



*Pacific Gas and
Electric Company™*

REQUEST FOR INFORMATION

PG&E Home Area Network (HAN)
Phase 2.0

July 31, 2012

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1.1 BACKGROUND

Pacific Gas and Electric Company (PG&E) is pursuing multiple strategies in the areas of conservation, energy efficiency, and demand response. Reducing the need for additional generation of resources is an essential part of PG&E's SmartMeter™ program, and reflects PG&E's ongoing commitment to the environment. PG&E is a national leader in demonstrating and developing the market for innovative energy management tools. PG&E's SmartMeter™ program is currently one of the largest in the United States, having deployed over 9 million electric and gas SmartMeters™ to customers.

PG&E's electric SmartMeters™ include an 802.15.4 ZigBee HAN gateway, which, when fully enabled, will allow customers to connect in-home devices to monitor their electric usage in near-real-time. This energy data is intended to assist customers by helping them identify, interpret and reduce their electrical consumption. A new generation of customer energy management tools is emerging to help provide additional transparency and insight into energy use. PG&E hopes to cultivate a diverse market for these energy management tools within its immediate service territory and California in general. Industry standards such as the ZigBee SEP, as well as PG&E's validation will be crucial in driving adoption of this promising technology, helping to ensure interoperability between customer devices and PG&E's Home Area Network and SmartMeter™ technology. While PG&E seeks to encourage the budding HAN device market by validating devices through this RFI and testing in its lab, PG&E has no intention of purchasing, distributing, or endorsing any such devices. The ultimate goal is to facilitate worry-free plug-and-play device activation, enabling customers to select from their choice of HAN device and focus on reducing their energy consumption, not the technology.

2. PURPOSE AND OBJECTIVES

PG&E is issuing this Request for Information (RFI) in order to solicit information from vendors (Respondents) capable of providing and supporting innovative Home Area Network (HAN) products and solutions to residential and small business electric customers within its service territory. In this next phase of the HAN deployment (Phase 2.0), PG&E is enabling HAN as a platform to allow for third party vendors to innovate and provide a wide variety of customer experiences that promote conservation and energy efficiency.

The goals of HAN Phase 2.0 are:

- Enabling HAN as a platform for customer and third-party access to near-real-time residential energy consumption data (demand and consumption kW and kWh).
 - Note that PG&E plans to expand the functionality of the HAN platform to include pricing and event notification integration in subsequent phases.
- Encouraging an ecosystem of value-added programs and services that promote conservation and energy efficiency through increased visibility and personal control over energy consumption.

- Launching a web-based self-service tool for customers to activate their Home Area Networks and register their validated HAN devices.
- Achieving broader-scale HAN adoption (up to 5,000 customers) via customer self-selection and open enrollment.
 - PG&E is planning to launch a customer pre-registration campaign to recruit interested customers for Phase 2.0 participation in late 2012.

In pursuit of these goals, through this RFI, PG&E intends to establish a limited testing and evaluation program (the “**Evaluation**”) that is designed to identify a limited number of devices that meet PG&E’s technical requirements and provide a customer experience that encourages the adoption of the technology.

PG&E is interested in In-Home Displays (IHDs), gateway devices, and repeaters. Vendors may enable other products (e.g. smart plugs, web based applications, etc.) and services (e.g. alerts, pricing estimations) beyond the certified IHD, gateway device, or repeater, however, the vendor is responsible for ensuring that the end use application functions properly¹ in the case that a non-PG&E-provided field is shown to the customer (e.g. price estimations). In addition, PG&E is interested in hearing about how existing HAN device and service solutions can easily and effectively be extended by the customer to accommodate future use cases.

Upon conclusion of the Evaluation, PG&E expects to select a limited number of devices comprising approximately one device under \$100, devices from at least 3 different vendors, and at least one IHD, one gateway, and one repeater.

PG&E intends to acknowledge, in its materials promoting HAN 2.0, that the selected devices have met PG&E’s criteria for connection to the PG&E network. Vendors should understand that PG&E has not completed its customer communication strategy for the HAN 2.0 project. PG&E will not determine the substance of the statements that it will make regarding the selected devices until after this RFI process is completed. Each selected vendor will be required to enter into a written Product Agreement with PG&E before the vendor makes any public statement regarding the selection of the product, and vendors are prohibited from making any such statement, or from claiming any approval or endorsement by PG&E, without PG&E’s express prior written consent.

¹ For example, a device will not show a \$0.00 or ERROR in the price field.

3. EVALUATION PROCESS

3.1 EVALUATION PROCESS AND TIMEFRAMES

The Evaluation Process will be done in two stages.

First, devices must be interoperable with Silver Springs Networks (SSN) HAN test harness. This testing, “Gate A” ensures interoperability between the HAN device and the SSN meter.

PG&E will evaluate the devices that pass Gate A in PG&E lab conditions using a sequence of tests. PG&E will also evaluate the devices and vendor responses against the evaluation criteria described in Section 3.4. During this evaluation process, PG&E reserves the right to request additional information and materials from any or all vendors, and to invite any vendor to submit a product update, if PG&E determines, at its sole discretion, that doing so would be beneficial to the selection process. PG&E does not guarantee that it will provide an opportunity for any vendor to revise or update its product(s) or submit additional unsolicited information or material. Vendors should assume that their devices and responses will be evaluated “as is”.

PG&E will advise vendors of the results of the Evaluation when the Evaluation is completed.

3.2 DEVICE TESTING STAGES

As noted above, PG&E requires all submitted devices to pass Gate A before the device is submitted to PG&E for detailed Evaluation. The requirements for Gate A are as follows:

- Pass SSN test harness - FW 2.14 and 2.16 (SE 1.0 and SE 1.1). Note that PG&E will be deploying on FW 2.10.8 in early 2013 with an upgrade to FW 2.16 or higher in late 2013. SSN test harnesses for FW 2.14 and 2.16 will test interoperability with these firmware versions.
 - Test harness is available from SSN at the vendor’s cost. Instructions for obtaining the test harness can be found at the following link:
<http://www.silverspringnet.com/partners/partner-registration.html>
 - PG&E is also exploring participation in a ZigFest CA event, at which vendors can test and de-bug on the SSN test harnesses (see Section 3.3)
- Submit RFI response and log files confirming successful SSN test pass. Log file must include the test harness version used, device hardware version, and device firmware version.

Those devices that satisfactorily pass Gate A will be accepted for Evaluation by PG&E. Each device submitted for Evaluation must be identical (in terms of hardware, firmware and software release levels, etc.) as the device that passed Gate A. The key features of the Evaluation are as follows:

- Testing of device on SSN test harness in the PG&E lab using the SSN test harness version appropriate for 2.14 (SE1.0) or 2.16 (SE 1.1). See Appendix B for specific PG&E Clusters & Commands requirements.
- Testing end-to-end interoperability, security, and other technical and functional attributes. See Appendix C for specific PG&E minimum technical requirements.
- Evaluating the other aspects of the vendor's response, including vendor issues, financial issues, commercial issues and the user experience. See Appendix A for Vendor Questionnaire.

3.3 ZIGFEST CA

PG&E is investigating a ZigFest CA event hosted through the ZigBee Alliance in cooperation with Silver Spring Networks (SSN) and other California utilities. As currently envisaged, PG&E expects ZigFest CA would offer device vendors an opportunity to test devices using the SSN test harness for SEP 1.0 (SSN test harness with Firmware 2.14) and SEP 1.1 (Firmware 2.16). Event organizers are looking at an event date in mid-September 2012.

While ZigFest CA attendance would be optional, RFI Respondents who attend would have the opportunity to test devices for interoperability with the SSN test harness without investing in the individual test harness (ZigFest CA cost TBD), and to troubleshoot unsuccessful test results. At ZigFest CA, vendors could undergo multiple iterations of testing; the event's design would facilitate an iterative process to aid in bug fixes and compatibility. By attending ZigFest CA, vendors would gain access to PG&E, other California utilities, Itron and SSN in an environment designed to update code and fix bugs in real time in order to encourage compatibility and interoperability.

ZigFest CA would be held at a future date to be announced. To pass Gate A, vendors could choose to submit the RFI to PG&E with log files proving the device(s) passed the SSN test harness, **or** vendors could choose to attend ZigFest CA, where vendors would use the SSN test harnesses without purchasing the harness themselves. Vendors who wish to participate in ZigFest CA would need to be members of the ZigBee Alliance. As such, vendors would not be required to perform SSN interoperability testing themselves if they attend ZigFest CA and pass testing on the SSN test harnesses at the event. Respondents are required to submit a log file confirming a successful SSN test pass no matter what method of Gate A testing they choose. The log file must include the test harness version used, hardware version, and firmware version. SSN would serve as a 3rd party proctor to confirm that a vendor passed testing at ZigFest CA.

Information regarding Zigfest CA will be made available as the program develops through the Power Advocate RFI event (www.poweradvocate.com). Because Zigfest is not controlled by PG&E, vendors should make contingency plans for Gate A testing using a separately purchased SSN test harness in case the event does not occur in time for response submission under this RFI.

3.4 KEY EVALUATION CRITERIA

The following list of criteria will be used in the evaluation of RFI submissions. Overall, PG&E expects to select a limited number of devices, including approximately one low-price solution (\$< 100), 3+ different vendors, and at least one IHD, one gateway, and one repeater. Vendors should highlight their alignment with these categories in RFI responses.

3.4.1 Device Criteria

Please Note: The following criteria are subject to future updates. All updates to selection criteria will be documented and communicated to vendors through the Power Advocate RFI event (www.poweradvocate.com).

- **Standards Compliance & Alignment** – In order to drive interoperability and support market growth, PG&E is committed to building a smart grid that is based on open standards. The device/solution must be ZigBee SEP 1.1 certified and have an upgrade path to SEP 2.0 when it becomes available. Note that PG&E will not be upgrading devices over its SmartMeter network. It is understood that the key standards have been rapidly evolving and in some cases are not complete. PG&E envisions that its HAN solution will fully comply with these standards as they mature and sufficient time has elapsed for product cycles to complete implementation and certification. Information is requested as to the current level certification and timeline for conformance, compliance and certification to these standards. Please describe compliance or interoperability with other standards (e.g. AutoDR, OpenADE, etc.).
- **Security** – The protection and accuracy of customer data will be critical.
 - Please describe the security and privacy policies and practices in place at Respondent organization. Respondent must provide a clearly-defined privacy policy that explains to customers in plain language i) their ability to choose whether to have their data provided outside of their local HAN and/or to other vendors; ii) a description of how their security and privacy will be protected; and iii) how their data will be obtained, handled, retained, and/or destroyed.
 - Device/ solution must comply with PG&E data privacy and security standards. PG&E security requirements are detailed in Appendix C and are subject to future updates via the Power Advocate RFI event (www.poweradvocate.com).
- **SSN Interoperability** – Device must be compatible with SSN meter FW 2.14 and FW 2.16+

- **PG&E Interoperability** – Interoperability on PG&E’s meter hardware and ability for the device to register and associate using PG&E’s online registration system. Please refer to technical guidelines in Appendix B & Appendix C.
- **Upgradeability** – PG&E believes that the way in which the solution is implemented matters as much as the functionality it provides. Having the right solution architecture is critical to reducing integration costs and complexity, as well as ensuring that the solution will stand the test of time. PG&E seeks solutions that are capable of adapting to the ever-changing technology and business landscape, and in particular, devices/ solutions that can provide an upgrade path to SEP 2.0. Please describe the process in place to offer upgrades to customers who purchase Respondent devices.
- **Basic Function** – PG&E will test the functionality on the product that relates to utility information provided on the device (e.g. kW, kWh, price/bill/ estimations). PG&E will perform basic usability testing on any end devices beyond an IHD/gateway (e.g. smart plugs or other end devices). This includes basic tasks such as being able to connect the end devices, and ability to operate them at a high level (turn device on/off, etc.). This would not include validation of the full functionality of more complex applications. Please refer to technical guidelines in Appendix B & Appendix C.
- **Product Documentation** – PG&E requires the availability of user manuals, proper device packaging and labeling for safety, product warranty, and other documentation. Is this a product designed for residential, small- and medium-sized businesses (SMB), or both? Please describe or exhibit the ways in which Respondent addresses these areas.
- **Product Benefits and Customer Experience** – PG&E will evaluate the extent to which the device and any associated services align with the objectives for the HAN 2.0 program, including total cost of ownership, available user functionality and expected user benefits, ease of use, and the expected overall customer experience in dealing with the device and related customer support.

4. RESPONDENT INSTRUCTIONS

4.1 QUALIFIED RESPONSE

Qualified responses must fully address the requirements of the RFI and its Appendices, and be received by the closing date and time stipulated in Section 4.2. Expectations for response format are detailed in Section 5.

4.2 KEY DATES AND ACTIVITIES

Key activities and target dates are set forth below. PG&E may change these dates at its sole discretion.

Event	Format	Date
RFI Issue Date	Electronic	July 31
Question Submission Period	Electronic	July 31 – Sep 7
Issuance of Q&A Responses*	Electronic	July 31 – Sep 14
Device testing on SSN harness	Event	July 31 – Sep 14
Gate A: RFI Submission, Devices pass SSN testing	Electronic	Sep 14 @ 5pm
Selected devices announced by PG&E	Electronic	Dec 31

** A copy of questions and their answers will be distributed to all vendors via the Power Advocate RFI event (www.poweradvocate.com).*

Responses must be received by 5 PM PDT on Friday, September 14, 2012. If proposals are not received in the format specified, and by the time and date specified, they may be rejected by PG&E. Responses must be submitted through the Power Advocate RFI event (www.poweradvocate.com).

If the prospective Respondent intends *not* to provide information, PG&E requests written confirmation of that fact as soon as possible.

4.3 CORRESPONDENCE AND QUESTIONS

All general communications regarding this RFI should be submitted via the Power Advocate RFI event (www.poweradvocate.com), through which PG&E will respond to submitted questions and update periodically.

5. RFI RESPONSE FORMAT

Responses should be organized to follow the format prescribed in this RFI and the Respondents are encouraged not to omit any point. Reference materials not prepared for this project, but which the Respondent concludes are relevant and appropriate, should be attached as appendices. This will facilitate review of the information and support the tight project schedule. To facilitate the comparison and evaluation of information, please follow these guidelines:

5.1 COVER LETTER

Each Respondent will upload a cover letter to the Power Advocate RFI event (www.poweradvocate.com) signed by an authorized representative of the organization, certifying the accuracy of the submission and agreeing to be bound by and comply with the terms set forth in this RFI.

5.2 DEVICE SUMMARY

Respondents should briefly describe the typical use case scenarios of their hardware and software products with narrative and/or diagrams, including real customer examples where appropriate. Include use case scenarios for both residential and SMB customer classes.

Please use this section to respond to Device Criteria highlighted in Section 3.4.1. Respondents are asked to illustrate their device's qualifications based upon the vision illustrated in Section 3.4.1.

In the Device Summary, please also address the questions listed below:

- Can Respondent fully meet the stated requests (see Section 3.4) in the required time frame for launch (early 2013) using existing applications and technology?
- If the request cannot be met for launch, explain which components Respondent can meet and which components Respondent cannot meet using existing applications and technology.
- If new development is necessary relative to the Respondent's existing applications and technology today and at launch, explain the cost/time/resources that will be required to fully deliver the feature or explain why it cannot be delivered.
- What enhancement/upgrade in opportunities exist that may enhance the product? What upgrades may be incorporated into the product in the future?

5.2.1 ALTERNATIVE INFORMATION

PG&E is interested in receiving creative, alternative proposals for the requested products/services. Out of necessity, the RFI is designed to provide a common basis for comparing RFI responses, and much of the RFI content is devoted to achieving this objective. Nonetheless, Respondents are urged not to be constrained by the RFI structure or to lose sight of PG&E's interest in alternative approaches which, depending on their scope, can be made a part of the Respondents' responses to stated RFI requirements, or can be attached as free-standing appendices. However, PG&E reiterates that alternative information shall not be submitted in lieu of the base information requested in this RFI.

5.3 APPENDIX A VENDOR QUESTIONNAIRE

Appendix A contains questions relating to the business operations, support, device functionality, and other areas of interest to PG&E. Please follow the prescribed format and numbering when responding to questionnaire.

5.4 APPENDIX B & APPENDIX C CHECKLIST

The detailed requirements can be found in *Appendix B* and *Appendix C*. For each requirement, please indicate in the provided column whether the device meets the stated requirement, and if needed insert comments in the area provided.

6. RFI TERMS AND CONDITIONS

By submitting a Proposal in response to this RFI, each vendor agrees to the following terms and conditions:

6.1 PRODUCTS

PG&E will own any physical products submitted for Evaluation and will not be required to return them to the vendors.

6.2 PROPRIETARY AND CONFIDENTIAL INFORMATION

Proposals submitted in response to this RFI, and all information contained therein, shall become the property of PG&E and will not be returned. The results of PG&E's Evaluation shall be the confidential information and property of PG&E and PG&E is under no obligation to share those results with the vendor. The information will be shared by PG&E with its officers, employees, agents and contractors involved in the HAN program.

In addition, PG&E may elect to disclose information provided by Respondents to regulatory agencies including but not limited to the CPUC, the CEC, or Federal Government agencies administering the American Recovery and Reinvestment Act of 2009 (ARRA), as determined by PG&E to further the objectives of PG&E's SmartMeter™ program and the HAN program. Such disclosure could include responses to discovery by participants in the processes of such agencies or requests for information by such agencies. If PG&E discloses to such regulatory agencies or other interested parties information provided by Respondents deemed by PG&E to be commercially sensitive, PG&E will request that the receiving entity adopt measures to protect such sensitive information from being made available to other parties. However, Respondents should be aware that PG&E will be required to disclose commercially sensitive information as directed by such regulatory agencies, even if those agencies do not adopt any protective measures. Thus, PG&E can make no representation that such information will be kept confidential. Even though Respondent's proposal will become the property of PG&E, Respondent may indicate which portions of its response it recommends that PG&E consider as commercially sensitive information. PG&E will consider Respondent's recommended designations in determining whether to request that regulatory agencies or other requesting parties adopt protective measures. Respondents are urged however to limit the information designated as commercially sensitive to allow PG&E maximum flexibility to discuss Respondent's proposal with other participants in Phase 2.0 to optimize the design and value of the HAN program.

PG&E is not responsible for, and accepts no liability with respect to, any information furnished by Respondents to SSN in the course of testing devices as described in this RFI. If Respondents wish to protect the confidentiality of any information or intellectual

property that is to be disclosed by them to SSN, they should address those requirements directly to SSN.

6.3 LIMITATION OF LIABILITY

The issuance of this document and the receipt of information in response to this document will not cause PG&E to incur any liability or obligation to the Respondent, financial or otherwise. PG&E assumes no obligation to reimburse or in any way compensate the Respondent for expenses incurred in connection with the response to this RFI. This RFI is not an offer to contract and PG&E does not guarantee that any work or business will be awarded as a result of the RFI process.

6.4 CHANGES TO RFI PROCESS

PG&E reserves the absolute right in its sole discretion, without liability, to do any or all of the following at any time:

- (a) Amend, supplement or withdraw this RFI;
- (b) Amend, change or discontinue its evaluation or the RFI process described herein;
- (c) Change the volume, scope, or nature of the work described in this RFI;
- (d) Reject any or all proposals received as a result of this RFI, seek additional or revised proposals, enter into negotiations and subsequently contract with any one or more than one company (whether or not such companies received this RFI) if such action is in PG&E's best interest; and
- (e) Invite other companies to submit proposals after the closing date for the submission of proposals.

6.5 CONTRACTING PROCESS

PG&E will require each vendor whose product is selected for the HAN 2.0 program to enter into a written agreement ("Product Agreement") regulating the way in which the product is presented to the market, and other matters that PG&E determines are relevant to the successful implementation of the HAN 2.0 program. PG&E will give a copy of the Product Agreement to selected vendors before any public announcements are made.

6.6 SUPPLIER DIVERSITY STATEMENT

PG&E encourages companies interested in providing goods and services in support of PG&E programs to support Supplier Diversity Purchasing.

6.6.1 Supplier Diversity RFI Questions

Please provide a response to the following questions pertaining to Supplier Diversity.

- Is your company certified by the CPUC Supplier Clearinghouse as a woman or minority-owned business? If your company is service disabled veteran-owned, is your company certified by the Department of General Services? Please provide certification number and expiration date.
- If your company is woman, minority or service disabled veteran-owned but not certified by the CPUC or Department of General Services, does your company hold a Women's Business Enterprise National Council (WBENC), National Minority Supplier Development Council (NMSDC) or SBA 8(a) certification. Please provide certification number and expiration date.
- Does your company have a Supplier Diversity Program? If so describe efforts your company has made to increase business with women, minority and service disabled veteran-owned businesses (i.e. does your company have a policy statement, participate in outreach activities, promote diverse firm subcontracting, publicize contract opportunities, provide certification assistance, etc.?) Please provide examples.
- If your company has a Supplier Diversity Program, does your company mentor women, minority and service disabled veteran-owned suppliers? Please provide examples.
- What percentage of your company's total contracting and procurement spend for the prior year was with women, minority and service disabled veteran-owned businesses?

6.7 SAFETY STATEMENT

PG&E is committed to maintaining and promoting job safety and health for our employees, customers and the general public, and we expect companies interested in providing goods or services in support of PG&E sponsored programs to do the same. We are committed to working with companies who conduct their services safely by providing adequate training and a safe work environment. Please identify if your company has a Safety Program and provide a brief overview.

6.8 ENVIRONMENTAL STATEMENT

Environmental protection and enhancement is one of our fundamental corporate priorities as PG&E recognizes that a sound environmental policy and sound business practices go hand in hand. PG&E expects that companies interested in providing goods or services in

support of PG&E sponsored programs contribute to the success of maintaining our leadership in the environmental arena by managing the product life cycle and delivering services in an environmentally sensitive manner which maintains and, when feasible, improves the quality of the environment. Please identify if your company has an Environmental Recycling Program and provide a brief overview.

6.9 ETHICS STATEMENT

PG&E stresses the importance of integrity, honesty, professionalism and ethical business conduct to all of its employees and its contractors. PG&E expects that companies interested in providing goods or services in support of PG&E sponsored programs will conduct business with the same emphasis on integrity, honesty, professionalism and ethical business conduct.