



Embedding Privacy into Smart Grid Initiatives

Ann Cavoukian, Ph.D.

Information and Privacy Commissioner,
Ontario, Canada

Modernization efforts to transform the current electrical grid into a Smart Grid are well underway. The infrastructure that will support the Smart Grid will be capable of collecting detailed information on energy consumption within the most private of places — the home. The successful implementation of the Smart Grid ultimately relies on consumer confidence and trust, but privacy concerns relating to the electricity usage profiles arising from Smart Grid technologies threaten to undermine that trust.

Privacy by Design (the Gold Standard for data protection), is *the* privacy standard to be adopted for privacy protection in the implementation of Smart Grid technologies. Embracing a positive-sum model whereby privacy and energy conservation may be achieved in unison, is key in ensuring consumer confidence and trust as Smart Grid projects are initiated.

This publication outlines the best practices for protecting privacy on the Smart Grid, which are detailed in the publications *Privacy by Design: Achieving the Gold Standard in Data Protection for the Smart Grid*¹ (*Achieving the Gold Standard*) and *SmartPrivacy for the Smart Grid: Embedding Privacy into the Design of Electricity Conservation*² (*SmartPrivacy*), and is intended to serve as a quick reference guide for electricity providers and utilities around the world, to ensure that consumer privacy is strongly protected on the Smart Grid. Organizations that lack the technical expertise to implement these best practices may wish to consider discussing them with their technology providers.

1 Information and Privacy Commissioner of Ontario, Canada, Hydro One Inc., and Toronto Hydro Corporation, *Privacy by Design: Achieving the Gold Standard in Data Protection for the Smart Grid*, 2010.

2 Information and Privacy Commissioner of Ontario, Canada and The Future of Privacy Forum, *SmartPrivacy for the Smart Grid: Embedding Privacy into the Design of Electricity Conservation*, 2009.

Also see: *Your Smart Meter is Watching*, an opinion column by Commissioner Ann Cavoukian and Jules Polonetsky, of the Future of Privacy Forum at: www.ipc.on.ca and *Smart Grid saves power, but can it thwart hackers?*, Tyler Hamilton, Toronto Star, August 3, 2009.



Ten Practical Steps:

Best Practices	Reference
<p>Step 1. Understand exactly what personally identifiable consumer information is currently being collected, and for what purposes. Understand how that consumer information is being used and disclosed. Consider conducting a Privacy Impact Assessment, but be sure to address concrete risks to privacy and, most important, develop an action plan to address those risks (see <i>Privacy Risk Management</i> at http://www.ipc.on.ca/images/Resources/pbd-priv-risk-mgmt.pdf).</p>	<p><i>Achieving the Gold Standard</i>, p. 16</p>
<p>Step 2. At the inception phase of a Smart Grid-related project, identify any privacy considerations and incorporate them as requirements into the development and design process.</p>	<p><i>Achieving the Gold Standard</i>, p. 16</p>
<p>Step 3. Ensure that consumers are informed of how information collected from them will be used. Provide consumers with clear instructions on how to use the privacy safeguards offered, such as a secure login and password, as well as how to de-enroll or delete personally identifiable information relating to them.</p>	<p><i>SmartPrivacy</i>, p.15</p>
<p>Step 4. Ensure that personally identifiable information on the Smart Grid is strongly protected, whether at rest or in transit. In particular, ensure that communications containing personally identifiable information are strongly encrypted, by default.</p>	<p><i>Achieving the Gold Standard</i>, p. 16</p>
<p>Step 5. Keep personally identifiable information in a minimum number of systems from which it may be securely accessed. Allow need-to-know-only access to personally identifiable information.</p>	<p><i>Achieving the Gold Standard</i>, p. 16</p>
<p>Step 6. Minimize the persistency of personally identifiable information.</p>	<p><i>Achieving the Gold Standard</i>, p. 16</p>

Step 7.	Ensure that any personally identifiable information retained is securely destroyed at the end of its lifecycle.	<i>Achieving the Gold Standard</i> , p. 16
Step 8.	<p>Regarding authorized disclosures to third parties for legitimate purposes:</p> <ul style="list-style-type: none"> a. Minimize the amount of information provided to the third party, given the nature of the relevant service. For example, partial location data such as the first few digits of a zip or postal code may be sufficient for services that allow for comparison of neighbourhood averages, and other features such as weather statistics. b. Consider replacing personal identifiers with a pseudonym such as a unique number, which an individual would be permitted to reset at any time. c. Include appropriate language in contractual agreements to safeguard consumers. d. Ensure that third parties agree not to correlate the disclosed information with data obtained from other sources without the consent of the individual. e. Ensure that disclosures of personally identifiable information to third parties are based on a consumer's choices and preferences, not requests received from third parties. 	<i>SmartPrivacy</i> , p.14; <i>Achieving the Gold Standard</i> , p. 16
Step 9.	Be able to demonstrate whether the methods used to incorporate both privacy and Smart Grid objectives meet the privacy requirements of the Smart Grid project.	<i>Achieving the Gold Standard</i> , p. 17
Step 10.	Develop remediation plans to immediately identify and correct non-compliant privacy deliverables, and then provide an acceptable means of redress to consumers.	<i>Achieving the Gold Standard</i> , p. 17



Conclusion

Utilities will face many challenges during the transformation to the Smart Grid. The amount of consumer information being collected and the digital nature of that information will precipitate internal changes within utilities, which go well beyond individual IT departments. However, great care must be taken not to sacrifice consumer privacy amidst a sea of enthusiasm for electricity reform and conservation. Utilities must embrace a new positive-sum business model — one that respects both the interests of electrical reform and the privacy of their customers — or risk losing consumer confidence and trust.

These best practices for Smart Grid *Privacy by Design* were developed to be used by the utilities that will be facing these challenges. The time to act is now – to enhance consumer confidence and trust by building *Privacy by Design* directly into the development and implementation of Smart Grid systems.

For more information, please visit the Information and Privacy Commissioner of Ontario, Canada's website at www.ipc.on.ca or www.privacybydesign.ca.



Published: October 2010

**Information and Privacy Commissioner,
Ontario, Canada**
2 Bloor Street East, Suite 1400
Toronto, Ontario • M4W 1A8 • Canada

Telephone: 416-326-3333 • 1-800-387-0073
Facsimile: 416-325-9195
TTY (Teletypewriter): 416-325-7539
Email: info@ipc.on.ca
Website: www.ipc.on.ca