if the Government decides to promote the transformation with investments provided by the companies, it should offer incentive for the search of new revenues, and it should also prioritize the mechanisms that promote the breaking of the link between sales and revenues, so that the companies can see as a matter of survival the energy efficiency, the implementation of government policies, and the new business opportunities without the current captive market.

Finally, the Policy and the Governmental strategies would end up offering and adjusting the sector’s funding capacity to implement the modernization.

Conclusions

Within a technological transformation that is global, Brazil has only recently started formatting the necessary governmental policy for the sector, led clearly and unequivocally among the Ministries. This policy, however, must still be defined and put in place, with effective leadership and a lot of communication to the agents.

Meanwhile, ANEEL should continue seeking to act with modernity and transparency, submitting and implementing progressive resolutions for the agents’ assessment, and throughout time ANEEL’s actions should be aligned to leverage the necessary governmental policy.

Still, the systematic annual increase of new duties for utilities already requires from companies significant investments in technology and management in the coming years.

However, the rules of the 3rd cycle bring significant reduction in revenue and investment and indebtedness capacity for these companies, as well as disincentive to seek new revenues.

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After all, what are the next steps? What does Brazil need?
The already announced changes in tariff structure need to be better evaluated in terms of economic impact to the different segments of customers and the utilities, in a financial and economic stability vision in the long run. The regulation of micro-generation in effect brings the beginning of the end of the regulated market for distributors and places Brazil in the 21st century, while, however, the definition of important fiscal issues end up being postponed.

Many simultaneous changes will gradually come into play until 2014, which brings the need for improved joint assessment of impacts on the industry and, simultaneously, the need to start educating the consumers on these topics.

The arrival of Smart Grid is both inevitable and only a matter of time: We need to get ready and create the regulatory environment and the economic models to make it sustainable and viable.

For this reason, the Smart Grid Latin American Forum will continue to fulfill its important role of including agents in these discussions with impartiality, independence, neutrality, inclusiveness and diligence, offering its contribution to the Latin American society, and agents and society will be able to participate and contribute to the discussion about the modernization of current electricity systems that are justifiable under a technical, economical, environmental and social view.

In 2012, the Forum Conference theme will be: “The commitment of Governments and Public-Private Partnerships in conducting programs for Technological Transformation for Smart Energy”, and will be held on 27-29 November in São Paulo, Brazil.

**About the author**

*CYRO VICENTE BOCCUZZI*, founded and is currently the President of the Smart Grid Latin American Forum. He has a 30-year experience in the Energy sector, having participated in the governing body of companies and organizations of the sector in Brazil and overseas.

[www.smartgrid.com.br](http://www.smartgrid.com.br)

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# SMART GRID FORUM/2012

**5th SMART GRID LATIN AMERICAN FORUM**

**November 27, 28 and 29, 2012**

"The engagement of Governments and Public-Private partnerships in conducting Technological Transformation Programs into Smart Energy"

Frei Caneca Conventions Center  
São Paulo - Brazil

### Selected Event

**International Workshop**

"Integration of Sensing, Control, and Measurement in Utilities and Infrastructure Applications"

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