Smart Grid Privacy Policy

Michigan Smart Grid Collaborative
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Institute for Energy and the Environment
Vermont Law School
Institute for Energy and the Environment

- The IEE is a national and international resource for energy law and policy.
- Our research team is selected from top students in the energy and environmental programs at VLS.
- In 2010 we initiated our Smart Grid Project funded by US DOE
  - Examining best practices in smart grid implementation through 6 utility case studies
  - Addressing the legal, regulatory, and policy challenges of smart grid implementation, including privacy concerns
Traditional Meter vs. Smart Meter Data
The Privacy Challenge

“We . . . have the technology to record . . . energy consumption . . . every minute, second, microsecond, more or less live. From that we can infer how many people are in the house, what they do, whether they're upstairs, downstairs, do you have a dog, when do you habitually get up, when did you get up this morning, when do you have a shower: masses of private data.”

Martin Pollock, Siemens Energy
“Privacy Concerns Challenge Smart Grid Rollout,” Reuters (June 25, 2010).
“We think the regulator needs to send a strong signal to say that the data belongs to consumers and consumers alone. We believe that’s a blocker to people adopting the technology.”

Martin Pollock, Siemens Energy
“Privacy Concerns Challenge Smart Grid Rollout,” Reuters (June 25, 2010).
Privacy is Paramount for Public Acceptance

- Consumer concern about data security in other sectors
  - Examples from Epsilon, Facebook, Google, Nintendo, etc.

- State scrutiny of privacy implications
  - “It is the policy of the state to promote . . . smart grid functions . . . in a manner that is consistent with security and privacy.” Maine Smart Grid Policy Act.
  - Colorado Smart Grid Task Force tasked to review potential impacts to “consumer protection and privacy.”
Overview of State and Federal Privacy Laws, Regulations and Related Issues
State Activities

- Nine jurisdictions have statutes, regulations, and/or orders
  - CA, CO, OK, OR, PA, TX, VT, WA, & WI
- Many other have background statutes & docket open to address the issue
- Lots of states have not acted
- Some utilities (co-ops, munis) self-regulate
Third Party Access to Data

- Opt-in States: Require affirmative customer consent before data is disclosed to third party
  - WA & TX
Third Party Access to Data

- Opt-Out States: Utility may disclose data to the third party unless the customer opts-out
  - OR & PA
  - PA Policy: Utility may not give information to a third party service provider unless:
    - (1) the customer has notice of the utility’s intent to do so and
    - (2) the utility gives the customer a convenient method to notify the third party that the customer wants to restrict the release of the private information
Third Party Access to Data

- Other methods: Allow third party access without consent
  - depending on third party’s use of the data
    - CA
  - if the utility contracts with the third party
    - OK, OR, & CO (Third party may have to maintain security procedures, use data solely for the contract’s purpose, destroy data, and sign a non-disclosure agreement)
  - if the entity that receives the information contract’s with the PUC.
    - VT & WI
Ratepayer-funded energy efficiency programs: an interesting challenge

<table>
<thead>
<tr>
<th>How is the Entity Related to the Utility?</th>
<th>What Type of Data is Requested?</th>
<th>Is Customer Consent Required to Share the Data?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Third Party Program Administrator under PUC Contract</td>
<td>All Customer Billing and Energy Usage Data</td>
<td>No Consent Required – PUC Establishes Rules for Data Sharing (e.g. VT)</td>
</tr>
<tr>
<td>Contracted to Utility or PUC Program Administrator</td>
<td>All/Select Customer Billing and Energy Usage Data</td>
<td>No Consent Required – Data Access Negotiated Between Program Admin &amp; Utility (e.g. WI)</td>
</tr>
<tr>
<td>Non Regulated Third Party</td>
<td>Aggregated Energy Usage Data</td>
<td>No Consent Required (e.g. CO, OK)</td>
</tr>
<tr>
<td>The Utility Customer</td>
<td>All/Select Customer Billing &amp; Energy Usage Data</td>
<td>No Consent Required (e.g. CO, VT, OK)</td>
</tr>
<tr>
<td></td>
<td>All Customer Billing and Energy Usage Data</td>
<td>Customer Opt In (e.g. CO, OK, TX)¹</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No Customer Consent Required for Primary Purpose (EE/DR) (e.g. CA)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Customers Have Unfettered Access to their Own Data (e.g. CA, CO, IL, OK, PA, TX, WA)</td>
</tr>
</tbody>
</table>
Who pays for data privacy?

- Can utilities recover the cost of disclosing data (including relevant privacy protections)?
  - CA: utility forbidden from selling customer data
  - CO: utility must provide access to standard format data without charge
  - OK: utility may charge a reasonable fee for providing nonstandard usage data

- Should utilities be fined for ‘leaks’?
  - Intentional vs. negligent vs. grossly negligent
Data Aggregation

- Dis-aggregation is easier than you think – and watch out for energy efficiency M, E & V data
- Colorado 15/15 rule: must contain data from at least 15 meters – and no single customer may comprise > 15 percent of data
- Oklahoma: aggregated data must contain a “sufficient number of similarly situated customers within a particular geographic area so that the daily usage routines or habits of an individual customer could not reasonably be reduced from the data
- Vermont: nothing more granular than townwide
Vermont Privacy Principles

- The customer always maintains the right to choose
- Aggregation should ensure that customers are not identified
- Interactive connections must have secure customer authentication
Vermont Privacy Principles cont.

- Utilities must:
  - not disclose the data unless:
    - warrant, customer consent, or legal procedure (i.e. subpoena)
      - Efficiency Vermont?
  - Create and maintain data security procedures
  - Adopt a privacy policy consistent with these principles and make it available
Public Records Laws: A problem?

- Apply only to government agencies, not utilities.
- Can apply to municipals, power authorities, sometimes even electric co-ops.
- M.C.L.A. 15.243, § 13(1): “A public body may exempt from disclosure as a public record . . . [i]nformation of a personal nature if public disclosure of the information would constitute a clearly unwarranted invasion of an individual's privacy.”
- Balancing test: privacy v. public interest in disclosure.
The Constitution

- SCOTUS has not directly addressed whether Fourth Amendment protects utility records or energy usage data from warrantless government access
- Bank records case: If you’ve already disclosed it to the service provider, no reasonable expectation of privacy
- At least 1 circuit court has applied this principle to utility customer data
- *Sorrell v. IMS* (2011) – gov’t cannot distinguish among data users and their purposes . . .?
- State constitutional protections may be > federal
Smart Grid Privacy: Federal

- Fair Information Privacy Principles (FIPPs)
- Consumer Privacy Bill of Rights – White House, February 2012
- NTIA/Dept. of Commerce convenes stakeholders to develop voluntary industry guidelines
- DOE Green Button Initiative
Privacy Seal Programs

- WebTrust–American Institute of Certified Public Accountants -- covers business practices and information privacy, transaction integrity, and security.

- TRUSTe - Electronic Frontier Foundation and CommerceNet Consortium, Inc. awarded to web sites sites that adhere to TRUSTe's privacy policies of disclosure, choice, access, and security. Site owners agree to comply with ongoing oversight and alternative dispute resolution processes.

- BBBOnLine - The Council of Better Business Bureaus – includes verification, monitoring and review, consumer dispute resolution, enforcement mechanisms, and an educational component.
Consumer Privacy Bill of Rights

- Easy accessibility and understandability
- Consumer control
- Context of consumer consent
- Right to set reasonable limits
- Access and Accuracy
- Secure and Responsible Handling
- Accountability
Privacy Principles Leading to a Model Utility Privacy Policy
Privacy Principles for Utilities

1. Make privacy the default setting.
2. Provide complete privacy protection.
3. Know the law regarding public disclosure in your state.
4. Only store/provide access to necessary information.
5. Obtain written consent before disclosing to most third parties.
6. Educate customers about the implications of sharing data with third parties.
7. Notify customers when data is disclosed.
8. Develop a plan for contingencies.
9. Make your privacy policy accessible to customers.
“Numerous companies are already developing Web and smartphone applications and services for business and consumers that can use Green Button data to help consumers choose the most economical rate plan for their use patterns; deliver customized energy-efficiency tips; provide easy-to-use tools to size and finance rooftop solar panels; and conduct virtual energy audits that can cut costs for building owners and speed the initiation for retrofits. Developing innovative applications and services to help consumers understand and manage their energy use and understand the environmental impacts of that usage is a field ripe for American innovation.”

(source: www.greenbuttondata.org)
How does the site work?
The site interfaces with the webservice used by Onstar's mobile applications. Currently, the service is polled 2 times a day for updated vehicle information.

What happens when I login to the site?...the site communicates with the OnStar webservice to validate your account....The site stores your username, password, and a token received from the OnStar webservice. The password is hashed and salted with bcrypt making it virtually unrecoverable. The password is stored to allow you to login to the site to manage your account without talking to OnStar every time. When the site needs to poll your car, the token is used to authenticate with the webservice....

It'd be cool to track X, can we do that? Right now, I can only get data that you can see on your phone. We might be able to get data from other sources (onstar.com/myvolt.com) in the future.
Volt Stats
Membership Groups: Michigan Capital City

<table>
<thead>
<tr>
<th>Serial #</th>
<th>Nickname</th>
<th>State</th>
<th>EV Miles</th>
<th>Total Miles</th>
<th>EV%</th>
<th>MPG</th>
<th>MPGe</th>
<th>MPGcs</th>
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<tr>
<td>2012-06866</td>
<td>EREVed</td>
<td>MI</td>
<td>10352.36</td>
<td>10470.71</td>
<td>98.9</td>
<td>1809.27</td>
<td>89.41</td>
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<td>2011-02903</td>
<td>Volt NMT</td>
<td>MI</td>
<td>6386.48</td>
<td>6547.06</td>
<td>97.5</td>
<td>1505.37</td>
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<td>36.92</td>
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<tr>
<td>2012-14012</td>
<td>Amazing Chev</td>
<td>MI</td>
<td>7344.41</td>
<td>7542.52</td>
<td>97.4</td>
<td>1158.43</td>
<td>88.24</td>
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<tr>
<td>2011-03945</td>
<td>Brent's Volt</td>
<td>MI</td>
<td>17859.39</td>
<td>18536.24</td>
<td>96.3</td>
<td>834.78</td>
<td>86.52</td>
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<tr>
<td>2012-22022</td>
<td>Volt</td>
<td>MI</td>
<td>2904.48</td>
<td>3136.20</td>
<td>92.6</td>
<td>486.89</td>
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<tr>
<td>2012-02019</td>
<td>Sparky</td>
<td>MI</td>
<td>3388.10</td>
<td>3620.56</td>
<td>93.6</td>
<td>481.48</td>
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<tr>
<td>2012-00519</td>
<td>Shocking!</td>
<td>MI</td>
<td>10875.82</td>
<td>11949.91</td>
<td>91.0</td>
<td>462.90</td>
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<tr>
<td>2012-13741</td>
<td>Quiet As A Mouse</td>
<td>MI</td>
<td>5606.06</td>
<td>6180.26</td>
<td>90.7</td>
<td>325.30</td>
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<td>2011-00974</td>
<td>Volt 974</td>
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<td>17494.85</td>
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<td>75.2</td>
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<td>2010-01439</td>
<td>DenY's Volt</td>
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<td>6746.23</td>
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<td>2011-01586</td>
<td>BATDOC</td>
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<td>11266.40</td>
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<td>68.4</td>
<td>115.49</td>
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<td>2012-04384</td>
<td>Red Streak</td>
<td>MI</td>
<td>5616.96</td>
<td>9348.27</td>
<td>60.1</td>
<td>100.67</td>
<td>91.00</td>
<td>40.18</td>
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<td>2013-16664</td>
<td>no-mo-gas</td>
<td>MI</td>
<td>4368.26</td>
<td>7477.44</td>
<td>58.4</td>
<td>91.73</td>
<td>58.20</td>
<td>38.14</td>
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<td>2012-00261</td>
<td>BlackBeauty</td>
<td>MI</td>
<td>6920.72</td>
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<td>2012-07622</td>
<td>AC2DC</td>
<td>MI</td>
<td>7616.88</td>
<td>13354.82</td>
<td>57.0</td>
<td>84.88</td>
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<td>2011-02200</td>
<td>Kim's Volt</td>
<td>MI</td>
<td>9553.96</td>
<td>17020.28</td>
<td>56.1</td>
<td>83.27</td>
<td>55.42</td>
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<tr>
<td>2011-02054</td>
<td>AmpOhm</td>
<td>MI</td>
<td>6389.04</td>
<td>13739.53</td>
<td>46.5</td>
<td>70.80</td>
<td>52.29</td>
<td>37.88</td>
</tr>
</tbody>
</table>

Showing 1 to 17 of 17 entries
Details for Volt #2012-14012 (Amazing Chev):

**Car Information / Rankings**

- **Location:** Lansing Charter Township, MI
- **Last Updated:** 9/8/2012 12:11:11 PM CST
- **EV Miles:** 7344.41, #481 / 70.7%
- **Total Miles:** 7542.52, #700 / 57.4%
- **EV %:** 97.4%, #83 / 95.0%
- **MPG:** 1158.43, #57 / 96.6%
- **MPGe:** 88.24, #53 / 96.8%
- **MPGcs:** 50.43, #1357 / 17.3%
- **Tire Pressure:** 38 PSI
- **Group Membership(s):** Michigan Capital City
- **Comments:** Plug It Not Pump It!

**Achievements**

- **Miles Driven Without Gas, Level 4**
  - 1633.44 Miles, 100.00 Points
  - Recorded between 5/1/2012 and 6/8/2012

**Graph Options**

- **Graph Type:** MPG
- **Moving Average:** 30 Day

**MPG History**

- Ranking Percentile
- Lifetime MPG
- 30 Day MPG
Voluntary Release to Third Parties

Illinois AG Position

“The People do not take issue with ComEd’s commitment to ensure that customer usage data is released only when the customer authorizes it. That being said, the devil is in the details. In any order ... the Commission should require that ComEd provide a report detailing information about the Green Button initiative and other instructions to ensure that ratepayers do not unwittingly authorize the access to personal information...”

The Illinois Commission

“The AG ... raise a valid point regarding the need to adequately educate consumers regarding the authorization of access to personal information ... ComEd should work with stakeholders to ensure that customers are properly informed.”
Model Privacy Policy - Background

- Implement privacy policies prior to Advanced Metering Infrastructure (AMI) rollout.
  - Update the policy as new options become available.

- What does this policy accomplish?
  - Protects customer data from unauthorized disclosure or breach of security throughout the data lifecycle.

- To whom does it apply?
  - Governs utility’s use and management of customer electricity use data and personal information.
Model Privacy Policy - Definitions

- Customer Electricity Use Data:
  Electricity use data includes all characteristics related to a customer’s electric demand. This information includes, but is not limited to, total monthly electricity use consumption and any incremental or time-of-use consumption data at the frequency or increment recorded by the utility.
Personally Identifiable Information ("PII")

- Names
- All geographic subdivisions smaller than a State, including street address, city, county, precinct, zip code, and their equivalent geo-codes;
- All elements of dates (except year) for dates directly related to an individual
- Telephone numbers;
- Fax numbers;
- Electronic mail addresses;
- Social security numbers;
- Account numbers (including energy bill account numbers, credit card numbers, bank account numbers, etc.);
- Any information received in the credit check processes, unique personal identifying information related to finances;
- Certificate and license numbers;
- Drivers license numbers;
- Network address, LAN, etc.;
- Device Identifiers and serial numbers;
- Internet Protocol (IP) address numbers;
- Biometric identifiers, including finger and voice prints;
- Full face photographic images and any comparable images;
- Any other unique identifying number, characteristic, or code.
Rights of Utility Customers

- **Privacy** - Customers are entitled to privacy in their electricity use data, personal information, and personally-identifiable information (PII).

- **Consent** - The utility will require express consent before disclosing electricity use data or personal information to a third party, other than to contractor, or disclosure to the third party is otherwise required by law.

- **Access to Information** - In general, customers have a right to know how the utility or third party contractors and vendors use their electricity use data or PII as well as which third party contractors have access to any of their electricity use data or personally identifiable information.

- **Accuracy** - The utility will ensure that the information it collects, stores, uses, and discloses is reasonably accurate and complete.

- **Data Security** - The customer’s electric meter and any web portal that the utility offers will provide secure and accurate electricity use data.
Individual Access

- **Right to Access Information** - Customers are entitled to access their own energy use data within a reasonable time-frame after the utility collects and verifies the data. This information will be presented in an easily readable format that is as detailed as the information the utility uses or discloses to third party vendors and contractors.

- **Right to Disclose Information** - Customers have the right to share their own electricity use data and personal information with third party vendors of their choice to obtain services or products provided by those vendors.

- **Written Permission** - The utility will only share identifiable customer electricity use data or PII with third party vendors after the customer has provided express, written permission.
Third Party Access

- Utility Disclosure
  - Subject to applicable state law, the utility may share customer data with third party contractors providing a necessary business service to the utility. The utility will not disclose customer electricity use data, personal information, or PII to third party contractors unless it is necessary to provide reliable electric service.
  - The utility will contractually obligate third party contractors to keep customer electricity use data and PII confidential.
  - The utility will require that third party vendors maintain adequate, internal auditing procedures for the collection, storage, and disclosure of customer data.
  - The utility will only share that information which is necessary for the contractor to perform the required service for the utility.
  - The utility will make all reasonable efforts to keep customers informed about the type of information that is shared with third parties. The utility will provide a general description of the type of information that is shared with third party contractors (i.e., name, address, monthly usage for billing, etc.).
Third Party Access

- Legal Obligation to Disclose Electricity Data - The utility will comply with a warrant, court order or other legal obligation to disclose a customer’s electricity use data or other PII.

  - **Freedom of Information:** The utility will only respond to a request for electricity use data pursuant to a “sunshine” law or state Freedom of Information Act with data that has been aggregated or de-identified.
  
  - **Warrants:** The utility will cooperate with law enforcement and provide information sought in a warrant or other court order. The utility will also establish law enforcement request procedures for requests for information supported by a warrant.
Utility Procedures

- **Data Storage and Handling** - The utility will only collect and store electricity use data or personal information which is necessary for the utility to provide reliable electric service. The utility will ensure that data that is no longer needed or used to provide reliable electric service will be disposed of effectively and securely.

- **Privacy Officer** – The utility will identify an officer or employee to be responsible for implementing and reviewing utility privacy procedures.

- **Breach Notice** – When the utility identifies a breach, it will make all efforts to secure the breached data and notify all customers about the breach.

- **Employee Access to Customer Data** - The utility will strive to limit employees’ and contractors’ access to customers’ electricity use information or PII so that employee or contractor has access only to the information that is needed to perform the duties of their regularly assigned duties.
Privacy Impact Assessment

Utilities must conduct a PIA with the following goals:

- Determine whether the utility’s information handling and use complies with legal, regulatory, and policy requirements regarding privacy;

- Determine the risks and effects of collecting, maintaining, and disseminating information in identifiable, or clear text, form in an electronic information system or groups of systems; and

- Examine and evaluate the protections and alternative processes for handling information to mitigate the identified potential privacy risks.

- The utilities information collection, storage, disclosure, and destruction procedures should be reviewed annually.
Issue Management

Be proactive about benefits rather than reactive to concerns

- “The utilities are not doing this (smart meters) to customers they are doing it for customers”
- We need to better articulate the operational and environmental benefits (e.g. PNNL 12% reduction in GHG emissions by 2030)

There is significant confusion over opt out policies:

- Is opt out because you cannot protect customer privacy?
- Is opt out because there are documented health impacts?
- Is opt out because we need to give customers a choice?
The Way Forward

There are substantial operational and environmental benefits to achieving a smart grid:

- Comprehensive state and utility policies are necessary to protect consumer privacy
- Educating consumers on both the positive attributes and risks of third party release of data is essential to success
- Utilities and policymakers should be more proactive on emphasizing consumer benefits.