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**The dichotomy between smart metering and the protection of consumer's personal data in Brazilian Law**

**A dicotomia entre medidores inteligentes e a proteção dos dados pessoais dos consumidores no Direito brasileiro**

Lucas Noura Guimarães

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DIREITO E MUNDO DIGITAL

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# The dichotomy between smart metering and the protection of consumer's personal data in Brazilian Law\*

## A dicotomia entre medidores inteligentes e a proteção dos dados pessoais dos consumidores no Direito brasileiro

Lucas Noura Guimarães\*\*

### ABSTRACT

This paper investigates the intersection between the goal of energy efficiency, by means of smart meters, and the protection of power consumers' personal data. Since energy data are collected and processed by distribution utilities, there is an urgent need to verify in what measure the right to privacy is (still) fulfilled in that matter. By analyzing and evaluating ANEEL's Normative Resolution n° 502/2012 on electronic meters, the Draft Bill n° 3337/2012 and Senate Bill n° 84/2012 on smart grids, and the Draft Bills n° 4060/2012 and n° 5276/2016 on personal data protection, this paper expects to lay some introductory thoughts on a still undeveloped matter, that tends to grow in importance, as the smart meter technology spreads. The paper observes that the Brazilian legal framework still lacks a detailed regulation regarding the protection of personal data. On the other hand, ANEEL's Normative Resolution is too general and leaves to interpretation important questions related to the legal treatment of energy data. Analyzing recent legal developments, the paper further concludes that, while two Draft Bills are regarded as insufficient to address the matter highlighted in this paper, one Draft Bill on personal data's protection might fill the regulatory gap. Special attention should be drawn towards the assumption of energy data as personal data and towards the relation between the efficiency of smart metering systems and the right to privacy, since the smartness of the meters depends on the amount of data collected and processed.

**Keywords:** Smart metering. Demand response. Data protection. Right to privacy.

### RESUMO

Este artigo investiga a interseção entre o objetivo da eficiência energética, obtido via medidores inteligentes de energia, e a proteção dos dados pessoais dos consumidores de eletricidade. Uma vez que os dados referentes ao consumo de energia são coletados e processados pelas distribuidoras de energia, há urgente necessidade em se verificar se o direito à privacidade (ainda) encontra-se respeitado. Ao analisar e avaliar a Resolução Normativa

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ANEEL nº 502/2012 sobre medidores eletrônicos, o Projeto de Lei nº 3337/2012 e o Projeto de Lei do Senado nº 84/2012 sobre medidores inteligentes, e os Projetos de Lei nº 4060/2012 e nº 5276/2016 sobre proteção de dados pessoais, o artigo almeja apresentar questões introdutórias a respeito de um tema ainda pouco desenvolvido, o qual tende a ganhar em importância, à medida em que a tecnologia se espalhe. O artigo observa que o arcabouço jurídico brasileiro ainda carece de uma regulação detalhada relacionada à proteção de dados pessoais. Por outro lado, a Resolução Normativa da ANEEL é genérica e deixa à interpretação questões importantes relacionadas ao tratamento dos dados relacionados à energia. Ao analisar desenvolvimentos legislativos mais recentes, o artigo ainda conclui que, enquanto dois projetos de lei são ainda insuficientes para endereçar o problema sublinhado neste artigo, um projeto de lei sobre proteção de dados pessoais pode preencher adequadamente a lacuna regulatória. Atenção especial deve ser dada à consideração de “dados de energia” como “dados pessoais” e à relação entre a eficiência de medidores inteligentes e o direito à privacidade, uma vez que a inteligência dos medidores depende da quantidade de dados coletados e tratados.

**Palavras-chave:** Medidores inteligentes. Resposta da demanda. Proteção de dados. Direito à privacidade.

## 1. INTRODUCTION

The promotion of renewable energy sources seen worldwide has forced the energy systems to evolve in order to accommodate increasing amounts of intermittent energy sources, mainly solar and wind. Considering that the sun light and winds are not available every time, an energy matrix highly dependent on these sources brings the risk of jeopardizing energy security, that is, the delivery of affordable, continuous and reliable electricity to consumers<sup>1</sup>.

In order to ensure energy security under a scenario with increasing penetration of renewable energies, it is of utmost importance, through measures targeted to manage the demand side, to make the demand for electricity as flexible as the power generation. The demand should adapt and respond to the supply intermittency, smoothing the load curve and avoiding extreme price peaks.

Therefore, the implementation of smart grids enables, at the same time, the integration of renewable energies in the network, the preservation of the overall reliability of the system and the postponement of investments in new infrastructure, bringing environmental and energy-efficiency-related benefits to society.

Considering that, smart metering, which is a component of smart grids, is very helpful to raise the consumer's awareness for the fluctuation of the power production and the volatility of the power price by means of offering load- and time-dependent tariffs and providing continuous information<sup>2</sup>.

1 The discussion about the concept of energy security is broad and extrapolates the scope of this paper. Regarding this matter, cf., among others, WINZER, Christian. Conceptualizing energy security. *EPRG Working Paper*, University of Cambridge, n. 1123, 2011; MÜLLER, Friedemann. Strategische Bedingungen für die Nutzung der Weltenergieerreserven: Energiesicherheit und internationale Sicherheitspolitik. In: LEIBL, Stefan; LIPPERT, Michael; WALTER, Christian. *Die Sicherung der Energieversorgung auf globalisierten Märkten*. Tübingen: Mohr Siebeck, 2007; GLACHANT, Jean-Michel; AHNER, Nicole. Is energy security the objective of EU energy policy? In: VINOIS, Jean-Arnold (Org.). *EU Energy Law: The security of energy supply in the European Union*. Holand: Claeys & Casteels, 2012. v. 6; DYER, Hugo; TROMBETTA, Maria Julia. The concept of energy security: broadening, deepening, transforming. In: DYER, Hugo; TROMBETTA, Maria Julia (Org.). *International Handbook of Energy Security*. Cheltenham: Edward Elgar, 2013; CAMERON, Peter. *Competition in energy markets: law and regulation in the European Union*. 2. ed. England: Oxford, 2007; LÖSCHEL, Andreas; MOSLENER, Ulf; RÜBBELKE, Dirk. Indicators of energy security in industrialised countries. *Energy Policy*, v. 38, 2010.

2 ROSTANKOWSKI, Anke. Die Ausgleichsmechanismus-Verordnung und der Ausbau erneuerbarer Energien. *Zeitschrift für Neues Energierecht – ZNER*, v. 2, p. 131, 2010; VOGELANG, Michael; VOLLMERT, Singy. Der Ausbau erneuerbarer Energien – Netzstruktur, Systemintegration und Marktdesign. *Zeitschrift für KMU und Entrepreneurship – ZjKE*, v. 3, p. 190, 2012; BENZ, Steffen. Energieeffizienz durch intelligente Stromzähler – Rechtliche Rahmenbedingungen. *Zeitschrift für Umweltrecht – ZUR*, v. 10, p. 458, 2008.



On the other side, however, smart metering makes not only the remote control of the power consumption (remote de-energization and re-energization) possible but allows the detailed mensuration of the power consumption and the timely behavior of the individual power demand<sup>3</sup>. Considering that, they are capable of gathering a large amount of information from the consumers and from their most privacy-sensitive place: home<sup>4</sup>. This feature poses questions related to legal protection of personal data, especially in terms of confidentiality, privacy, correct use of the gathered data, protection of the transmitted data against possible cyber-attacks, sabotage, among others<sup>5</sup>.

Considering the fact that access to personal data regarding electricity consumption is becoming an essential tool to promote energy efficiency and, consequently, energy security, there is a growing necessity to modulate the concept of privacy and its notion as a fundamental right<sup>6</sup>. An absolute right to privacy<sup>7</sup> would undermine the goal of energy efficiency, to the detriment of collective interests. It is of utmost importance, then, to investigate how, when, by whom and under which conditions the fundamental right to privacy can be limited.

In order to seek answers for this conflictive dichotomy and by pointing regulatory gaps in that matter, this paper aims to analyze the recent developments in the Brazilian legal framework. Especially for Brazil, the research is relevant due to the fact that from 2018 on, the installation of smart meters will be mandatory for consumers that adopt the white tariff regime<sup>8</sup>. Entering into such tariff regime without a regulation on data protection and counting only with a vague Normative Resolution from ANEEL brings a risk to a violation of the right to privacy, since several collected personal data can be misused or intercepted.

3 PIELOW, Johann-Christian. Wie effizient ist das Regelwerk zur Energieeffizienz? In: CREMER, Wolfgang; PIELOW, Johann-Christian (Org.). *Probleme und Perspektiven im Energieumweltrecht*. Stuttgart: Boorberg, 2009. p. 193; BENZ, Steffen. Energieeffizienz durch intelligente Stromzähler – Rechtliche Rahmenbedingungen. *Zeitschrift für Umweltrecht – ZUR*, v. 10, p. 458, 2008.

4 Through the real-time electricity mensuration, it is possible to know the daily consumption and to identify specific demand profiles, as reported in the media, cf. VALOR ECÔNOMICO. *Setor de energia inova no relacionamento com consumidores*. 26 jul. 2017. Available at: <<http://www.valor.com.br/empresas/5053724/setor-de-energia-inova-no-relacionamento-com-consumidores>> VALOR ECÔNOMICO. *Redes inteligentes começam a avançar pelo Brasil*. 28 ago. 2017. Available at: <http://www.valor.com.br/empresas/5096398/redes-inteligentes-comecam-avancar-pelo-brasil>>.

5 As recently reported in the media, available at: <https://www.symantec.com/connect/blogs/dragonfly-western-energy-sector-targeted-sophisticated-attack-group>. Accessed in: 26 Sept. 2017; REBOUÇAS, Roberto. *Empresas de energia ignoram riscos de ameaças virtuais*. 2017. Available at: <<http://brasilenergia.editorbrasilenergia.com/daily/bec-online/eletrica/2017/09/artigo-empresas-de-energia-ignoram-riscos-de-ameacas-virtuais-476022.html>>. Accessed in: 26 Sept. 2017.

6 Protection of privacy can be found in the international level by Article 12 of the Universal Declaration of Human Rights (1948) and Article 17 of the International Covenant on Civil and Political Rights (1966). Besides that, virtually all western democracies protect not only the right to privacy but also the personal data. As an example, the Charter of the Fundamental Rights of the European Union guarantees, on one hand, the right to respect for his or her private life, home and communications (Article 7 CFR), and on the other, the right to the protection of personal data, which should be processed fairly, for specified purposes and on the basis of the consent of the person concerned. The right of access to data and the right to have it rectified are also guaranteed (Article 8 CFR). cf. BAUMGART, Max. A (legal) challenge to privacy: on the implementation of smart meters in the EU and the US. In: LEAL-ARCAS, Rafael; WOUTERS, Jan (Org.). *Research handbook on EU Energy Law and Policy*. England: Edward Elgar, 2017. p. 353.

7 BONNICI, Jeanne. Exploring the non-absolute nature of the right to data protection. *International Review of Law, Computers & Technology*, v. 28, p. 137, 2014; FUSTER, Gloria González; GELLERT, Raphaël. The fundamental right of data protection in the European Union: in search of an uncharted right. *International Review of Law, Computers & Technology*, v. 26, p. 74, 2012. Cf., more broadly, MCKENNA, Eoghan; RICHARDSON, Ian; THOMSON, Murray. Smart meter data: balancing consumer privacy concerns with legitimate applications. *Energy Policy*, v. 41, p. 807, 2012.

8 The “white tariff” is regulated by ANEEL’s Normative Resolution nº 733/2016. It is a tariff system where the energy price varies throughout the day (peak, intermediary and off-peak hours), allowing the consumer to know when the energy price is cheaper and when it is more expensive. As a result and with the help of smart meters, consumers can, by means of changing their consumption habits, lower their energy bills and distribution utilities can postpone new investments in infrastructure. It is worth noting that the Brazilian government intends to open the possibility for distribution utilities to offer different energy prices on an hourly basis, according to the Technical Note nº 5/2017/AEREG/SE from the Ministry of Mines and Energy. p. 23. Available at: <[http://www.mme.gov.br/web/guest/consultas-publicas?p\\_p\\_id=consultapublicaexterna\\_WAR\\_consultapublicaportlet&p\\_p\\_lifecycle=0&p\\_p\\_state=normal&p\\_p\\_mode=view&p\\_p\\_col\\_id=column-1&p\\_p\\_col\\_count=1&consultapublicaexterna\\_WAR\\_consultapublicaportlet\\_consultaId=33&consultapublicaexterna\\_WAR\\_consultapublicaportlet\\_mvcPath=%2Fhtml%2Fpublico%2FdadosConsultaPublica.jsp](http://www.mme.gov.br/web/guest/consultas-publicas?p_p_id=consultapublicaexterna_WAR_consultapublicaportlet&p_p_lifecycle=0&p_p_state=normal&p_p_mode=view&p_p_col_id=column-1&p_p_col_count=1&consultapublicaexterna_WAR_consultapublicaportlet_consultaId=33&consultapublicaexterna_WAR_consultapublicaportlet_mvcPath=%2Fhtml%2Fpublico%2FdadosConsultaPublica.jsp)>. Accessed on: 26 Sept. 2017.

The paper is divided into three parts. By means of conceptualizing smart metering and introducing the main principles that guide data protection, the first part elucidates the conflict that arises between smart metering and data protection, when the (fundamental) right to privacy gets in the way of the quest for more energy efficiency. The second part of the paper critically analyzes the legal developments made so far in the regulation of smart grids and smart meters, on one side, and the regulation of personal data protection, on the other. The Brazilian Agency for Electric Energy – ANEEL enacted Normative Resolution n° 502/2012 on electronic meters<sup>9</sup>, which is the only piece of legislation that (vaguely) addresses the legal aspects surrounding the implementation of smart meters. Within the scope of the second part are also the Draft Bills still under discussion that provide for the establishment of a smart meter roll-out and the protection of personal data. Lastly, concluding remarks are drawn.

While analyzing in what depth the Brazilian legal texts<sup>10</sup> regulate smart metering and data protection, and while evaluating if they are successful in solving the dichotomy between the goal of energy efficiency and the protection of a fundamental right, this paper lays some thoughts and draws some conclusions on a still undeveloped matter, that on the other hand tends to grow in importance, as the smart meter technology spreads.

## 2. THE CONFLICT BETWEEN SMART METERING AND DATA PROTECTION

The measuring systems and devices can be used for various measuring functions, such as for reasons of the public interest, for health protection, public security and order, environmental protection, consumer protection, as well as for the levy of taxes and dues and for fair trade<sup>11</sup>.

Regarding the measuring instruments of the power sector, they must guarantee a high level of protection, so all the persons concerned can trust in the measurements' results, on one side, and to guarantee that the data will only be used and stored for the purpose it was designed for, on the other side.

The so-called “measuring security” encompasses the metrology and the security of the measured data<sup>12</sup>, being the latter the object of this paper.

### 2.1. Smart metering: concept and applications

There is a myriad of different concepts for smart grids and smart metering<sup>13</sup>. It is not the goal of this paper to bring all definitions and concepts together, nor to suggest the best one. Nevertheless, some of them are brought in this section in order to help elucidate how such a system conflicts with the legal principle of the protection of the consumer's data.

Smart grids are associated with the integration of innovative technologies, products and services, such as sensors, actuators, microprocessors, meters, telecom instruments and other intelligent devices that allow for a better management and monitoring of the whole electricity network, from the power plant to the final energy use in households<sup>14</sup>.

9 The expressions “electronic”, “intelligent” and “smart” meters are used indistinctly throughout this paper.

10 In order to benefit from other jurisdiction, this paper brings, in some footnotes, the extensive work already undertaken at the European level to create a comprehensive regulatory environment regarding data protection.

11 Recital 2 of the Directive 2004/22/EC.

12 Cf., MOREIRA, Josilene Aires; SCETTINO, Stevon; SILVA, Ricardo Moreira da. Aspectos de segurança em smart grid. In: *Encontro Nacional de Engenharia de Produção*, 33., Salvador-BA, Brasil, 2013. p. 9.

13 HEINLEIN, Björn. Rechtsrahmen von Smart Grids und Smart Markets. In: AICHELE, Christian; DOLESKI, Oliver D. (Org.). *Smart Market: vom Smart Grid zum intelligenten Energiemarkt*. Wiesbaden: Springer Vieweg, 2014. p. 57; ANGENENDT, Nicole; BOESCHE, Katharina Vera; FRANZ, Oliver Helge. Der energierechtliche Rahmen einer Implementierung von Smart Grids. *Recht der Energiewirtschaft – RdE*, p. 117, 2011.

14 OLEDO, Fábio de Oliveira. Redes elétricas inteligentes e a ruptura de paradigmas tecnológicos do setor elétrico. In: ROCHA,

According to art. 2 of the Regulation 347/2013/EU on guidelines for trans-European energy infrastructure, for example, smart grid means “an electricity network that can integrate in a cost efficient manner the behavior and actions of all users connected to it, including generators, consumers and those that both generate and consume, in order to ensure an economically efficient and sustainable power system with low losses and high levels of quality, security of supply and safety”<sup>15</sup>. They can also be described as an upgraded electricity network to which two-way digital communication streams between supplier and consumer, intelligent metering, smart appliances, electric vehicles, and monitoring systems have been added<sup>16</sup>.

Broadly speaking, smart grids are designed to better facilitate the connection and operation of generators of all sizes and technologies, allow consumers to play a part in optimizing the operation of the system; provide consumers with more information and options for choice of supply; significantly reduce the environmental impact of the whole electricity supply system; maintain or even improve the existing high levels of system reliability, quality and security of supply; and maintain and improve the existing services efficiently<sup>17</sup>.

Regarding smart meters, they could be conceptualized as “an electronic system that can measure energy consumption, providing more information than a conventional meter, and can transmit and receive data for information, monitoring and control purposes, using a form of electronic communication”<sup>18</sup>. They are one of the main components of the smart grids and besides being the main interface between distribution utilities and the consumers, they also have other functionalities, such as better informing the consumers about their energy consumption, reduce the energy theft, act as a sensor to identify anomalies in the power supply and protect home devices from eventual damages caused by voltage fluctuation in the power grid<sup>19</sup>.

They are digital versions of traditional mechanical meters that include a two-way communication capacity. They can transmit information directly from the metered property to the utility company in near-real time and with much higher granularity of data<sup>20</sup>.

As it can be seen, smart meters are more defined by what they do instead of by what they are. They allow for an efficient integration of the behavior and actions of all users of the grid by achieving a reduction of the total energy consumption, as well as by a specific relocation of the energy demand<sup>21</sup>. As a result, it contributes to energy conservation and energy security. All these benefits come with a drawback: the collision with the right to privacy.

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Fábio Amorim da (Org.). *Temas relevantes no direito de energia elétrica*. Rio de Janeiro: Synergia, 2013. t. 2. p. 312. BOCCUZZI, Cyro Vicente. Smart grid e o big brother energético. *Metering International*, v. 1, p. 10, 2010.

15 Regulation (EU) 347/2013 of the European Parliament and of the Council of 17 April 2013 on guidelines for trans-European energy infrastructure and repealing Decision 1364/2006/EC and amending Regulations (EC) 713/2009, (EC) 714/2009 and (EC) 715/2009. OJ L 115 of 25.04.2013, p. 39.

16 EUROPEAN COMMISSION. *Cyber Security of the Smart Grids*. Paper produced by the Expert Group on the Security and Resilience of Communication Networks and Information Systems for Smart Grids. Summary Report, p. 5, 2013.

17 EUROPEAN COMMISSION. *Cyber Security of the Smart Grids*. Paper produced by the Expert Group on the Security and Resilience of Communication Networks and Information Systems for Smart Grids. Summary Report, p. 5, 2013; PEREIRA, Breno Pompeu Carvalho. *Análise de eficiência energética em rede inteligente de energia elétrica*. 2015. Trabalho de Conclusão de Curso (Especialização) - Universidade Federal de Santa Maria, Rio Grande do Sul, 2015. p. 14; FRACARI, Fabiano; SANTOS, Iverton dos; SANCHEZ, Gustavo. Smart Grid: uma nova forma de controle de Energia Elétrica. *Rev. de Empreendedorismo, Inovação e Tecnologia*, v. 2, p. 16, 2015.

18 Commission Proposal or a Directive of the European Parliament and of the Council on common rules for the internal market in electricity (recast). COM (2016) 864 final/2.

19 TOLEDO, Fábio de Oliveira. Redes elétricas inteligentes e a ruptura de paradigmas tecnológicos do setor elétrico. In: ROCHA, Fábio Amorim da (Org.). *Temas relevantes no direito de energia elétrica*. Rio de Janeiro: Synergia, 2013. t. 2. p. 312; RIVERA, Ricardo; ESPOSITO, Alexandre Siciliano; TEIXEIRA, Ingrid. Redes elétricas inteligentes (smart grid): oportunidade para adensamento produtivo e tecnológico local. *Revista do BNDES*, v. 40, p. 47, 2013.

20 PAPAKONSTANTINO, Vagelis; KLOZA, Dariusz. Legal protection of personal data in smart grid and smart metering systems from the European perspective. In: GOEL, S. et al. *Smart grid security*. London: Springer-Verlag, 2015. p. 41.

21 BENZ, Steffen. Energieeffizienz durch intelligente Stromzähler – Rechtliche Rahmenbedingungen. *Zeitschrift für Umweltrecht – ZUR*, v. 10, p. 458, 2008; STASCHUS, Konstantin. The active role of TSOs and their association ENTSO-E to ensure, today and tomorrow, the security of electricity supply of 532 million citizens. In: VINOIS, Jean-Arnold (Org.). *EU Energy Law: The security of energy supply in the European Union*. Holland: Claeys & Casteels, 2012. v. 6. p. 164.

## 2.2. Data protection

Although the smart metering allows for a greater, more accurate and detailed knowledge regarding the conditions of the power demand, as well as the operational status of the power network, it is also true that this new communication platform increases substantially the chances of possible flaws, attacks and errors, demanding, thus, the implementation of more advanced security systems<sup>22</sup>.

Considering the many possible focuses where security concerns can be targeted to – distribution utilities, network systems, logistics of the smart meters' installation or invoicing –, one is especially keen to Law: consumers and their bill management, including the availability of payment data and privacy of the personal identification data<sup>23</sup>.

Not only in terms of cyber engineering are standardizations and regulations<sup>24</sup> necessary for smart metering, but also in regard to Law, since this technique allows distribution utilities to monitor highly detailed information about the energy use by the consumers. Considering that, concerns are raised around the custody of these information and consumer privacy, fact of which demand a legal response.

Data protection can be analyzed according to three approaches or principles: confidentiality, availability and integrity. The principle of confidentiality addresses the (legal) forms to maintain private the information gathered, avoiding the transformation of the smart metering systems into an instrument invasive to consumers' privacy.

With smart meters will be possible to identify if a house is empty or not, at a given moment, or, considering a power consumption level lower as usual, if the inhabitant is on vacation or sick; considering a power consumption level higher as usual, it will be possible to infer if the house has guests or how many people indeed live in the house, for social security reasons; at what time inhabitants of the house wake up, or use their showers, or when they go to sleep<sup>25</sup>; besides that, it will be possible to assess the functioning of the electric devices of a house, enabling the identification of efficiency losses and the consequent suggestion to change them to more efficient and modern ones. Information regarding consumption habits is already of great interest for some companies, especially in the media market. The diffusion of the profile and consumption habits of the electricity consumers evokes questions concerning people's security, their privacy and consent. Rules are then necessary to protect consumers against the inappropriate use and diffusion of their behavior data<sup>26</sup>.

Legal protection of the energy consumers' data is necessary not only because of the confidentiality principle, but also in terms of the availability of the data, i.e, which data is available to which professionals. As stated before, smart meters allow for the transmission of sensible consumer information, as well as the remote control of some electric devices. To make that possible, data need to flow from the houses to the distribution utilities (and vice-versa), which makes it subject to interception, misuse, leakage or hacking<sup>27</sup>. Hence, legal rules should establish minimum safety requirements for telecom and information technology systems.

22 BOCCUZZI, Cyro Vicente. Smart grid e o big brother energético. *Metering International*, v. 1, p. 10, 2010.

23 BOCCUZZI, Cyro Vicente. Smart grid e o big brother energético. *Metering International*, v. 1, p. 10, 2010.

24 For an analysis of different regulatory models for data protection, cf. GUIDI, Guilherme Berti de Campos. *Modelos regulatórios para proteção de dados pessoais*. 2017. Available at: <<https://itsrio.org/wp-content/uploads/2017/03/Guilherme-Guidi-V-revisado.pdf>>. Accessed in: 30 Oct. 2017.

25 GUCKELBERGER, Annette. Smart Grids/Smart Meter zwischen umweltverträglicher Energieversorgung und Datenschutz. *Die Öffentliche Verwaltung – DÖV*, v. 16, p. 618, 2012; HORNUNG, Gerrit; FUCHS, Katharina. Nutzerdaten im Smart Grid: zur Notwendigkeit einer differenzierten grundrechtlichen Bewertung. *Datenschutz und Datensicherheit – DuD*, v. 36, p. 22, 2012.

26 BOCCUZZI, Cyro Vicente. Smart grid e o big brother energético. *Metering International*, v. 1, p. 11, 2010. For an analysis on the importance and relevance of metadata, cf. MENEZES NETO, Elias Jacob; MORAIS, Jose Luis Bolzan de; BEZERRA, Tiago José de Souza Lima. O projeto de lei de proteção de dados pessoais (PL 5276/2016) no mundo do big data: o fenômeno da *dataveillance* em relação à utilização de metadados e seu impacto nos direitos humanos, in: *Revista Brasileira de Políticas Públicas*, v. 7, n. 3, 2017.

27 BOCCUZZI, Cyro Vicente. Smart grid e o big brother energético. *Metering International*, v. 1, p. 11, 2010.

A third principle that should be addressed within the scope of regulatory measures targeted to safeguarding the power consumers' data relates to integrity. While availability concerns with who have access to the data, integrity concerns with which data is transmitted. It should be guaranteed that exactly what is measured is also received by the distribution utility, without any alterations, manipulations or suppressions of the transmitted data<sup>28</sup>. Although still recent for the case of smart meters, there is already a broad concern regarding sabotage and terrorism threats towards critical infrastructures<sup>29</sup>, such as those involved in the power transmission.

The regulation of smart meters, especially in the field of consumers' privacy and of information security, should, therefore, provide adequate answers about the definition of minimum requirements and necessary precautions in the telecommunication systems and regarding IT, so that the development of this technology does not collide with the guarantee of the rights related to data protection.

### 3. LEGAL DEVELOPMENTS IN BRAZIL

After migrating from an almost-exclusive-hydro to a hydro-thermal energy matrix, and after watching the fast development – and success – of the wind industry in the country, the Brazilian energy landscape is changing into a more flexible one, where demand matters. Profiting from the benefits of smart metering, especially the improvement of the power supply quality, minimization of energy losses and lowering of the operational costs<sup>30</sup>, some distribution utilities have already started changing the meters, Light Company being an example, with more than 1 million smart meters installed in the city of Rio de Janeiro. Those meters are connected to Light's Control and Measurement Center and they are able to measure consumption and power generation from prosumers<sup>31</sup>.

Nevertheless, the Brazilian smart meter roll-out has not yet received the necessary “legal push” to flourish widely and bring the benefits it promises. Two normative texts from the Brazilian Energy Agency – ANEEL addressed directly and indirectly the issue concerning smart metering (II.1) and some draft bills seek to regulate more broadly the smart grids (II.2).

28 BOCCUZZI, Cyro Vicente. Smart grid e o big brother energético. *Metering International*, v. 1, p. 11, 2010.

29 Cf. Communication of the Commission “Critical Infrastructure Protection in the fight against terrorism” of 20.10.2004, which includes the energy infrastructure and networks in the category „critical infrastructure“. COM (2004) 702 final. Cf. Also the Council Directive 2008/114/EC of 8.12.2008 „on the identification and designation of European critical infrastructures and the assessment of the need to improve their protection“, which in Annex I classifies the infrastructures and installations destined to power production and transmission as “European critical infrastructure”. OJ L 345 of 23.12.2008, p. 75. Detailed about the protection of critical energy infrastructure, cf. PÉREZ, José Hoyos. The protection of critical energy infrastructures. In: VINOIS, Jean-Arnold (Org.). *EU Energy Law: The security of energy supply in the European Union*. Holland: Claeys & Casteels, 2012. v. 6. p. 75; ROGGENKAMP, Martha. Protecting infrastructure in order to guarantee supply security: critical infrastructure in the EU. In: ROGGENKAMP, Martha et al. (Org.). *Energy networks and the Law*. England: Oxford, 2012. p. 119. ZENIEWSKI, Peter; MARTÍNEZ-ANIDO, Carlo Brancucci; PEARSON, Ivan L. G. Framing new threats: the internal energy security of gas and electricity networks in the European Union. In: DYER, Hugo; TROMBETTA, María Julia. *International Handbook of Energy Security*. UK: Cheltenham, 2013. p. 55-65; CLINGENDAEL INTERNATIONAL ENERGY PROGRAMME. Security of supply in the run-up to the post-2020 period, *CIEP*, n. 4, p. 31-34, 2014.

30 Available at: <[http://www2.aneel.gov.br/cedoc/aren2012502\\_1.pdf](http://www2.aneel.gov.br/cedoc/aren2012502_1.pdf)>. Accessed on: 25 Sept. 2017; ROCHA, Maria Luiza do Valle; SILVA, Priscilla Maciel de Menezes. Medidores “inteligentes” de energia elétrica e a necessidade da *Good Governance* para salvaguardar o direito fundamental à proteção de dados pessoais. In: ROCHA, Fábio Amorim da (Org.). *Temas relevantes no direito de energia elétrica*. Rio de Janeiro: Synergia, 2013. t. 2. p. 693; LANIM, Hugo. *Medição eletrônica em baixa tensão: aspectos regulatórios e recomendações para implantação*. 2009. Dissertação (Mestrado) – Universidade de Brasília, Brasília, 2009. p. 96. Available at: <[http://repositorio.unb.br/bitstream/10482/4040/1/2009\\_HugoLamin.pdf](http://repositorio.unb.br/bitstream/10482/4040/1/2009_HugoLamin.pdf)>. Accessed on: 29 Sept. 2017.

31 VALOR ECONÔMICO. *Setor de energia inova no relacionamento com consumidores*. 26 jul. 2017. Available at: <<http://www.valor.com.br/empresas/5053724/setor-de-energia-inova-no-relacionamento-com-consumidores>>. Concerning the R&D national initiatives, cf. CENTRO DE GESTÃO E ESTUDOS ESTRATÉGICOS. *Redes elétricas inteligentes: contexto nacional*. Brasília: CGEE, 2012. (Série Documentos Técnicos, n. 16). p. 59-89; RIVERA, Ricardo; ESPOSITO, Alexandre Siciliano; TEIXEIRA, Ingrid. Redes elétricas inteligentes (smart grid): oportunidade para adensamento produtivo e tecnológico local. *Revista do BNDES*, v. 40, p. 76-78, 2013.

On the other hand, Brazil lacks so far an extensive normative regulation for data protection<sup>32</sup>, as seen, for example, in the European Regulation (EU) 2016/679<sup>33</sup>. Consulting the Brazilian Constitutional Text, and being data subjects also power consumers, it can be inferred that they are protected in their consumption relations<sup>34</sup>. Firstly, art. 5°, XXXII, obliges the State to promote consumer protection<sup>35</sup>. Considering its position in the Constitutional Text, it is a fundamental right, but it is also a general principle of the economic activities, according to art. 170, V, of the Constitution.

As a rule, privacy and secrecy are fundamental rights and cannot suffer restrictions. Art. 5°, X and XII, of the Constitution establishes that privacy, private life, honor and image are inviolable, as well as mail, telegraphic, telephonic and data privacy (as art. 7 of the Charter of the Fundamental Rights of the European Union). Any legislation that limits the exercise of those fundamental rights should be restrictively interpreted. Regarding information rights, everyone has the right to receive information of his/her private interest or of collective or general interest (art. 5°, XXXIII)<sup>36</sup>.

In the case of privacy violation – personal data obtained by illicit means, for example – the constitutional remedy *habeas data* can be filed. Doubtful is the possibility to file *habeas data* (art. 5°, LXXII) when personal data is obtained by legal means – energy data are provided, collected and processed by means of a contract –, but misused. Since in this case there would be a breach of trust, and since restriction to the fundamental right to privacy should be minimal, *habeas data* is the adequate constitutional remedy also against personal data misuse, even if processed by legal means<sup>37</sup>.

Considering the current legal vacuum regarding data protection, two Draft Bills (II.3) addresses the compatibility between the technological breakthroughs related to data collection and processing and the protection of the fundamental right to privacy, as shown below.

### 3.1. ANEEL's Normative Resolution n° 502/2012 on electronic meters

Already in 2012, ANEEL published Normative Resolution n° 502/2012, regulating electronic metering systems for households. The remote data transmission, from the data subject to the distribution utility, is addressed only in one article. The main focus of the Resolution is to oblige distribution utilities to inform

32 Only in 2012 were computer-related crimes defined in the Brazilian Penal Code, with the enactment of Law 12.737/2012. According to art. 154-A of the Penal Code, hacking of an electronic device with the purpose to obtain, adulterate or destroy data or information without explicit or tacit authorization of the device's owner is a criminal offense. That article can apply to cybercrimes in smart metering systems.

33 More recent legal developments – like the Regulation EU 2016/679 on the protection of personal data and the Directive EU 2016/1148 on network security and information systems – has shown the concern the European Union has on the topic of the personal data protection. But already before those mechanisms, some Directives and other non-binding instruments, invested with impulse character, already raised awareness towards the interaction between the smart metering roll-out and the safeguarding of consumers' rights, although it can still be said that some open questions remain, especially related to the integration of complex smart networks, the choice between cost-effective technologies, the validity of technical standards and also the acceptance of those new systems by the consumers, cf. Communication from the Commission "Smart Grids: from innovation to deployment" of 12.4.2011. COM (2011) 202 final, p. 4-5. The EU launched a Forum with the goal to consolidate the development and research of technologies within the scope of smart grids. Cf., Available at: <<http://www.smartgrids.eu/>>.

34 For a consumerist approach of power consumers' data protection, cf. ROCHA, Maria Luiza do Valle; SILVA, Priscilla Maciel de Menezes. Medidores "inteligentes" de energia elétrica e a necessidade da *Good Governance* para salvaguardar o direito fundamental à proteção de dados pessoais. In: ROCHA, Fábio Amorim da (Org.). *Temas relevantes no direito de energia elétrica*. Rio de Janeiro: Synergia, 2013. t. 2.

35 Law n° 8.078/1990.

36 The principle of publicity of the Public Administration is found in art. 37 of the Constitution. See also Law n° 12.527/2011.

37 Likewise, cf. ROCHA, Maria Luiza do Valle; SILVA, Priscilla Maciel de Menezes. Medidores "inteligentes" de energia elétrica e a necessidade da *Good Governance* para salvaguardar o direito fundamental à proteção de dados pessoais. In: ROCHA, Fábio Amorim da (Org.). *Temas relevantes no direito de energia elétrica*. Rio de Janeiro: Synergia, 2013. t. 2. p. 701; MOREIRA, José Carlos Barbosa. O *habeas data* brasileiro e sua lei regulamentadora. *Genesis Revista de Direito Processual Civil*, v. 3, p. 18, 1998; WAMBIER, Teresa Arruda Alvin. *Habeas data*. São Paulo: Editora Revista dos Tribunais, 1998. p. 86; ÁBALOS, María G.; CANALS, Olga P. Arrabal (Org.). *Derecho a la información, Habeas data e internet*. Buenos Aires: Editora La Rocca. 2002. p. 389.

consumers, through the installation of electronic display meters, about the tariff variation throughout the day, in order to induce and modulate power demand.

The implementation of meter systems as established by Normative Resolution n° 502/2012 should occur from the beginning of 2018 (art. 1°, § 1°). The metering systems must measure and inform the electricity consumption at least in four different tariff posts. The implementation of those meters is mandatory only in the households that adopt the “white tariff” (art. 2°). Consent to collection and transfer of energy data is *implicit* to the acceptance, by consumers, of the white tariff system.

Nevertheless, consumers can only decide to migrate to the white tariff system if he or she has information enough about the variation in the energy price and individually evaluates if this new system brings benefits to him/her. Paradoxically, the variation in the energy price is made known for the consumers only through the installation of the display meters, which, according to art. 2°, § 4°, Normative Resolution n° 502/2012, is mandatory only for consumers who have *already* decided to migrate to the white tariff system.

Regarding the right to information, the cumulated price of the energy consumed and the identification of the current tariff post have to be displayed for the consumers (art. 2°, § 1°). On consumers’ request, meter systems that provide additional information – the Resolution does not specify which – can be installed by distribution utilities (art. 3°, § 6°).

Chapter III of the Normative Resolution n° 502/2012 regulates smart metering systems, imposing on distribution utilities the adoption of procedures and technologies that ensure the safety of the transmitted data, especially personal data collected from households. The Resolution only broadly establishes the data security principle and does not specify which technologies can be used, how is the collected data to be secured nor which data are to be secured.

The Resolution further prohibits the collected data to be shared and sent to third parties without consent of the data subject. Although not expressed, it should be understood that the Resolution meant *prior* consent, and not *ex post* consent, since *ex post* consent could not be timely adequate to avoid data sharing misuse. Besides that, considering that an *ex post* consent represents a greater invasion of the right to privacy – in comparison to prior consent – and considering the right to privacy as a fundamental right, the more cautious form of consent should be adopted. More difficult to determine is if tacit – if consent given in one month is also valid for following months – or indirect consent – consent given on a broadly context, such as the signing of a power supply agreement – suits the idea of consent intended by the Resolution. Besides that, no word was addressed in regard of consent withdrawal.

Lastly, the fairness and transparency of data protection applied to the meters installed according to this regulation is brought by art. 9°, whereby data subjects are to be informed, prior to the meter installation, about the functionalities of such system and the information that will be made available to them.

The Normative Resolution n° 502/2012 cannot be considered an extensive and detailed piece of legislation on smart meters. It lacks an adequate treatment of data protection and the fulfillment of consumers’ personal rights when sharing data with distribution utilities<sup>38</sup>. Nevertheless, as stated in the discussions prior to approval of the Normative Resolution n° 502/2012, the mere definition of minimum functionalities should be understood as a first step in a bigger strategic project. Besides that, focus was given on the importance of specific functionalities for the dissemination of smart grids, considering not only the fact that this technology is still under development, but also the duty to keep tariffs at a reasonable level<sup>39</sup>.

38 For a critical approach of the Normative Resolution n° 502/2012, cf. RIVERA, Ricardo; ESPOSITO, Alexandre Siciliano; TEIXEIRA, Ingrid. Redes elétricas inteligentes (smart grid): oportunidade para adensamento produtivo e tecnológico local. *Revista do BNDES*, v. 40, p. 61, 2013.

39 Available at: <[http://www2.aneel.gov.br/cedoc/aren2012502\\_1.pdf](http://www2.aneel.gov.br/cedoc/aren2012502_1.pdf)>. Accessed on: 25 Sept. 2017. p. 11.

### 3.2. Draft Bill n° 3337/2012 and Senate Bill n° 84/2012 on smart grids

At the Federal level, two draft bills address the regulation of smart grids: the Draft Bill n° 3337/2012, which creates the Smart Grids National Program – PNREI<sup>40</sup> and determines the complete replacement of electromechanical meters for smart meters<sup>41</sup>; the Senate Bill n° 84/2012, which establishes guidelines for the implementation of smart grids in the energy systems of distribution utilities<sup>42</sup>.

According to the Draft Bill n° 3337/2012, the PNREI prescribes fifteen years for the complete smart meter roll-out in Brazil. Smart grids are understood in the proposed legislation as power networks which intensively apply information-related equipments and technologies in power generation, transmission and distribution, automating and optimizing the operation and protection actions, as well as providing consumers with real time information on current tariffs, energy consumption and conditions related to system operation.

On the other hand, smart meters are not defined in the Draft Bill. In fact, it opts to use the expression “electronic meters” and not “smart” or “intelligent meters”, as opposed to the more common electromechanical meters. If the Draft Bill meant “smart” when it mentioned “electronic”, is not clear, since no definition can be found in the regulation. However, an analysis of the features of electronic meters helps elucidate this matter. According to art. 2° of the Draft Bill n° 3337/2012, electronic meters should be able to register, for each measure period, the maximum demand of verified energy and the energy consumed. Besides that, distribution utilities should implement a communication system between each meter and their management centers, in order to allow for each consumer to follow, in real time, current energy tariffs. Considering that – and although the Draft Bill does not describe the full functionalities and possibilities of smart meters, for example, the data collection and processing by data controllers or distribution utilities –, the electronic meters regulated by the Draft Bill can be considered “smart”.

Running parallel in the Brazilian Senate there is Senate Bill n° 84/2012, in which Bill Justification is argued that Brazil is late regarding the implementation of smart grids and that these systems can bring several benefits to consumers, like tariff price reduction, greater transparency in consumption relations, right to choose their energy supplier, development of distributed generation and fostering of renewable energies. Additionally, with smart grids (i) the costs with personnel to measure power consumption will be reduced; (ii) the operative efficiency will be enhanced due to reduction of technical losses; (iii) network reliability will grow; (iv) technical flaws will be foreseen; (v) hourly tariffs will become the rule; (vi) consumers will be able to instantaneously check the quality of energy supplied; (vii) will be possible to optimize the operation of electronic devices in households (internet of things); among others.

The Senate Bill Justification also uses the expression “electronic meters” to refer to “smart meters”. Differently from the Draft Bill n° 3337/2012, the Senate Bill n° 84/2012 prescribes eight years for the complete smart meter roll-out in Brazil. The Senate Bill does not offer a concept for electronic meters but defines smart grid as “a set of networks and equipments associated to the distribution utility’s system, whose control and command is done by using digital technology for information, measurement, monitoring and telecommunication, and whose adoption allows for the offering of better services to consumers and the improvement of existing services”. Not clear, however, is what defines a service as “better” and what characterizes a service as “improved”.

Art. 3° of the Senate Bill rules that smart grids should, among others, be composed of a reliable communication system between automation devices and be able to instantaneously and bi-directionally transfer in-

40 Abbreviation in Portuguese.

41 This Draft Bill is since May, 2017, waiting for rapporteur designation by the Commission for Constitution, Justice and Citizenship.

42 This Senate Bill is since April, 2017, with the rapporteur, Senator Dario Berger.



formation between devices. Once again, the Bill does not explain what constitutes a “reliable” communication system nor lists which pieces of information are to be transferred. Art. 4<sup>o</sup>, though, specifies minimum standards and functionalities for the electronic meters, including bi-directional communication systems. It can be inferred that the information collected through the use of those standards and functionalities can be transferred. The functionalities include: metering of energy, active and reactive demand, power factor, energy frequency, control of commercial losses, remote power cut and restart, instantaneous verification of individual quality indexes, pre-payment, open protocol, net metering, four tariff posts.

As seen, both Bills are extremely broad, vague and superficial in the regulation of smart meters. The basic principles relevant to the issue are not properly addressed and there is a lack of legal treatment regarding the role of the agents involved in the installation, operation and monitoring of smart meters, as well as with regard to the treatment of the data measured. Besides that, there is an emphasis in both Bills on the benefits and functionalities of smart meters for the consumers’ side, with no elucidation of how distribution utilities should collect, process and store the information gathered. Finally, the right to be forgotten and the right to require information on stored data are not addressed in the Bills.

### **3.3. Draft Bills n° 4060/2012 and n° 5276/2016 on personal data protection**

There are two Draft Bills related to personal data protection under discussion in the Brazilian Congress: the Draft Bill n° 4060/2012, framing the processing of personal data, and the Draft Bill n° 5276/2016, “framing the processing of personal data to ensure the free development of the personality and the dignity of natural persons”<sup>43</sup>. While the former can be criticized for the lack of depth in the regulation of personal data protection, the latter offers greater concern to the right to privacy and regulates the issue in more detail, reasons of which justify its analysis and application to smart meters below.

#### **3.3.1. Application of the Bills on personal data protection to smart meters**

According to art. 2<sup>o</sup> of the Draft Bill n° 5276/2016, the protection of personal data’s regulation fundamentals itself in the respect for privacy; the self-determination to information; the freedom of expression, communication and opinion; the inviolability of privacy, private life, honor and image; the economical and technological development; as well as for the free enterprise, freedom of competition and consumer protection.

If approved, this Bill will find application for the data collected and processed in the Brazilian territory, even if the data bank is permanently or temporarily placed overseas. The Bill will also apply if the processing aims at offering or providing goods or services in Brazil (art. 3<sup>o</sup>)<sup>44</sup>. The Bill will not apply to data processing made by natural person for personal purposes; made for journalistic, artistic, literary or academic purposes; made for exclusive purposes of public security, national defense, State security or activities related to criminal investigation and persecution (art. 4<sup>o</sup>)<sup>45</sup>.

Considering that, the personal data transferred through smart meters could find protection under the Draft Bill n° 5276/2016. The Draft Bill n° 5276/2016 could, nevertheless, be repealed for energy data

43 Considering that both Draft Bills regulate the same topic, the Bills were joined and since November 2016 they wait for the establishment of a Special Commission in charge of issuing an Opinion.

44 On the other hand, art. 2<sup>o</sup> of the Draft Bill n° 4060/2012 affirms only that every person has the right to personal data protection.

45 KEPPELER, Lutz Martin. Personenbezug und Transparenz im Smart Meter-Datenschutz zwischen europäischem und nationalem Recht. *Zeitschrift für das gesamte Recht der Energiewirtschaft – EnWZ*, v. 4, p. 105, 2016, addressing the question whether data processing within the scope of smart metering could be regarded as data processing carried out in the public interest, argues that classically, the power supply to consumers and correlated activities are considered functions of the State. Considering the energy sector activities as public services, the data processing performed in the context of such public services – in pursue of the goal of energy efficiency and energy security, especially – could be considered of public interest.

processing due to public security or State security reasons. Although it could be argued that the promotion of energy efficiency by means of the collection and processing of energy data from power consumers contributes ultimately to energy security, it would still be needed a power crisis scenario – that is, an abnormal situation – in order to consider a threat to energy security as a public security or State security issue. The Bill is, therefore, applicable to energy data collected from smart meters.

It is worth noting that, on the other hand, the application of the less detailed Draft Bill n° 4060/2012 for the cases of information collected by smart meters would become doubtful if considered the concept of “personal data” contained in the Draft Bill n° 4060/2012, understood as any information which allows the exact and precise identification of a particular person (art. 7º, I). In a family house, with more than one inhabitant, the distribution utility cannot exactly and precisely identify which inhabitant consumed which amount of energy. The mere fact that the smart meter in a household is registered in the name of one of the house’s inhabitants, on one hand, and the mere fact that each household has one smart meter, on the other, do not suffice *per se* to attend the definition’s criteria of “a particular person”, as ruled by Draft Bill n° 4060/2012.

Therefore, only an extensive interpretation of the legal text or the creation of a *legal fiction* in the Draft Bill n° 4060/2012 would allow for the subsumption of “energy data” collected from a household, inhabited by many individuals, in the concept of “personal data”. Art. 5º, I, of the Draft Bill n° 5276/2016 is more specific in the definition of “personal data” but does not completely solve this problem. It defines “personal data” as “data related to an identified or identifiable natural person, including identifying numbers, locational data or electronic identifier, when they are related to a person”<sup>46</sup>. Still, it remains open the question as to if the energy data collected in a household can be considered personal data<sup>47</sup>. Considering only the definition above mentioned, the energy data collected and processed would have to be considered personal data<sup>48</sup>, *as if* only the owner of the smart meter (or the owner of the property where the meter is located) consumed electricity at a given period. Ideally, either the Draft Bills on smart meters or the Draft Bills on data protection should clarify that the energy data collected by smart meters and processed by distribution utilities are to be considered personal data, for data protection purposes.

Besides the discussion regarding the consideration of “energy data” as “personal data” for data protection purposes, it is also necessary to clarify if the purposes that legitimate data processing include the processing of data collected by smart meters.

Art. 7º of the Draft Bill n° 5276/2016 addresses the cases under which data processing is lawful. Firstly, free, informed and unmistakable consent<sup>49</sup> of the data subject has to be provided. Data processing is also lawful for the fulfillment of a legal obligation by the data processor; by the Public Administration, for the processing and shared use of data necessary to the execution of public policies established in laws or regulations; for the completion of historical, scientific or statistical research; when necessary for the execu-

46 Similar to the definition of “personal data” in art. 4(1) of the Regulation (EU) 2016/679: “any information relating to an identified or identifiable natural person (‘data subject’); an identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an *identification number*, location data, an *online identifier* or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person”.

47 BREITTHAUER, Sebastian. Smart Meter im Spannungsfeld zwischen Europäischer Datenschutzgrundverordnung und Messstellenbetriebsgesetz. *EnWZ*, v. 3, p. 57, 2017, understands that, since each smart meter allows for an individualized labeling of a consumer, an identification of natural person, and therefore the collection and processing of personal data, could be (technically) possible. Besides that, the concept of “personal data” would have contact points with the so-called “energy data”, not only because of the information about the inhabitants of a house, but also with regard to the habits of a house’s inhabitant.

48 When addressing the consideration of anonymised data – data related to a data subject which cannot be identified – as personal data, art. 13, § 1º, of the Draft Bill n° 5276/2016, establishes that data used for the constitution of a behavioral profile of a determined natural person, regardless if identifiable or not, can be considered personal data, for the purposes of the Bill. The processing of energy data could fit into this article, but only for the purpose of the constitution of a behavioral profile – not for the offering, for example, of better energy tariffs, since data processing should be attached to a specific purpose.

49 Cf. II.3.2 below.

tion of a contract or preliminary procedure related to a contract in which the data subject is party; for the regular exercise of rights within a judicial or administrative process; for the protection of the data subject's or a third party's life or physical safety; for health protection; and when necessary to attend the legitimate interests of data processors or third parties, except in the cases when data subject's interests or fundamental rights and liberties prevail and demand personal data protection, especially if the data subject is underage.

Processing of energy data collected by smart meters is allowed after consent of power consumers. It is doubtful if (tacit) consent is considered as given by an energy consumer that chooses to enter into the white tariff regime. The issue is relevant, since the choice for the white tariff regime makes mandatory for the distribution utility to install an electronic meter (art. 1, §1º, and art. 2º, Normative Resolution nº 502/2012), which can – depending on the meter model – provide for transmission of consumers' energy data (smart meter). It is not reasonable to expect all power consumers to know the relations between the white tariff regime, smart metering and data processing. Data processing is not a direct and unavoidable consequence of meters – ANEEL acknowledges that by regulating in separate articles electronic meters (arts. 2º and 3º) and meters with “remote communication system” (art. 7º). Furthermore, consent should be given in writing or by any other means which allows for its clear identification (art. 9º of the Draft Bill nº 5276/2016). Considering that, it can be concluded that even in the cases where the installation of a smart meter is mandatory, for the purpose of white tariff regime's implementation, the processing of data can only occur after express, direct and unmistakable consent of the data subject. The Draft Bill nº 5276/2016, in art. 8º, §4º, wisely establishes that when consent for data processing is a condition for the delivery of a product or a service – such as the white tariff regime, for instance – the data subject has to be especially informed about this fact and about the rights s/he has to exercise control over the processing of his/her data.

Besides by means of consent, processing of energy data could be justified to fulfill three purposes.

Firstly, if data processors – distribution utilities, for instance – are required by law to process data. That is the case either in art. 1º, §1º, of ANEEL's Normative Resolution nº 502/2012, which obliges distribution utilities to install smart meters from 2018, or in art. 2º of the Draft Bill nº 3.337/2012 or in art. 1º of the Senate Bill nº 84/2012.

Secondly, processing of data by the Public Administration is lawful when needed for the execution of a public policy. In order to frame energy data processing within this purpose, data processors would have to be understood as part of the Public Administration. According to Decree-Law 200/1967, the Public Administration is divided between direct Administration – services integrated in the administrative structure of the Presidency and Ministries (art. 4º, I) – and indirect Administration, comprised of autarchies, state-owned companies, mixed-economy companies and public foundations (art. 4º, II). In Brazil, there is some distribution utilities – data processors for the purpose of ANEEL's Normative Resolution nº 502/2012 – organized as mixed-economy companies. But since not every distribution utility assume this form, i.e. since not every distribution utility is part of the indirect Administration, this justification for data processing does not apply to smart meters. Otherwise, it would be discriminatory if only mixed-economy utilities were obliged to comply with the Draft Bill nº 5276/2016, but not the privately-owned utilities. Besides that, the purpose for personal data processing under this case is only lawful within the scope of the execution of a public policy, which does not exist yet.

Thirdly, data processing is lawful within the performance of a contract. Data processors – distribution utilities or not – and data subjects can enter into contract to regulate rights and obligations related to the processing of energy data collected by smart meters. That is, though, not the case in the Normative Resolution nº 502/2012, which does not oblige distribution utilities to enter into a contract by the installation of smart meters nor by data processing.

### 3.3.2. Principles of data protection and their relation to smart metering

Consent is defined in Draft Bill n° 5276/2016 as “a free, informed and unmistakable manifestation, by means of which the data subject agrees with the processing of his/her personal data for a specific purpose” (art. 5°, VII). “Free” means without coercion or pressure of any kind. “Informed” means that consent can only be given if the data subject has clear understanding of what s/he is consenting for. Transparency is, therefore, crucial for informed consent. “Unmistakable” means that tacit or indirect consent is invalid, being necessary a specific and expressed consent. Additionally, general consent is also invalid, since the manifestation is to be given “for a specific purpose”<sup>50-51</sup>.

Art. 6° of the Draft Bill n° 5276/2016 lists the *principles* applied to personal data processing<sup>52</sup>. Data processing should respect good faith and the principles of purpose, adequacy, necessity, free access, data quality, transparency, security, prevention and non-discrimination.

“Purpose” means that data should be processed only for legitimate, specific and explicit purposes, which need to be informed to the data subject. If data is misused, i.e., if data is processed for a different purpose as initially allowed, the right to personal data privacy is considered infringed<sup>53</sup>.

According to the adequacy principle, there must be a compatibility between the data processing, on one side, and the purpose and legitimate expectations of the data subject, on the other side, considering the data processing context.

The necessity principle observes the data minimization, according to which data processing should be limited to the minimum needed to achieve its respective purpose. Considering that, data collected should be pertinent, proportional and non-excessive in relation to the purpose of data collection. Data minimization promises to be a highly relevant principle within the implementation of smart meters, since the efficiency of these technology depends on the amount of data collected and processed. It still remains as an open question, which energy data and which amount of energy data from power consumers suits the data minimization principle.

The principle of free access guarantees data subjects easy and free of charge consultation about the processing categories and about the integrality of their personal data. This principle is intertwined with the data quality principle, by which the accuracy, clarity, relevance and updating of data are guaranteed to data subjects, according to a periodicity proportional to the purpose of the data processing.

As the above mentioned principles, also transparency is related to the broader right to information. Data subjects should receive clear, adequate and easily accessible information about the data processing and the respective data processor. The data subject should have unhindered access to the specific purpose of the processing; form and duration of the processing; identification of the data processor; data processor's contact info; third parties to which the collected data can be transferred; responsibilities of the data processors; his/her rights, with the explicit mention to the right to access or rectify data, right to withdraw consent, right to file a complaint and right to deny consent, when consent is required (art. 8° of the Draft Bill n°

50 Consent is further regulated in arts. 8° and 9° of the Draft Bill n° 5276/2016.

51 The Draft Bill n° 4060/2012 requires consent – quite broadly given “by any means which allows for expression of will” – only within the scope of sensitive data processing and it is not necessary, not even for sensitive data, in case of legal determination (art. 12). Firstly, it is astonishing that the Draft Bill n° 4060/2012 neither provides for a definition of consent nor specifies how consent should be given. Secondly, no reason was found in the Bill Justification to draw the consent line between personal data and sensitive data, as if personal data would not need consent at all to be processed.

52 Chapter II of the Draft Bill n° 4060/2012 establishes the requirements and standards for the processing of personal data. Personal data should be processed with trustworthiness and in good faith (art. 9°). These principles have similar content as the fairness principle brought by Regulation (EU) 2016/679.

53 ROCHA, Maria Luiza do Valle; SILVA, Priscilla Maciel de Menezes. Medidores “inteligentes” de energia elétrica e a necessidade da *Good Governance* para salvaguardar o direito fundamental à proteção de dados pessoais. In: ROCHA, Fábio Amorim da (Org.). *Temas relevantes no direito de energia elétrica*. Rio de Janeiro: Synergia, 2013. t. 2. p. 700.

5276/2016)<sup>54</sup>. The list of art. 8° is not categorical and other data subject's rights receive attention of the Draft Bill n° 5276/2016, such as the right to be forgotten (art. 16)<sup>55</sup>, right to anonymisation (art. 18, IV), right to request revision of decisions taken exclusively based on automated processing of personal data (art. 20), among others.

It should be noted that ANEEL's Normative Resolution n° 502/2012 does not address the issue of information access. It addresses only which information should be displayed for energy consumers (art. 2°) and the consumers' right to be informed previously on the functionalities of electronic meters and which data will be gathered (art. 9°). The principles listed in the Draft Bill n° 5276/2016 – if approved, it will have the status of a Law, hierarchically higher than a normative act of a regulatory body of the Public Administration, such as ANEEL – demand more than that to satisfy data subjects' fundamental right to information.

The principle of security establishes that up-to-date technical and administrative measures should be adopted by data processors, in order to protect personal data from unauthorized access and illicit or accidental situations which can lead to data destruction, loss, alteration, communication or diffusion. The adoption of such measures should be proportional to the nature of the data processed<sup>56</sup>. The prevention principle has close relation to this principle, since, according to prevention, measures should be adopted in order to prevent the occurrence of damages resulting from data processing.

Security is further detailed in arts. 45 to 49 of the Draft Bill n° 5276/2016, although concrete measures to ensure an appropriate level of security<sup>57</sup>, are not addressed in the Draft Bill. Technical and organizational standards can be established by the competent authority, which will also consider not only the scope of the data processed, but also the specific features of the processing and the technology's current state, especially for sensible data. The data processors are obliged to confidentiality of the personal data, even after the data processing. The Bill also addresses measures to be taken by data processors in case of a security breach that could cause relevant risks or damages to data subjects. Data subjects are to be informed of the security incident only after decision of the competent authority (art. 48, I), unless it is possible to identify a risk to the personal safety of the data subject, case of which the communication of affected data subject is mandatory (art. 48, §2°).

What the detailing of the security principle in the Draft Bill n° 5276/2016 also does not address is the economical feasibility of a given technology. It is clear, on one side, that data processors are not obliged to use technologies that exceed a reasonable data protection level. On the other side, it cannot be inferred from the text if the (high) cost of a specific technology – already developed, tested and widely used, i.e. reflecting the current state of technology – offers reasonable ground that justifies a refusal by a data processor to adopt such technology. Simply put, affordability is not expressly considered a normative restraint to investments made in security tools that should be considered in the proportionality test<sup>58</sup>.

Finally, data processing cannot be undertaken for discriminatory purposes. Although this principle is especially important in the processing of sensitive data, nothing in the Bill indicates that it cannot apply to

54 Data subject's rights are listed in detail in Chapter III of the Draft Bill n° 5276/2016.

55 The right to be forgotten suffers restriction by the Draft Bill, since processed data, even after its use, can be stored in order to fulfill a legal obligation by the data processor, for historical, scientific or statistical purposes, and shared with third parties. Furthermore, the regulatory body can establish specific purposes for personal data conservation (art. 16, single paragraph). Once again, the Draft Bill is vague regarding the maximum time personal data can be stored or in which ways processed data should be shared.

56 The less detailed Draft Bill n° 4060/2012 mentions only that Data processors are responsible to adopt technological measures in order to reduce – the Bill does not say “eliminate” – to a maximum the risks of destruction, loss, non-authorized access or not allowed data processing. The measures adopted are to be proportional to the technological state-of-the-art, to the nature of the data and the specific features of the processing (Art. 10). This Draft Bill recognizes that a completely breach-free security system is not technologically feasible. Likewise, technologies are still being developed in order to improve tools for better and more long-lasting storage. There must be a proportionality between the level of data protection pursued and the technologies available.

57 Like Article 32(1) of the Regulation (EU) 2016/679.

58 Economical feasibility is mentioned in Recital 55 of the Directive 2009/72/EC and in the Directive 2012/27/EU (“...financially reasonable...”) as a precondition for the smart meter roll-out. ANEEL's Normative Resolution n° 502/2012, on the other hand, obliges distribution utilities to equip with smart meters households that choose the white tariff regime.

personal data processing. As for smart meters and energy data, it would be discriminatory if a distribution utility handles data subjects differently, according to their energy consumption or according to the amount of data they make available for processing.

### 3.3.3. Other data protection rules with application on smart meters

The Draft Bill n° 5276/2016, besides regulating the principles of data protection and the rights and remedies of data subjects, it also details other aspects of data processing that, given the fact that they find application to smart meters, are brought by in this section.

Firstly, it addresses a chapter on the personal data processing by the Public Power<sup>59</sup> (arts. 23 to 30). This chapter is of importance for smart meter regulation, considering that some distribution utilities are public companies and mixed-economy companies.

Also regulated is the international transfer of data (arts. 33, 34 and 35), the personal data processing agents (“controller” and “operator”) (art. 36 to 44), good governance practices (arts. 50 and 51)<sup>60</sup>, administrative sanctions (art. 52), competences of regulatory bodies (art. 53) and the creation of a National Council for Data Protection and Privacy (arts. 54 and 55). It is not yet clear how the competent body responsible for the implementation of the data protection Bill will interact with other agencies and regulatory bodies when data processing occurs within a specific regulated sector of the economy, such as telecommunications and power. The Draft Bill n° 5276/2016 rules only that the bodies of the Public Power should inform the cases under which they process personal data, providing clear and updated information about this activity in their websites (art. 24). Publicity also applies to the communication of personal data among Public Law’s entities and bodies (art. 28).

## 4. CONCLUDING REMARKS

As seen in this paper, the interactions between smart meters and data protection are only recently becoming clear. Although some international literature – as quoted in the sections above – already addresses the issue with a legal approach, the Brazilian literature still lacks critical work in this matter. The general goal of this article was to fill this gap.

Analyzing the legislation in force, it can be concluded that the regulation of smart meters in Brazil is still incipient and a broader acceptance of the population<sup>61</sup> regarding its benefits can also be necessary for the development of the technology. The Draft Bills regarding the smart-meter roll out cannot be considered as an extensive and detailed smart meter regulation. Since those Bills are still under discussion in the Parliament, there is a chance for further and developments on how to legally align the goal of energy efficiency and energy security with a little as possible limitation to the right to privacy.

On the other hand, one of the data protection Draft Bills is extremely privacy-sensitive, addresses the issues related to consumers’ privacy adequately and equals the highly detailed Regulation EU 2016/679. In many ways the data protection regulation finds application to smart metering. The concept of data protec-

59 Public bodies of the Direct Administration of the Executive, Legislative and Judiciary Powers, including Fiscal Courts, Judicial Courts and Public Prosecution, as well as autarchies, public foundations, public companies, mixed-economy companies and other entities controlled directly or indirectly by the Federation, States, the Federal District and Municipalities.

60 About good governance, cf. ROCHA, Maria Luiza do Valle; SILVA, Priscilla Maciel de Menezes. Medidores “inteligentes” de energia elétrica e a necessidade da *Good Governance* para salvaguardar o direito fundamental à proteção de dados pessoais. In: ROCHA, Fábio Amorim da (Org.). *Temas relevantes no direito de energia elétrica*. Rio de Janeiro: Synergia, 2013. t. 2. p. 708.

61 MCLEAN, Megan. How smart is too smart? How privacy concerns threaten modern energy infrastructure. *Vanderbilt Journal of Entertainment & Technology Law*, v. 18, p. 881, 2016.

tion is, though, not without some legal reasoning effort applicable to energy data collected by smart meters. Of greater concern is the relation between the data minimization principle and the efficiency of smart metering systems, since the efficiency of this technology depends on the amount of data collected and processed. It still remains as an open question, which energy data and which amount of energy data from power consumers suits the data minimization principle. Besides that, the right to consent withdrawal can also hamper the smartness of the meters.

Further research, when – and if – the Draft Bills are passed, could provide for relevant insights, especially given the fact that from 2018 the white tariff regime – which demands the installation of smart meters – will become mandatory.

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