

For Privacy's Sake: Consumer "Opt Outs" for Smart Meters

The Faculty of Oregon State University has made this article openly available.
Please share how this access benefits you. Your story matters.

Citation	King, N. and Jessen, P.W. (2014). "For Privacy's Sake: Consumer 'Opt-Outs' for Smart Meters," Computer Law and Security Review, 30-5, 530-539 (Elsevier Ltd., UK).
DOI	10.1016/j.clsr.2014.07.001
Publisher	Elsevier
Version	Accepted Manuscript
Terms of Use	http://cdss.library.oregonstate.edu/sa-termsofuse

For Privacy's Sake: Consumer "Opt Outs" for Smart Meters

This paper was sent to Sylvia for the conference book on Sept. 3, 2013

Nancy J. King

Oregon State University, U.S.A.
kingn@bus.oregonstate.edu

Pernille W. Jessen

School of Business and Social Sciences,
Aarhus University, Denmark
pwj@asb.dk

Abstract: Smart meters are being installed in consumers' homes as both Europe and the United States move to the smart grid of intelligent energy networks. Yet not all homeowners are willing recipients and some demand to "opt out". When balancing consumer privacy and data protection rights with the important societal benefits to be obtained from smart meters, should opt outs be allowed? If so, what should a smart meter opt out mechanism look like? Further, may consumers be charged additional fees for the privilege of opting out without violating their privacy and data protection rights? The EU/U.S. comparative law analysis provided in this paper aims to help energy suppliers and regulators craft opt out mechanisms to protect individual privacy and data protection rights while also achieving important societal benefits from smart meters.

1. Introduction

"Smart metering systems enable massive collection of personal information from European [and U.S.] households with the potential intrusiveness increased by the ability to infer information from the data about what members of a household do within the privacy of their own homes."¹ In both Europe and the United States, concerns about consumer privacy and other potential harms have caused delays in programs to roll out smart meters as questions arise about whether consumers should be given options to keep analog meters or other options that would mitigate their privacy-intrusiveness.²

¹ See Opinion of the European Data Protection Supervisor (EDPS) on the Commission Recommendation on preparations for the roll-out of smart metering systems, EDPS, pp. 4-6 (8 June 2012) (EDPS Opinion on Smart Metering Systems); Guidelines for Smart Grid Cyber Security: Vol. 2, Privacy and the Smart Grid, National Institute of Standards and Technology Interagency Report, NISTIR 7628 (August 2010) (NISTIR 7628); *A Policy Framework for the 21st Century Grid: Enabling Our Secure Energy Future*, Executive Office of the President of the United States, p. 60 (June 2011) (U.S. Energy Framework for the 21st Century).

² For example, in the Netherlands, consumer privacy concerns led to a significant delay in the roll-out for smart meters after the Dutch Senate rejected a proposal for mandatory smart metering deployment.

This paper addresses consumer privacy and data protection issues for smart metering implementation programs that relate to requests by customers to opt out of having a smart meter for electricity service installed in their homes. Section 2 provides an overview of the technology of smart metering systems. Section 3 explores the privacy and data protection concerns that relate to smart meters that may justify opt out mechanisms.³ It also discusses significant societal benefits advanced by smart metering implementation programs that may be undermined by opt out programs.⁴ Section 4 compares the privacy and data protection laws of the European Union and the United States that relate to smart metering implementation programs and discusses how regulators are responding to consumer opt out requests. Finally, Section 5 recommends a balanced model opt out mechanism that will protect consumers' privacy without sacrifice of important societal benefits to be gained from using smart meters.

2. Overview of Smart Meter Technology

Installation of residential smart meters is a key component of implementing smart metering systems. Smart metering systems feature two-way communication between the smart meter and the energy supplier and also between the smart meter and other potential third parties, a communication capability that distinguishes smart meters from more conventional meters.⁵ Smart metering systems use Advanced Metering Infrastructure (AMI)⁶ that enables the operator of a smart metering system "to collect, measure, and analyze energy consumption data for grid management, outage notification, and billing purposes via two-way communications."⁷ Smart meters provide the information data and communications (ICT) capacity to measure, record and transmit very granular (meaning highly detailed, in terms of frequency of measurement and types of data) energy consumption data.⁸

European Smart Metering Landscape Report 2012, SmartRegions Deliverable 2.1, Vienna, pp. 58-60 (October 2012) (European Smart Metering Landscape Report 2012). See also, Angela Beniwal, 'Utilities Are Getting Ahead Of Smart Meter Opt-Out Demands', *Renew Grid* (28 February 2012) (Renew Grid) (reporting on the California Public Utility Commission's mandate of opt outs and the opt out programs put in place by utilities in California that charge customers who elect to retain or return to an analog meter an initial fee of \$75 and a monthly charge of \$10; low-income customers who opt out are charged an initial fee of \$10 and a monthly charge of \$5).

³ See, e.g., Commission's Recommendation of 9 March 2012 on preparation for the roll-out of smart metering systems (2012/148/EU), OJ 2012 L 73/11, note 1 (Commission's Recommendation on Smart Metering Systems); Article 29 Data Protection Working Party's Opinion 12/2011 on smart metering, p. 2, 00671/11/EN/WP 183 (4 April 2011) (Art. 29 Opinion 12/2011); EDPS Opinion on Smart Metering Systems, (fn 1), 2. For discussion of the distinction between data protection and broader personal privacy notions that include personal liberty and autonomy, see Luiz Costa & Yves Pouillet, 'Privacy and Regulation of 2012', *Computer Law & Security Review*, (2012) 28, 3, 255 (Costa & Pouillet).

⁴ See Joseph Savirimuthu, 'Smart meters and the information panopticon: beyond the rhetoric of compliance,' *International Review of Law, Computers & Technology*, (2013) 27:1-2, 161-186.

⁵ Commission's Recommendation on Smart Metering Systems, (fn 3) para. 3(b).

⁶ Communications Requirements of Smart Grid Technologies, U.S. Department of Energy, 12 (5 October 2012). The U.S. Federal Energy Regulatory Commission (FERC) defines AMI as "meters that measure and record usage data at hourly intervals or more frequently, and provide usage data to both consumers and energy companies at least once daily".

⁷ Communications Requirements of Smart Grid Technologies, (fn 6) 9.

⁸ Data Access and Privacy Issues Related to Smart Grid Technologies, U.S. Department of Energy, pp. 6, 9 (5 October 2010) (DOE Data Access and Privacy Report).

3. Smart Meters, Individual Rights and Societal Interests

Significant consumer privacy and data protection concerns are associated with implementation of smart metering systems that relate to a traditionally highly private arena, the home. These interests include the legal rights of people to be free from unreasonable surveillance and intrusions in their homes and their personal and family lives.⁹ Once smart metering systems are installed, such surveillance could be either overt or covert, depending on whether the consumers who are under surveillance are aware of the surveillance. For example, overt surveillance would occur if consumers have opted in to having a smart meter that monitors their household's energy use while covert surveillance would presumably include surveillance that occurs after consumers have opted out of having a smart meter.¹⁰

There are also significant personal data concerns because "smart metering systems produce highly detailed energy usage data at the household level,"¹¹ including the ability to measure, record and transmit granular individual energy consumption data on a near real-time basis.¹² For example, depending on the granularity of energy use data collected and communicated by particular smart metering systems, these devices may enable persons outside the home to remotely monitor activities in the home, including determining when the home is occupied, what specific appliances are used in the residence, when an individual household appliance is turned on or off, and providing a detailed picture of energy usage in the home over a long period of time that reveals patterns of energy use from which human behaviour in the home can be inferred.¹³ Thus implementation of smart metering systems raises important privacy and data protection concerns that are exacerbated by the availability of other sources of personal data that could be combined with energy-use data to produce highly-detailed consumer profiles. Smart meter data and related consumer energy-use profiles could be used for secondary purposes not directly related to delivery of electricity, including direct marketing, unfair price discrimination (charging some consumers more than other consumers for the same goods and services without justification).¹⁴

⁹ EDPS Opinion on Smart Metering Systems, (fn 1) 4-6; David Wright and others, 'Sorting out smart surveillance,' *Computer Law & Security Review*, (2010) 26, 343-354, 349 (Table 2). Where there is surveillance, there will be leaks and there is a need for more research about the security issues related to smart meters including data breaches. An EU proposed directive on cyber security covers data breach reporting of utility companies such as electric and gas companies. See Proposal for a Directive of the European Parliament and of the Council concerning measures to ensure a high common level of network and information security across the Union, COM(2013) 48 final, p. 14 (Feb. 2013).

¹⁰ See generally, Charles A. Sennewald and John Tsukayama, 'The Process of Investigation', 2006, Chapter 6: (describing covert versus overt surveillance).

¹¹ DOE Data Access and Privacy Report, (fn 8) 9. This type of data is consumer-specific energy-usage data (CEUD). *Ibid.*

¹² DOE Data Access and Privacy Report, (fn 8) 20; Art. 29 Opinion 12/2011, (fn 3) 9.

¹³ EDPS Opinion on Smart Metering Systems, (fn 1) 5.

¹⁴ EDPS Opinion on Smart Metering Systems, (fn 1) 6 (profiling may also increase the information imbalance between consumers and energy suppliers or other third parties who wish to market goods and services to consumers); Art. 29 Opinion 12/2011, (fn 3) 21 (use in criminal investigations, etc.).

Citing privacy and other concerns, some consumers ask not to have a smart meter installed in their homes.¹⁵ When consumers opt out (in some cases, opt out may mean modifying or disabling the meter's monitoring and communication capabilities or it may mean choosing a meter that has not been equipped with AMI), they are taking action to prevent potential privacy and data protection intrusions associated with having a smart meter by excluding the device that is capable of monitoring and communicating energy use data from their homes. However, consumer opt outs may also hinder achieving societal benefits from smart meters, as next described.

It is anticipated that significant societal benefits will flow from implementation of smart metering systems that relate to the protecting environment, improving energy management and promoting new economic opportunities for businesses. For example, installation of smart meters may facilitate better management of the energy supply and lessen society's dependence on fossil fuels by making it possible to improve: operational efficiency, reliability of delivery, energy conservation and use of renewable power.¹⁶ Consumers with smart meters may be able to take advantage of dynamic pricing models that adjust the price of energy for peak and off peak periods, thus reducing their energy costs.¹⁷ Additionally, smart meter installation programs may create new economic opportunities for energy suppliers or third party businesses that are likely to be based on selling smart meter data or providing services related to the availability of smart meter data. Such opportunities are likely to include helping consumers to better manage their household's energy consumption or delivering targeted behavioural advertising to consumers.¹⁸

A wide variety of third parties may be interested in accessing smart-metering data and they may claim to be negatively impacted by allowing consumers to opt out of having a smart meter installed in their homes: law enforcement agencies, tax authorities, insurance companies, landlords, employers, commercial data banks, appliance and equipment makers, participants in the online behavioural advertising industry, and companies offering consumer energy management related services.¹⁹ For example, opting out may restrict generation of targeted advertising solicitations. It may also prevent use of energy use data by: landlords to identify potential lease violations, such as occupancy by an unauthorized guest; life insurance companies to assess higher premiums based on negative evaluation of the insured's energy use patterns; and law

¹⁵ European Smart Metering Landscape Report 2012, (fn 2) 58-60. Analysis of potential health risks associated with smart meters is beyond the scope of this paper, but government regulators have found no significant health risks associated with smart meters. See Jeff Evans, 'The Opt-Out Challenge,' Black & Veatch (published in the March/April 2012 issue of *Electric Light & Power*) (Evans).

¹⁶ Simone Pront-van Bommel, 'Smart Energy Grids within the Framework of the Third Energy Package,' *European Energy and Environmental Law Review* (April 2011) 32-44, 33; Paul Lewis Joskow, 'Creating a Smarter U.S. Electricity Grid,' *Journal of Economic Perspectives* (2012) 26(1) 29-48, 30.

¹⁷ EDPS Opinion on Smart Metering Systems, (fn 1) 4 (describing 'demand-response,' 'dynamic' or 'time of use' pricing for electricity that allows customers to buy electricity at constantly changing prices, thereby cutting demand at peak times and facilitating better integration of renewable energy sources).

¹⁸ EDPS Opinion on Smart Metering Systems, (fn 1) 5-6 (smart meter data may be used for consumer profiling including generation of targeted and personalized advertising).

¹⁹ EDPS Opinion on Smart Metering Systems, (fn 1) 5-6. Third-party requests to utilities for data about their customers' energy usage have come from many sources: energy services providers, law enforcement, regulators, attorneys, researchers, municipalities and real estate agents. Angeliq Caron, 'Consumer data privacy concerns persist in smart grid plans,' *The Privacy Advisor* (21 November 2011).

enforcement to identify energy use patterns that indicate growing marijuana in the home.

4. Comparing EU and U.S. Laws Regarding Privacy and Data Protection

The installation of smart meters is a necessary prerequisite to implementation of smart grids.²⁰ In fact, unless one of the exceptions applies, EU Member States are required by the Energy Services Directive to ensure implementation of smart metering systems that help consumers actively participate in the electricity supply market.²¹ There is no analogous federal legislation in the United States that mandates installation of smart meters in customers' homes. Instead, these decisions are left to the public or privately-owned energy suppliers ("utilities"), which are regulated by public utility commissions (PUCs) in the fifty states.²² Leaving regulation of the smart grid to the states is consistent with the U.S. view that state public utility commissions, as opposed to federal regulatory agencies, should have regulatory authority over public utilities including energy suppliers.²³ Although the smart grid and smart metering systems are primarily regulated at the state level by PUCs, the U.S. government has an important policy-making and oversight role and the federal government has provided substantial financial incentives to encourage smart grid development that have helped fund smart meter installation programs.²⁴

Currently there is no EU or U.S. legislation that expressly addresses privacy or data protection issues related to implementation of smart metering systems or that mandates offering smart meter opt out mechanisms to consumers. As described below, some Member States and some state PUCs have created opt out mechanisms for energy consumers within their jurisdictions, but not all consumers in all jurisdictions have been provided opt out mechanisms. Further, where opt out mechanisms have been made available to consumers in the EU and the U.S., there is a wide disparity in these mechanisms and fees for opting out. EU and U.S. regulators need to address whether an opt out mechanism for smart meters should be made available to consumers given their privacy and data protection concerns and the corresponding societal benefits for

²⁰ EDPS Opinion on Smart Metering Systems, (fn 1) 4.

²¹ Art. 13 of the Directive 2006/32 of 5 April 2006 on the energy end-use efficiency and energy services and repealing council Directive 93/76, OJ 2006 L 114/64, (Energy Services Directive). See also, Ann-Sofie Vanwinsen 'Smart Grids: Legal Growing Pains,' *European Energy and Environmental Law Review*, (June 2012) 142 (the Energy Services Directive requires Member States to ensure final customers are provided with affordable individual meters, but installation of smart meters is not mandatory in all circumstances as there are three justifications for not requiring installation: technical impossibility, financial unreasonability and disproportionate benefit in relation to the potential energy savings).

²² There are estimated to be over 3000 electrical energy suppliers in the U.S.; over 25 U.S. states have already adopted policies regarding smart grid technology. U.S. Energy Framework for the 21st Century, (fn 1) 2.

²³ John R. Forbush, 'Regulating the Use and Sharing of Energy Consumption Data: Assessing California's SB 1476 Smart Meter Privacy Statute,' *Albany Law Review*, (2011/2012) 75, 341-377, 341; NISTIR 7628, (fn 1).

²⁴ The National Science and Technology Council (NSTC) Subcommittee on Smart Grid has taken the lead to outline the federal policy framework on the smart grid. U.S. Energy Framework for the 21st Century, (fn 1) 2. See also, Russell Frisby and Jonathan Trotta, 'The Smart Grid: The Complexities and Importance of Data Privacy and Security,' (2011) 19 *CommLaw Conspectus* 297-341, 305-311 (Frisby & Trotta).

implementing smart meter programs, and if so, at what cost, if any, to those who opt out.

4.1 The EU Perspective

The starting point in the EU is Article 8 of the European Convention on Human Rights (ECHR), which protects an individual's "right to respect for his or her private and family life, home and communications".²⁵ Personal data protection is also explicitly mandated by the EU's Data Protection Directive (Directive) and Member States' implementing legislation in the form of general data protection principles that apply to all processing of EU residents' personal data.²⁶ Further, the E-Privacy Directive ensures privacy and data protection in the electronics communication sector.²⁷

Although EU privacy and data protection legislation does not explicitly address smart meter implementation programs and opt out mechanisms, it is clear that this comprehensive legislative and regulatory framework for personal privacy and data protection is applicable to the collection and processing of energy use data in smart metering systems. The applicability of EU law to smart metering systems is supported by various sources of EU soft law, including opinions by the EU's Data Protection Supervisor and the Article 29 Working Party, which offer specific guidance on how the Data Protection Directive should apply in the context of smart metering systems, and a Recommendation from the EU Commission on the roll-out of smart metering systems that includes a significant discussion of data protection.²⁸ Further, some Member States have adopted legislation or regulatory guidance that directly addresses privacy and data protection concerns related implementing smart metering systems.²⁹

²⁵ See Treaty of Lisbon amending the Treaty on European Union, the Treaty establishing the European Community, OJ 2007 C 306/1, (recognizing Article 8 of the European Convention for the Protection of Human Rights and Fundamental Freedoms (ECHR) and requiring Members of the European Union to respect the fundamental rights guaranteed by the Convention). Article 8 of the ECHR goes beyond data protection, "covering all activities regarded as constituting private and family life," and providing an "extra layer of safeguards for physical, personal and psychological development." Savirimuthu, (fn 4) 172.

²⁶ See generally, Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data, OJ 1995 L 281/31, (Data Protection Directive); Proposal of the European Parliament and of the Council on the Protection of Individuals with Regard to the Processing of Personal Data and on the Free Movement of Such Data (General Data Protection Regulation), COM (2012) 11 final (25 January 2012) (Draft Data Protection Regulation).

²⁷ See generally, Directive of the European Parliament and of the Council 2000/31/EC of 8 June 2000 on Certain Legal Aspects of Information Society Services, in Particular E-Commerce, in the Internal Market, OJ L. 178/1,17.07. 2000 (E-Privacy Directive).

²⁸ See generally, Commission's Recommendation on Smart Metering Systems, (fn 3); EDPS Opinion on Smart Metering Systems, (fn 1); Art. 29 Opinion 12/2011, (fn 3).

²⁹ See Art. 29 Opinion 12/2011, (fn 3), 15 ("in some member states the possibility for the data subject to object to installation of the smart meter exists and that in such cases the data subject's preferences override any other interests"); European Smart Metering Landscape Report 2012, (fn 2) (summarizing legislation and proposed legislation in EU Member States regarding smart meter implementation programs). See also, the proposed regulatory guidance on data access and privacy for smart metering programs in the United Kingdom. UK Smart Metering Implementation Programme, Data Access and Privacy, Consultation Document, Department of Energy & Climate Change, United Kingdom, pp. 21-23 (April 2012) (U.K. Smart Meter Consultation Document); Smart Metering Implementation Programme, Data Access and Privacy, Government Response to Consultation, Department of Energy &

4.2. The U.S. Perspective

In contrast to the EU, one must examine many sources of U.S. law to see if any laws are applicable to privacy and data protection in smart metering systems because a comprehensive legal framework for information privacy does not exist in the U.S. Although there is generally an absence of statutory privacy or personal data protection law that could be applied to smart metering systems, U.S. laws (through state privacy tort laws and state and federal constitutional rights) have long protected individual privacy from unreasonable intrusions, including the right of people to privacy in their homes and personal communications.³⁰ Further, federal statutes restrict interception of electronic communications and unauthorized access to consumers' stored electronic communications, as may occur when smart metering systems are hacked.³¹ And there are industry-specific federal laws protecting information privacy related to personal health information collected by health providers, financial data collected by financial institutions, consumer credit data collected by consumer credit reporting agencies and data collected online by websites that relate to children under the age of thirteen. However, given the industry-specific nature of these laws, most smart meter data does not fall within the scope of these laws.

Where there is no applicable federal law, regulation of privacy and data protection in smart metering systems is left to the states and this is typically the responsibility of state legislatures or state PUCs that regulate energy suppliers.³² If the state legislature or PUC has not adopted any data protection rules regarding smart metering systems and other sources of state law do not apply (see above discussion of state tort laws including privacy torts and constitutional laws), then the matter is left to industry self-regulation. In that case energy suppliers and third party businesses that use smart meter data may choose whether to give consumers' privacy and data protection rights, for example, under voluntarily adopted privacy policies.³³ A businesses failure to follow their own

Climate Change, United Kingdom, pp. 30-32 (December 2012) (UK Government Response to Consultation).

³⁰ U.S. scholars have been instrumental in developing arguments that personhood, or the right to define one's self, is a core privacy value to be protected by law. Warren, Samuel and Brandeis, Louis, 'The Right to Privacy', *Harvard Law Review*, (1890) 4, 193-195 (arguing individuals have a "right to be let alone"); Nancy King, 'Fundamental Human Right Principle Inspires U.S. Data Privacy Law, But Protection Are Less Than Fundamental', in *Challenges of Privacy and Data Protection Law*, (Cahiers Du Centre De Recherches Informatique Et Droit, 2008) 71-98, 76.

³¹ Electronic Communications Privacy Act, 18 U.S.C. § 2510 et seq. (2012); Computer Fraud and Abuse Act, 18 U.S.C. § 1030 et seq. (2012). Exceptions under these laws provide avenues for lawful access to electronic communications by providers of electronic communications and when the user has given authorization/consent.

³² California has laws governing privacy and data protection in smart metering implementation systems. See California Public Utility Code, § 8380 (2012) (CPUC § 8380); Decision Adopting Rules to Protect Privacy and Security of the Electricity Usage Data of the Customers of Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company, Rulemaking 08-12-009, California Public Utilities Commission (29 July 2011) (CUPC Rulemaking 08-12-009).

³³ See Michael Pryor, 'The White House Consumer Privacy Bill of Rights: Implication for Smart Grid Privacy Regulation,' Smart Grid Update, DowLohnes, PLLC (24 February 2012).

privacy policy or failure to protect sensitive personal data is a consumer protection violation.³⁴

Some states have acted to fill the regulatory gap related to privacy in smart metering systems. For example, California's PUC has adopted rules covering the privacy and security of smart metering data and customers have specified judicial and administrative remedies available for privacy and data protection violations in smart metering programs.³⁵ Currently, only a few states have adopted legislation or administrative rules regulating privacy and smart meters.

A U.S. Department of Energy-formed task force was recently formed to address consumer privacy and smart grids. One of its key responsibilities is to craft a voluntary smart grid privacy code of conduct.³⁶ It remains to be seen whether this code of conduct will include a smart meter opt out mechanism. Another recent development that can be characterized as industry self-regulation is the creation of a voluntary smart grid privacy seal program for companies that use consumer energy data.³⁷ This privacy seal program does not require offering an opt out mechanism to consumers from having a smart meter installed in their homes or other opt out equivalents, such as the right to have a smart meter modified to limit collection and communication of smart meter data. Nor does the privacy seal program address whether an energy supplier may charge fees to consumers who opt out. Despite their limitations, these recent developments provide helpful but non-binding guidance for energy suppliers, third party businesses and state public utility commissions that are engaged in designing practices and policies to protect consumers' information privacy. However, unless Congress takes the legislative step of enacting a federal law to address information privacy in smart metering systems (for example, Congress could enact a statute that incorporates the National Institute of Standards and Technology's guidelines for privacy and the smart grid) or enact other legislation (such as comprehensive data protection legislation of general applicability to consumer data including smart meter data), it is not likely that there will be federal information privacy law in the United States that protects consumers' privacy in this context.³⁸ If Congress does not act, it is still possible that other states may follow California's lead and decide to mandate consumer privacy in smart metering systems through legislation or rulings of their PUCs.

³⁴ Federal and state consumer protection laws protect consumers from unfair and deceptive business practices. See, eg, Section 5 of the Federal Trade Commission Act, which the Federal Trade Commission has interpreted to cover a business's failure to protect sensitive consumer data and failure to keep promises in privacy policies, Federal Trade Commission Act, 15 U.S.C. § 45 (2012).

³⁵ CPUC § 8380, (fn 32) (defining electrical or gas consumption data and establishing information privacy requirements for such); CUPC Rulemaking 08-12-009, (fn 32).

³⁶ Angelique Carson, 'Stakeholders Aim to Craft Smart Grid Privacy Code of Conduct,' *The Privacy Advisor* (27 February 2013).

³⁷ See Privacy Smart, Powered by TRUSTe <<http://www.futureofprivacy.org/issues/smart-grid/>> accessed 3 September 2013. This privacy seal covers companies that seek to access consumer energy data but the seal does not cover collection or use of data by energy suppliers for billing, operations, demand response, or for first party marketing.

³⁸ Alternatively, Congress could give a federal administrative agency, such as the Department of Commerce, authority to adopt administrative rules to protect consumers' privacy with regard to their smart meter data. Currently, because no federal or state laws (with some exceptions, as in California) provide specific information privacy protections for consumers' in smart metering systems, the privacy of smart metering data is protected only by weak consumer protection laws and industry self-regulation. See Frisby and Trotta, (fn 24) 339; DOE Access and Privacy Report, note (fn 8)15.

4.3 Comparison of Opt Out Mechanisms

Across the U.S., consumers continue to challenge smart metering implementation programs for a variety of privacy, health, or other reasons, including demanding the right to opt out and challenging the reasonableness of opt out fees.³⁹ In response, PUCs in Maine, Oregon and California require energy suppliers in their states to provide opt out programs.⁴⁰ Several other states are considering whether to require energy suppliers to provide opt out programs.⁴¹ In states where the right to opt out is provided, there may be a fee for opting out and the amount of the fee may vary considerably depending on the state in which the consumer resides and on the business practices of the particular energy supplier providing electricity to the consumer. For example, the Oregon Public Utility Commission requires electrical energy suppliers in Oregon to have opt out programs, although the fees charged consumers for opting out differ depending on which supplier serves the customer. In Portland, Oregon, the fee for opting out of a smart meter to be installed by Portland General Electric is \$254, with additional monthly charges of \$51 per month for the length of time of the opt out. By way of comparison, the City of Ashland, Oregon allows customers to opt out of a smart meter without paying any additional charges.⁴² Some states (including Maine) have proposed legislation to repeal or prohibit opt out charges.⁴³

Two U.S. Courts have held smart metering implementation programs that provide opt out mechanisms do not violate consumers' privacy rights.⁴⁴ The opt out mechanism provided by an energy supplier in Maine gave customers two opt out choices: 1) have an analog meter installed in the home instead of a smart meter, for an initial cost of \$40 for the installation and additional fees of \$12 per month for as long as the consumer continued to opt out; or, 2) keep the smart meter that has been installed in the home and have the radio communications from the meter disabled, for a one-time fee of \$20, and additional fees of \$10.50 per month for as long as the opt out continues. The court rejected consumers claims that the energy supplier's opt out program was unlawful because it included opt out fees that were so large as to be unreasonable, unjust and discriminatory, accepting the energy supplier's argument that the opt out fees were justified due to incremental costs of opt outs, including longer repair times for power restoration after storms and ongoing inefficient energy allocation to those customers using analog meters.⁴⁵

In the EU, consumers in some Member States also have the option to object to installation of a smart meter in their homes.⁴⁶ For example, Dutch consumers have the

³⁹ See generally, Evans, (fn 15).

⁴⁰ Evans, (fn 15), 4; Renew Grid, (fn 2).

⁴¹ Ibid.

⁴² Ibid.

⁴³ Evans, (fn 15).

⁴⁴ *Friedman and others v. Public Utilities Commission*, 2012 ME 90 (Maine Supreme Judicial Court, 12 July 2012); *Naperville Smart Meter Awareness v. City of Naperville*, No. 11 C 9299 (N. District of Illinois, 22 March 2013).

⁴⁵ N. Shah, "Maine Supreme Court Affirms Validity of Smart Meter Opt-Out Program,"

InformationLawGroup, p. 1 (1 August 2012) (InformationLawGroup)

<<http://www.infofawgroup.com/2012/08/articles/smart-grid-1/maine-supreme-court-affirms-validity-of-smart-meter-optout-program/>> accessed 3 September 2013.

⁴⁶ Art. 29 Opinion 12/2011, (fn 3) 5 (commenting that this right to opt out may override all other interests).

option of refusing a smart meter and keeping their traditional meter.⁴⁷ Dutch consumers may exercise the right to opt out without having to pay any direct fees like those imposed by energy suppliers in some U.S. states. In other member states, consumers may have no legal right to opt out of having a smart meter (compulsory or mandatory smart meter implementation programs), although consumer opt in or opt out rights may be legislated for collection and use of energy-consumption data by energy suppliers and third parties. For example, in the United Kingdom, where implementation of smart metering systems is underway by suppliers and privacy and data protection is included in suppliers' licensing terms, the energy supplier: may collect monthly (or less granular) smart meter readings for billing and regulated purposes without obtaining consumer consent; may collect daily (or less granular) smart meter readings with opt out consumer consent; and may collect half-hourly smart meter readings only with opt in consumer consent.⁴⁸ Consumers retain full control about usage of daily smart meter data for purposes other than billing and regulated purposes, and may allow suppliers access to their daily smart meter data for some purposes (e.g., provision of energy efficiency advice), while refusing its use for other purposes (e.g., for wholesale hedging).⁴⁹ No matter the granularity of the energy use data that is involved, energy suppliers must obtain consumers' opt in consent to use energy consumption data from smart meters for marketing purposes.⁵⁰ Consumers in the U.K. have the right to opt out of trial programs that relate to energy suppliers' collection and use of half-hourly energy consumption data, and these types of trial programs that collect very granular energy consumption data require approval by government regulators.⁵¹

In some Member States, installation of smart meters is compulsory and consumers do not currently have legal opt out rights in terms of refusing a smart meter or rights to limit collection and communication of energy consumption data. Concerns about the public health consequences of consumers being exposed to radio frequency transmissions from smart meters and other wireless devices have also been raised in Europe. For example, in Italy there have been two High Court judgements issued that recognize claims of adverse health effects from wireless transmissions such as mobile phones.⁵² It is conceivable that insurance companies may decline to cover liability for health effects from electromagnetic radiation.⁵³ The European Data Protection Supervisor (EDPS) recommends offering consumers the choice of not switching to smart meters, particularly when they do not wish to take advantage of time of use tariffs or other services based on smart meter functionalities (for privacy reasons, health reasons, or otherwise).⁵⁴ Alternatively, the EDPS recommends that consumers be given the option of having a smart meter installed, but having the meter's smart functionalities

⁴⁷ European Smart Metering Landscape Report 2012, (fn 2) 7-8 (describing provisions of the Dutch Electricity and the Gas Act that was approved in 2011 giving customers legal choices over whether they accept a smart meter; their choices range from "having no smart meter at all to [having] a smart meter with full functionality to provide interval data to the network operator and chosen service provider").

⁴⁸ UK Government Response to Consultation, (fn 29), 22.

⁴⁹ UK Government Response to Consultation, (fn 29), 24.

⁵⁰ UK Government Response to Consultation, (fn 29), 24-25.

⁵¹ UK Government Response to Consultation, (fn 29), 25-27.

⁵² Corte di Cassazz. 12.10.2012 Brescia Caso Marcolini and Cass. Civ. Sez. Lavoro, Sentenza n. 17438 del 12.10.2012. See also Corte Costituzionale Sentenza TAR Trentino Alto Adige Sez.I, 08.07.2010, n. 171.

⁵³ See generally, Roseanne White Geisel, 'Insurers exclude risks associated with electromagnetic radiation', *Business Insurance*, 6/4/2007, Vol. 41, Issue 23, p 12-13.

⁵⁴ EDPS Opinion on Smart Metering, (fn 1) 11.

disabled, including disabling the meter from making granular readings and disabling the meter's remote on/off control switch. Apart from an opt out mechanism, it is important to note that the EDPS recommends following principles of data minimization and requiring energy suppliers to obtain explicit consent to collect smart meter data beyond that necessary for providing energy, billing, detecting fraud and preparing aggregate data to maintain the energy grid, which will further protect consumers' privacy and data protection rights in smart metering implementation programs even when there is no opt out mechanism.

5. Recommendation on Opt Out Mechanisms

The advantages of smart metering programs should be compared with the related costs that will be borne by customers in terms of financial cost as well as non-monetary costs, such as intrusions into their privacy and personal data.⁵⁵ Assuming consumers' privacy and data protection rights should be recognized and protected in smart metering implementation programs and that an opt out mechanism is desirable for this purpose, what type of opt out mechanism should be offered? There are two parts to answering this question.

First, what type of opt out mechanism should be included in a smart metering implementation program? Choosing not to have a smart meter device installed in the home is the ultimate opt out for consumers from an information privacy perspective. This is so because such an opt out mechanism excludes the device that makes it possible for energy suppliers and others to initially collect household-level energy-use data and it also prevents subsequent sharing and processing of that data. A less drastic option would be to allow the consumer to choose to have a smart meter installed that minimizes the collection of granular energy-use data, such as one that has been modified through programming of the device to collect and communicate only energy use data that are necessary to deliver energy to the consumer or that are essential to management of the energy grid. This latter option is preferable because it achieves a better balance between protecting consumers' privacy and personal data and achieving important societal interests that support participation in smart metering systems, such as promoting better management of the energy supply and energy conservation. Modifying the data collection and communication capabilities of smart meters also helps prevent privacy intrusive secondary uses of smart meter data by energy suppliers and third parties that are unrelated to the direct provision of energy, such as the use of granular household energy use data for behavioural advertising purposes.

Second, is it lawful (and equitable) for energy suppliers to charge consumers additional fees for opting out? Currently additional fees for opting out do not appear to be included in opt out mechanisms available to consumers in the European Union, but they are common in the United States. As in the *Friedman v PUC* case discussed earlier, energy suppliers argue that it is fair to charge additional fees to consumers who opt out because such opt outs result in additional expenses for energy suppliers and undermine potential societal benefits of smart metering systems.⁵⁶ We think much caution should be exercised in determining the amount of fees for opt outs. To the extent that the

⁵⁵ See European Smart Metering Landscape Report 2012, (fn 2), 93 (discussing the balancing required between individual privacy and achieving societal goals in smart metering implementation programs).

⁵⁶ See European Smart Metering Landscape Report 2012, (fn 2) 59 (noting beneficial items include energy savings, savings on call centre costs, a lower cost level as a result of the market, and savings in meter reading costs).

necessary purposes of smart metering systems can be achieved without charging customers for opting out, no fees should be charged to customers who opt out because energy suppliers do not need data from each household to manage the energy supply, and many of the important societal benefits of the smart grid may be achieved without each household sharing granular energy use data.⁵⁷ However, if opt outs become very common among energy suppliers' customers, there may be insufficient data collected through smart meters to achieve the societal benefits anticipated from the smart grid.⁵⁸ A reasonable balance seems to involve charging consumers no (or low) fees to opt out and engaging in ongoing assessment (by energy suppliers and government regulators) of the success or lack of success of smart meter implementation programs in terms of meeting the societal goals of the programs.

This ongoing assessment of impact of opt outs should examine whether the prevalence of opt outs is impacting the success of a smart metering implementation program. To determine the impact, it will be important to identify the essential societal goals of smart metering implementation programs and to distinguish purely commercial uses of smart metering data, such as secondary uses to generate behavioural advertising revenues, from the primary societal goals that relate to delivering energy to customers and better managing the energy supply. In some cases there may be evidence that opt outs result in significant additional expenses for energy suppliers. In these cases, it may be anticipated that some government regulators, particularly those in the U.S. where consumers' privacy and data protection rights are weak, may determine that these expenses related to opt outs should be borne by consumers who opt out, as opposed to being passed on to all customers through general rate increases. In such cases, there should be a mechanism to make sure any opt out fees to be imposed directly on consumers who opt out are reasonable in light of the additional expenses incurred by energy suppliers that relate to such opt outs. Finally, it may also be important to correlate the applicable fees for opting out to the income of those who opt out, such that lower-income customers pay lower fees.⁵⁹ The adjustment of opt out fees for income level is needed to ensure that the cost of exercising one's privacy and data protection rights is not so high that it makes privacy and data protection out of reach to customers who have limited resources.

If challenged by consumers on consumer privacy and data protection grounds, an opt out mechanism as described above is likely to be upheld by the courts in the United States, where consumers do not have broad information privacy rights or fundamental human rights of privacy or data protection.⁶⁰ But is it lawful to charge opt out fees to EU consumers who do have fundamental human rights of privacy and data protection that apply in all contexts including smart metering systems? The answer will likely depend on whether smart meter implementation programs and the personal data processing that these programs entail constitute lawful processing that is permitted without the data subject's consent.⁶¹ Further, it will entail balancing individuals' fundamental human rights of privacy and data protection in smart metering systems with competing interests of the larger society that are to be derived from smart grids and

⁵⁷ Evans, (fn 15), 5-6.

⁵⁸ Evans, (fn 15) 5-6 (additional cost to the energy supplier could also result if too few customers opt out).

⁵⁹ Renew Grid, (fn 2) (providing an example of reduced opt out fees for low income customers in California).

⁶⁰ See previous discussion of the two U.S. court cases cited in fn (44).

⁶¹ Data Protection Directive, (fn 26), Art. 7; EDPS Opinion on Smart Metering Systems, (fn 1) 10-11.

smart metering systems.⁶² If no opt out mechanism is provided or the fees required to opt out are too onerous, consumers may rightly claim they are being unlawfully forced to give up their fundamental rights of privacy and data protection without proper justification. Recent research indicates that consumers are typically not willing to pay significantly higher costs for goods to obtain enhanced information privacy.⁶³ So, even if smart meter opt out fees are imposed that are consistent with preserving consumers' fundamental human rights of privacy and data protection, these fees may still be high enough to deter many privacy conscious people from opting out of participation in smart metering programs. And, this begs the question of whether charging consumers to exercise their fundamental rights of privacy and data protection can ever be justified.

6. Conclusions

The key to crafting opt out mechanisms will be to balance the rights of individuals and families to protect their privacy and personal data with the broader societal interests to be achieved from smart metering implementation programs. Society benefits from achieving energy conservation and other improvements in energy management that are likely to flow from smart metering implementation programs, but it should not come at the expense of undue sacrifice of consumers' rights to privacy and data protection. The right to be free of unnecessary and intrusive surveillance in the home is recognized under both EU and U.S. law, and energy consumers have significant concerns related to this traditionally private arena that are implicated by installation and operation of smart meters in their homes. Accordingly, consumers in both the EU and the U.S. are requesting the right to opt out under smart metering installation programs. They should be provided with opt out mechanisms that respect consumer rights to privacy and data protection, provided these mechanisms do not significantly frustrate achievement of important societal benefits that can be gained from smart meter implementation programs.

However, not all societal benefits to be achieved from smart meters are equally important, and it will be imperative to reach consensus about which societal benefits are essential. Some potential societal benefits, including some that are related to secondary uses of smart meter data that have commercial value but are not directly related to delivering energy to the supplier or better managing the smart grid, should be subordinate to consumers' privacy and data protection rights. Use of smart meter data to market products and services to consumers is a prime example of a use that is not essential to smart metering implementation programs. Consumers should be allowed to opt out of privacy intrusive smart metering implementation programs including opting to have smart meters installed in their homes that have been modified to limit collection and sharing of energy use data except for data that is necessary to deliver energy to them and to enable the energy supplier to better manage the energy grid. Further, when exercising their right to opt out, consumers should not be charged unreasonable fees and the reasonableness of opt out fees must be examined in light of the nature of consumers'

⁶² The fundamental rights to privacy and data protection are not unlimited and exceptions permit interference with those rights in accordance with the law and when necessary in a democratic society for national security, public safety or the economic well-being of the country, or for other specified reasons. ECHR, (fn 25), Art. 8.

⁶³ Nicola Jentzsch and others 'Study on monetising privacy, An economic model for pricing personal information,' European Network and Information Security Agency, Deliverable 2012-02-27, (2012) 34-37, 39, 41.

privacy rights under EU and U.S. laws. Finally, fees charged to individual consumers for opting out should be reasonable in light of the consumers' relative income level, such that low-income consumers are not being asked to pay fees that make it unduly burdensome to exercise their privacy and data protection rights.