

[XBRL-CET](#) (eXtensible Business Reporting Language - Construction Energy Transportation)
[Response to Request for Information](#) (RFI)
[Solar Big Data and Informatics](#)
[U.S. Department of Energy's SunShot Initiative](#)

Solicitation Title : Request for Information for Solar Data & Informatics
Funding Number : DE-FOA-0001218
Description : The U.S. Department of Energy's SunShot Initiative requests feedback from industry, academia, research laboratories, government agencies, and other stakeholders on issues related to data solutions for the deployment of solar energy. SunShot intends to learn more on issues related to technical, economic, administrative, and legal barriers limiting the efficient collection and exchange of solar datasets; specifically, information on practical, industry-driven, financially enduring, and self-sustaining strategies that treat big data as strategic assets for the U.S. solar industry

Company / institution name;
XBRL-CET working group *and the Cat Herd*¹

Company / institution contact;
K. Dixon Wright
Wells Fargo Insurance Services.

Alfred Berkeley
Former Vice Chairman and Acting Chairman of the President's National
Infrastructure Advisory Council.
Former Chairman of XBRL US
Former Director of XBRL International

Mike Willis
Partner and Global XBRL Co-Leader
PricewaterhouseCoopers

Duane Gabor
Alliances and Business Development
Intuit

Mr. Steve Burnett, Gallina
Lead Partner in XBRL Initiative for Construction
GALLINA LLP

¹ The cat herd is our informal group of collaborators and industry participants. There is no formal relationship with any participants to each other, or to XBRL-CET.

Contact's address, phone number, and e-mail address.

K. Dixon Wright
Wells Fargo Insurance Services
45 Fremont Street
8th Floor
San Francisco, California 94105
Dixon.wright@wellsfargo.com
415-717-1092

Mr. Alfred R. Berkeley
301 Northfield Place
Baltimore, MD 21210-2817
alfredberkeley@gmail.com
[1-410-630-1431](tel:1-410-630-1431) office

Mike Willis
Partner and Global XBRL Co-Leader
PricewaterhouseCoopers
3109 West Dr. Martin Luther King Blvd
Tampa, Florida 33607
(813) 340-0932
mike.willis@us.pwc.com
www.pwc.com

Mr. Duane Gabor
Alliances and Business Development
Intuit
150 Cambridge Park Drive
5th Floor
Cambridge, Massachusetts 02140
617-250-2292 Direct
duane_gabor@intuit.com
www.intuit.com

Mr. Steve Burnett
GALLINA LLP
2870 Gold Tailings Court
Rancho Cordova, California 95670-6169
(916) 638-1188
sburnett@gallina.com
www.gallina.com

Executive Summary

To reduce the “soft costs of solar” the inefficiency burden and excessive costs created by the lack of solar data interoperability should be the focus of the upcoming DOE FOA, with direction for respondents to explore the option and possibilities of XBRL, and to identify any alternatives that that could be superior to XBRL with its synergized data standards for specific needs.

Solar data interoperability will [reduce non hardware costs](#), improve informatics along with data analytics, and can be cost effectively achieved by the DOE adopting the XBRL open data standard, expanding the XBRL taxonomy² to include more energy related data fields, and synergized with other standards to enable system developers to exploit the capabilities of interoperability within current systems and as a foundation for innovative new applications. The resulting efficiency will impact all stakeholders and directly affect [Customer Acquisition](#), [Financing and Contracting](#) (Construction), [Permitting](#), [Interconnection](#), [Inspection](#), [Installation and Performance](#) and [Operations and Maintenance](#).

The DOE FOA respondents will validate that XBRL is the best logical choice for financial reporting, will demonstrate how XBRL could be employed for solar data and informatics, and confirm that XBRL offers the most overlap with other standards to be the best logical choice as the core standard to synergize other standards around. With that validation and clarity all stakeholders will begin the adoption and implementation of XBRL, the soft costs of solar will dramatically decrease, all while improving opportunities for small business.

An example of the potential impact for reducing soft costs is the initial construction related “Work on Hand Report” dataset that XBRL-CET is developing with the Financial Standards Accounting Board (FASB) and used by banks, lenders, insurance companies and sureties. These reports are submitted quarterly by each contractor, and can take up to a half an hour for each recipient to manually input into their respective systems, and subject to data entry errors. With the ability to import the data the time would be reduced to a click, or virtually zero input time, and no errors.

To translate that to dollars, according to the [US Census report released 1/23/2015](#) there are 640,951 firms listed in construction. That would result in 1,281,902 input hours, and at \$20/hour cost stakeholders \$25,638,000 in wasted expense on that one report alone. See page seven for more detail.

Firms with less than 20 employees represent 92% of all construction companies, and being a small business makes that excessive cost a barrier to opportunities.

The SunShot objective of reducing the “soft costs of solar” will have the greatest beneficial impact to small business, and make more solar projects financially viable.

XBRL can be the catalyst to make that happen across all solar customer classes: residential, commercial and utility.

² XBRL allows the creation of reusable, authoritative definitions, called taxonomies, that capture the meaning contained in all of the reporting terms used in a business report, as well as the relationships between all of the terms. Taxonomies are developed by regulators, accounting standards setters, government agencies and other groups that need to clearly define information that needs to be reported upon. XBRL doesn't limit what kind of information is defined: it's a language that can be used and extended as needed.

See: <https://www.xbrl.org/the-standard/what/an-introduction-to-xbrl/>

Background

There are a number of datasets that relate to solar activity, each with their own purpose, value and constituency. However the maximum potential benefit from Big Data and data analytics comes from datasets that are not a silo to a specific industry, process, procedure or niche. The best datasets are based on open standards and interoperability, cross industry segments, have broad usage and adoption from multiple stakeholders, and can synergize with specific industry datasets for the nuance data that combines to provide both depth and interoperability.

[XBRL](#) (eXtensible Business Reporting Language) is one such dataset, and we advocated in DOE FOA 0001167 that the DOE should adopt and implement XBRL. More information and background on XBRL can be found in the attached:

2014 12-13 XBRL-CET - FOA-0001167 - Internal Working Document - Overview of FOA Objectives

2014 12-16 XBRL-CET - FOA-0001167 - Appendix A - Examples of Semantic Standards Articulated in XBRL

2014 12-16 XBRL-CET - FOA-0001167 - Appendix B - Examples of Standards Implementations with Scientific and Technical Merit

2014 12-16 XBRL-CET - FOA-0001167 - Appendix C - Examples of data standards enhancing validation processes and thereby data quality

Briefly, XBRL is

- An international standard
- Developed and maintained by a consortia with international representation and governance
- Freely available
- Used by governments around the world
- Used by US Federal and State level agencies
- Supported via Taxonomies by the US FASB

The XBRL-CET response to the SunShot Request for Proposal on Solar Big Data and Informatics does not comment as to the value of any one dataset apart from XBRL, but rather advocates that any dataset is made significantly more viable and valuable by its ability to efficiently exchange individual data elements.

Transitioning to a national Smart Grid, with multiple buyers and sellers interacting with multiple utilities that manage the grid is a major challenge by itself for stakeholders, even more so for the utilities that must develop long term planning for large capital investments for peak load demand with changing revenue and distribution models. Data analytics will help the utilities, as will working with various stakeholders so that the broadest sources of data can be captured efficiently for planning, and for managing the default risk utilities face as scores of new entrants seek to connect to the grid with new energy generation facilities.

Promoting interoperability is the value proposition the DOE FOA should seek in structuring its upcoming FOA to provide the utilities with the resources to harvest data from all aspects of operations and administration, from facility design, through procurement and construction, to improve their planning ability and to mitigate their risk from defaulting developers with new products and services enabled by improved communication capabilities.

The XBRL-CET working group is a collaboration of multi-disciplined industry experts. They advocate that XBRL should be adopted for financial reporting, to provide the DOE and utilities with a common business reporting structure through the XBRL language that can promote synergies with financial and other industries already using it. The result is an opportunity to advance interoperability through a collection of synergistic standards that work together for greater efficiency. This interoperability directly supports opportunities for innovation and faster and clearer communications/transactions.

The SunShot FOA process can contribute to the exploration and dialogue that brings together the diverse group of stakeholders to expand the XBRL taxonomy, with industry specific extensions, so that the national resource of XBRL can be exploited for the benefit of stakeholders, create the foundational structure for interoperability, enable innovation and best serve the public at large.

Not just for the energy industries as a segmented and segregated silo, but a part of all industries and all stakeholders.

The XBRL-CET working group is pleased to offer its support and participation in helping the SunShot program enable solar related data sets to achieve their maximum potential, both collaboratively as a working group and to support any and all individual respondents to the FOA to address specific points.

In the spirit of the invitation to seek as much insight and input as possible from respondents to the RFP, as the adage goes, be careful what you ask for. We have sought to be expansive in our commentary, even if redundant, and have included as attachments the internal background working documents and formal submissions for the DOE FOA 0001167. Together the group of documents will provide an extensive amount of information and detail, and while not concise, informative.

Together SunShot and the XBRL-CET working group can make data work for everyone, including small business and big energy.

Desired Outcome of SunShot FOA

XBRL established as *the* financial reporting data standard recognized by DOE.

XBRL taxonomy expanded to include more energy related data fields.

XBRL taxonomy includes [extensions](#) specially tailored to the needs of the individual utility for planning and risk mitigation for building the Smart Grid.

XBRL as core for synergy with other industry specific data standards, with an established structure to enable synergy with relevant data standards.

XBRL transitioned from just financial reporting to enabling financial transactions.

XBRL in compliance with the [DATA Act](#) for energy related activity.

Established [XBRL Data Sets](#) with standardized forms to enable innovation and promote development of applications, following the model of the [Green Button](#).

XBRL as a basis for achieving other DOE objectives, like [promoting small business](#) and innovation.

XBRL and the DOE working together to develop outreach and educational programs with public and private entities that assist small business to enable the efficiencies of interoperability and standardized forms to improve access to surety credit so that small businesses can participate in building the Smart Grid, and provide the energy facility developers with risk mitigation tools and resources to encourage their engagement with small businesses.

XBRL, DOE, FERC, NIST and the utilities working together to develop national standardized policies and procedures that enable the efficiencies of interoperability and standardized forms to improve the financial security protection provided by the financial services industry, including surety, to effectively mitigate the risk to the utility of developer default.

The establishment of a university based interoperability research facility as a national asset to continually improve the XBRL taxonomy and related extensions as an educational opportunity and to promote the innovation that will be made possible in a public and transparent platform.

Impacting Small Business

The impact of efficiency will be greatest on small business in general, and energy related as well. Utility system contractors with less than 20 employees represent 82% of all companies, 80% of Power and Communication Line and 90.9% of Electrical Contractors.

US Census: <http://www.census.gov/econ/susb/>

NAICS CODE	ENTERPRISE EMPLOYMENT SIZE	NUMBER OF FIRMS		EMPLOYMENT		ANNUAL PAYROLL (\$1,000)	
Construction							
23	1: Total	640,951		5,260,942		275,201,822	
23	5: <20	594,783	92.8%	2,070,904	39.4%	85,256,341	30.98%
23	6: 20-99	40,451	6.3%	1,510,943	28.7%	81,148,069	29.49%
23	7: 100-499	4,821	0.8%	798,173	15.2%	49,171,558	17.87%
23	9: 500+	896	0.1%	880,922	16.7%	59,625,854	21.67%
Utility System Construction							
2371	1: Total	17,446		466,099		29,841,905	
2371	5: <20	14,297	82.0%	70,708	15.2%	3,551,912	11.90%
2371	6: 20-99	2,455	14.1%	95,977	20.6%	5,609,428	18.80%
2371	7: 100-499	504	2.9%	86,529	18.6%	5,867,107	19.66%
2371	9: 500+	190	1.1%	212,885	45.7%	14,813,458	49.64%
Power and Communication Line and Related Structures Construction							
23713	1: Total	4,511		169,929		10,592,378	
23713	5: <20	3,612	80.1%	18,635	11.0%	939,793	8.87%
23713	6: 20-99	686	15.2%	26,613	15.7%	1,528,586	14.43%
23713	7: 100-499	125	2.8%	20,873	12.3%	1,430,361	13.50%
23713	9: 500+	88	2.0%	103,808	61.1%	6,693,638	63.19%
Electrical Contractors and Other Wiring Installation Contractors							
23821	1: Total	68,636		682,659		37,261,693	
23821	5: <20	62,364	90.9%	242,591	35.5%	10,344,440	27.76%
23821	6: 20-99	5,363	7.8%	205,584	30.1%	11,564,878	31.04%
23821	7: 100-499	752	1.1%	130,201	19.1%	8,075,186	21.67%
23821	9: 500+	157	0.2%	104,283	15.3%	7,277,189	19.53%

The excessive cost in hours to input the one “work on Hand” dataset creates the situation where the small companies cost the most to provide financial services to, and those unnecessary costs represent a barrier for small business.

	Number of Firms	Number of Qtry Reports	Input Hours	\$20/hr
Construction	640,951	2,563,804	1,281,902	25,638,040
Utility System Construction	17,446	69,784	34,892	697,840
Power and Communication Line and Related Structures Construction	4,511	18,044	9,022	180,440
Electrical Contractors and Other Wiring Installation Contractors	68,636	274,544	137,272	2,745,440
Under 20 employees				
Construction	594,783	2,379,132	1,189,566	23,791,320
Utility System Construction	14,297	57,188	28,594	571,880
Power and Communication Line and Related Structures Construction	3,612	14,448	7,224	144,480
Electrical Contractors and Other Wiring Installation Contractors	62,364	249,456	124,728	2,494,560

XBRL -Best option for DOE and SunShot to adopt for financial reporting

The challenge to interoperability is securing consensus for a universally adopted data standard that is implemented by all stakeholders. While there may be many options for which data standard could be the “one”, and various interests seeking to promote their standard as the “one”, the fact is there will never be “one” standard as there are too many industry specific data needs for one standard. The objective should not be to seek the “one” standard, but start with a standard that can act as a core that other standards can synergize around for maximum adaptability across multiple industries, not just solar.

XBRL is the best data standard option for solar financial reporting:

- XBRL is non-commercial, royalty-free, and a national public resource.
- XBRL addresses the main weakness of XML, uniform terminology. XBRL is XML on steroids, with each data field having extensive detail on definitions and exacting terminology and context. Having no disparity for how the data field is used is critical in data exchange, and XBRL can provide that.
- A large number of utilities, along with construction and solar companies, have already paid the cost to implement XBRL by virtue of their being public companies, their systems are mapped to XBRL, and currently exchange data using XBRL.
- The process to build the XBRL taxonomy for public companies identified a significant number of data fields that are relevant to the solar industry, and are consequently already part of the XBRL taxonomy.
- Access to capital, insurance and surety all deal with financial information, therefore being able to process and exchange financial data has the highest possible return. XBRL is the only data standard widely implemented, and compliance requirements will guarantee it will be sustained.
- The building of the Smart Grid will entail significant construction activity, and utilities being able to exchange financial data utilizing XBRL for procurement, contract administration, progress payments and monitoring provides the foundation for innovation and streamlining to transition from manual “dumb” paper based processes to efficient smart digital, which in turn will mitigate risk to the utility.
- Performance measurement, data analytics, predictive analytics, and similar risk management tools and modeling that can be applied during the design, procurement and construction generally revolve around financial aspects, so XBRL can contribute to improve investment decisions and ease access to cost competitive capital.

- Solar asset management also utilizes performance measurement, data analytics, predictive analytics, and similar modeling that generally revolve around financial aspects, so XBRL can contribute to there as well.
- The XBRL standard is already accepted by the Securities and Exchange Commission, therefore any future solar related activity that has federal funding that need compliance with the DATA Act can utilize XBRL.
- The XBRL standard is not limited to any one industry, nor limited to just financial reporting. It can be used for a wide range of opportunities, such a common applications that help small business by reducing administrative efficiency barriers.
- XBRL can be optimized for the most sophisticated system, and still be used with the most basic spreadsheet.

Given the attributes of XBRL and its potential for the solar industry, and recognizing there are no viable alternatives with respect to exchanging financial data, the XBRL-CET response to the SunShot RFP is to advocate that XBRL be designated so that the exploration of data sets can focus on how to best implement and utilize XBRL for interoperability so that respondents can focus on making the various data sets reach their full potential.

Recommended Structure and Questions for SunShot FOA

To promote interoperability between datasets the SunShot program should structure an FOA that promotes exploring how best to expand the XBRL taxonomy, how expanding the taxonomy can be exploited by various data sets, and what barriers a valuable data set would have to achieving maximum potential if its data could not be exchanged with other stakeholders.

The respondents should address and/or demonstrate:

1. How the current XBRL taxonomy for financial reporting and transactions could be utilized in the solar industry
Examples: [Data by Design Contest](#)
Common Company Profile Application
Standardized Financial Reporting Data Sets
Standardized Data Sets for Interconnection
2. How the current XBRL taxonomy can be expanded to include more solar related data fields.
Example: University, or other neutral facility, hosts an online application that contains all the data fields that should be considered for inclusion in the XBRL taxonomy and students work to complete all the data elements required for each field required by XBRL.
3. How to identify data fields for inclusion in XBRL
Example: University creates innovative prototype applications that demonstrate the potential of data modeling, performance measurement and data analytics that contains data fields that should be considered for inclusion in the XBRL.
4. How to establish consensus for what data fields are contained in specific Data Sets.
Example: The [DOE, FERC, NIST and SGIP model](#) to establish the Data Set for the Green Button.
5. How would the respondent interact with XBRL US to develop a process for proposing new data fields?
6. How would the respondent interact with utilities to develop a process for proposing new data fields?
7. How to synergize the XBRL taxonomy with other solar specific data sets like [IEP XML](#), [AcordXML](#) (Insurance), [agcXML](#) (Construction)
8. How they would identify other solar industry specific data sets that should be synergized with XBRL, and how to coordinate the process.

9. How would the respondents identify other non-solar data sets that should be interoperable, and how would they synergize those data sets with XBRL.
10. How, and where would they establish an Interoperability Research Center and how would it be financially sustainable?
11. How would the respondent manage the project website, and host the various applications, to facilitate the project.
12. What applications would the respondents utilize to managing the process of expanding the taxonomy and/or other aspects?
13. How would the respondents engage with the various “Resources in Place” (see next section) to assist in their efforts?
14. How would the respondents help small business take advantage of the opportunity to improve efficiency and take part in building the Smart Grid?
15. How does XBRL provide compliance with the [DATA Act](#)?
16. How does XBRL align with the [Open Data Initiative](#), and similar government programs?
17. How would the respondent generate specific individuals for work local to the project, and interns for placement with outside project participants?

Recommended “Resources In Place”

The XBRL-CET working group has a number of collaborators, relationships, and facilities that could provide SunShot FOA respondents with “resources”, such as collaboration platforms, research facilities, access and outreach to membership, working groups, similar initiatives and programs, relationships and professional networks.

Respondents could maximize their ability to propose approaches they would take and concepts to explore by taking advantage of the resources.

These resources have no formal commitment to XBRL-CET, participate solely in the best interest of their respective organizations, and have no obligation to XBRL-CET. Each resource, if offered the opportunity by the SunShot FOA, will have their own budget to submit and solely responsible for their use of funding. XBRL-CET “herds cats”, it does not control them.

These resources should be funded as part of the SunShot FOA and independent of the respondent budget. Funding amounts would be determined once more clarity on direction was determined, and could be funded by a crowd funding effort by XBRL-CET, the SunShot FOA, or a combination of both.

[XBRL US](#) XBRL US is an entity that administers and maintains the XBRL taxonomy.

Funding is needed to cover the cost to administer the process of expanding the taxonomy for energy related data fields, and working with the respondents, including the initial SunShot FOA response prior to award.

Ongoing financial sustainability would be provided by membership revenue and other sources of fee income to support its work with the SEC.

[SGIP](#) The Smart Grid Interoperability Panel (SGIP) is an entity that seeks to develop best practices for energy industry, and for promoting interoperability between stakeholders. SGIP P25, Harmonizing Data, is to consider if financial services should be part of the SGIP sphere of influence.

SGIP does not an advocate for any one standard, product or service, and is solely focused in providing a platform for exploring idea and concepts to promote interoperability in the energy industry.

Funding is needed to provide the neutral platform, accommodate meetings and conferences, distribute information, and contribute expertise and support to respondents.

Ongoing financial sustainability would be provided by membership revenue and other sources of fee income to support its work with the DOE and NIST.

[IEP XML](#)

Solar Nexus currently has a SunShot grant to develop specific standards for the solar industry, IEP XML, and would be a great way to experiment with, and explore how to synergize an industry specific standard with XBRL.

Funding is needed for the unanticipated costs associated with expanding the initial work under the SunShot Grant to include working with XBRL.

[COSA/](#)
[AGC](#)

The Associated General Contractors of America (AGC) and Contractors Open Standards Alliance (COSA) are working within the construction industry to develop agcXML and along with IEP XML would be a great way to experiment with, and explore how to synergize an industry specific standard with XBRL.

Funding is needed for:

Costs associated for exploring how agcXML can be synergized with XBRL.

Costs associated with coordinating with contractors and construction industry software vendors for what data fields should be added to the XBRL taxonomy, or by an AGC specific extension.

Costs associated with coordinating with contractors and construction industry software vendors for establishing XBRL Data Sets for the construction industry.

[SFAA/](#)
[NASBP](#)

The Surety Fidelity Association of America and its sister organization the National Association of Surety Bond Producers are working to promote standards that could improve administrative and underwriting processes for the surety industry, including ways to improve access to surety credit for small business.

Funding is needed for:

Costs associated for exploring how the insurance industry standard, AcordXML, can be synergized with XBRL.

Costs associated with coordinating with surety companies and brokers for what data fields should be added to the XBRL taxonomy, by extension with Acord, or by an SFAA/NASB specific extension.

Costs associated with coordinating with surety companies and brokers for establishing Data Sets for the surety industry.

[SunSpec Alliance](#)

SunSpec Alliance is working to develop standardized forms and contracts to streamline the process of contract negotiations as well as financial underwriting. Each form has data fields that get information inserted, and those fields make up a Data Set.

Funding for expanding that effort to work with XBRL so that the Data Sets for each of the SunSpec Alliance forms had a corresponding XBRL Data Set.

[SEFA](#)

Solar Energy Finance Association is working to expand access to public capital, specifically securitization, for residential and commercial solar projects through development of robust system and credit performance datasets.

Funding for expanding that effort to work with XBRL so that the Data Sets for financing solar projects had a corresponding XBRL Data Set.

[SEIA](#)

Solar Energy Industries Association is a national trade association dedicated to providing its members with information, advocating for best practices and for solar related research.

Funding for research related to XBRL, and for education outreach to its extensive membership.

[SRC](#)

Surety Resource Connection is owned by K. Dixon Wright of Wells Fargo Insurance Services and part of his personal community service effort designed for universities to promote an educational opportunity for students interested in the business of construction. The company provides a free down load of programming code for two applications, the Chico Common App and Bid List Connection as non-commercial shareware prototype applications for promoting open standards and interoperability to improve access to surety credit for small and emerging contractors.

SRC may develop new commercial or proprietary applications enabled by the XBRL taxonomy, or similar emerging technologies.

Funding may be appropriate for the costs associated with the shareware applications, but no funding will be sought for commercial and/or proprietary applications.

BEDES

BEDES is a DOE funded effort at Lawrence Berkeley National Lab to identify and then “knit together” data standards related to energy efficiency for buildings. Their work has generated an extensive understanding of various data standards and established relationships with entities working towards standards.

Funding for a scope change would be required for BEDES to also “knit together” data standards associated with building the buildings, and for building the Smart Grid.

Small Business

Advocate There are a number of companies that specialize in helping small business, and working towards streamlining the surety process utilizing industry adopted standards. The DOE has a number of similar programs and coordinating efforts will help align XBRL to be a valuable resource.

Funding for the Small Business Advocate for costs associated with implementing XBRL into their systems and procedures and for outreach efforts to other agencies and groups dedicated to helping small business.

Participating
Utilities

Given the SunShot FOA XBRL-CET is advocating for entails exploring how utility companies may implement XBRL for managing construction of the Smart Grid more efficiently with enhanced risk management capabilities by improved communication with providers of financial security, consideration should be given to fund certain costs of those utilities willing to participate.

Funding is needed for:

Respondent provided student interns to work within the utility to act a liaison with the respondents group. Explore how the XBRL is currently utilized by the utility for exporting to the SEC and how it might be adapted to import XBRL from construction and financial services industries.

Participating
Public Entity

Given the SunShot FOA XBRL-CET is advocating for entails exploring how public entities and regulatory agencies may implement XBRL for managing construction of the Smart Grid, consideration should be given to fund certain costs of those willing to participate.

Funding is needed for:

Respondent provided student interns to work within the public entity or regulatory agency to explore how XBRL could be utilized for compliance with laws and statues, and to act a liaison with the respondents group along with the construction and financial services industries.

Participating
Surety

Given the SunShot FOA XBRL-CET is advocating for entails exploring how surety companies may implement XBRL for managing construction of the Smart Grid, consideration should be given to fund certain costs of those willing to participate.

Funding is needed for:

Respondent provided student interns to work within the surety to explore how XBRL could be utilized for more efficient underwriting and risk management with improved communication with utilities for construction of the Smart Grid, with developers and prime contractors on behalf of small business to improve access to opportunities related to the Smart Grid.

The student interns will act a liaison with the respondents group along with public entries, regulatory agencies, trade associations, small business advocates, and the construction and financial services industries.

University Based Interoperability Research Facility

In XBRL-CET's Response to Funding Opportunity Announcement (FOA) Number: DOE-FOA-0001167 - University Interoperability Research Facility, we proposed that the process of identifying data fields to be added to the XBRL taxonomy be undertaken at a university setting for neutrality, but also because the work to complete all the necessary steps to have a specific data field have all the components required of XBRL does not directly have any commercial value.

Because there is only indirect value to the taxonomy, there is no commercial incentive for private industry to spend the resources to create the public recourse.

While there is no private incentive to build the public resource, there is economic value to private industry to having the public resource.

Cost Sharing

FOA's generally require cost sharing from the respondent, however the "Resource in Place" can be funded by an independent "Crowd Funding", and made available to respondents at no cost the respondent, the DOE or the SunShot program.

XBRL-CET will work with the SunShot program on how that would work, and how much independent funding would be secured to supplement the SunShot FOA.

REQUEST FOR INFORMATION CATEGORIES AND QUESTIONS:

CATEGORY 1: Solar Data Marketplace

1. Describe available datasets and resources for solar (residential, commercial, utility scale) or datasets that are relevant to the solar deployment and usage across the following data classes? Please provide details about data accessibility (e.g. public, private), availability (e.g. real-time, monthly) variety, volume, providers, users, uses, or any other key characteristic? Respondents may use Table 1 to answer this question.

Suggested list of data classes:

- a. Customer Data (Demographics, financial information, experience with energy products)
- b. System Site Data (location, irradiance, utility data, zoning, electric rate structure, load profile, electric feeder characteristic, roof characteristics, shading, environmental characteristics)
- c. PV System- Level Data (array profile, inverter characteristics, communications capabilities, other system design characteristics, installer, system ownership/contract terms, incentives, critical dates (e.g. contract date), fees (e.g. permits))
- d. Fleet Operations & Maintenance (production, failure modes, equipment replacement)
- e. Other

Response

The XBRL taxonomy is more like a dictionary than a data set. XBRL is an open international standard for digital business reporting, managed by a global not for profit consortium, XBRL International. It is used in more than 50 countries, including the US. Millions of XBRL documents are created every year, replacing older, paper-based reports with more useful, more effective and more accurate digital versions.

XBRL provides a language which can be authoritatively defined. It is used to uniquely represent the contents of financial statements or other kinds of compliance, performance and business reports. XBRL enables reporting information to move between organizations rapidly, accurately and digitally. The authoritative language opens up a range of new capabilities with clearly defined, platform-independent, testable and digital information. XBRL simplifies the way that people use, share, analyze, and add value to the data.

2. What barriers or costs in the solar market could be addressed by increasing access to data-driven information?

Response

Lack of interoperability between data sets is a major barrier, along with irregularly in data field definitions and term usage. XBRL will enable interoperability so that various data sets and/or applications can efficiently and accurately process imported data, and resolve the definition and term usage issue.

3. What are the data gaps that exist today for solar (residential, commercial, utility)? What value can be derived by filling these gaps?

Response

The gap is the inability to confidently exchange information between data sets relating to solar construction. Without that confidence various applications, each financial investment decision is treated as a one-off, requiring large time investments while still resulting in significant risk to the investment communities and higher costs to utilities. The gap is simply that there currently is no mechanism for providing the necessary financial and risk information from one system to another, complicating the process and slowing the construction and deployment of scaled solar systems. If standardized forms and applications were adopted based on an extended XBRL data set, the gaps will be effectively filled, resulting in increased efficiencies and ultimately, more and quicker solar deployments.

4. A. What datasets or information would increase solar deployments, reduce financial risks and boost consumer confidence?

Response

[Proposed XBRL Data Sets](#)

XBRL Standard Company Profile
Used for initial underwriting

XBRL Standard Financial Statement
Used for initial underwriting

XBRL Work on Hand with FASB formal guidance
Used for initial underwriting and ongoing project monitoring

XBRL Energy Interconnection
Used for the interconnection process underwriting and project monitoring

XBRL Contractors Progress Billing
Used for project monitoring

XBRL/IEP XML
Used for synergizing XBRL with IEP XML for solar related activity

XBRL/agcXML
Used for synergizing XBRL with agcXML for construction related activity

XBRL/AcordXML
Used for synergizing XBRL with AcordXML for insurance related activity.

B. Which of these datasets would be the most impactful and what would its impact be?

Response

XBRL Energy Interconnection

The building of the Smart Grid entails a wide range of stakeholders and a significant amount of overlap exists with respect to the data fields used by dipartite entities with different uses and needs.

Being able to demonstrate that a wide range of users, each with different systems, needs and uses, can all utilize one data set would promote the use of open standards and interoperability that would then be employed in other areas.

5. What types of datasets/tools/capabilities are needed for faster, easier, better:
- a. Economic valuation of solar
 - b. Consumer protection (e.g. contracts, certified installers, verified equipment, safety)
 - c. Solar financing/investing
 - d. Insurance (e.g. asset insurance, performance insurance, warranty/equipment insurance)
 - e. Compliance with local regulations (e.g. permits, codes, safety)
 - f. Real estate dynamics
 - g. Grid integration, system operation/maintenance, and grid management/operations (forecasting, dispatchability, demand response).
 - h. Transparency and self-regulation

Response

- a. Economic valuation of solar
XBRL will enable financial modeling and predicative analytics for the financial services industry that will support investment decisions.
- b. Consumer protection (e.g. contracts, certified installers, verified equipment, safety)
Standardized contracts supported by qualified trade associations, public entities, regulatory agencies and the financial services industry, with corresponding XBRL Data sets, will provide the greatest consumer protection because the average consumer will not be qualified to make an informed assessment.
- c. Solar financing/investing
XBRL Company Profile
XBRL Standard Financial Statement
XBRL Work on Hand
XBRL Interconnection
XBRL/agcXML Progress Payment

What types of datasets/tools/capabilities are needed for faster, easier, better (continued):

- d. Insurance (e.g. asset insurance, performance insurance, warranty/equipment insurance)
 - XBRL Company Profile
 - XBRL Standard Financial Statement
 - XBRL Work on Hand
 - XBRL Interconnection
 - XBRL/agcXML Progress Payment
 - XBRL Synergy with AcordXML

- e. Compliance with local regulations (e.g. permits, codes, safety)
 - XBRL Work on Hand
 - XBRL Interconnection
 - XBRL/agcXML Progress Payment

- f. Real estate dynamics
 - N/A

- g. Grid integration, system operation/maintenance, and grid management/operations (forecasting, dispatchability, demand response).
 - XBRL Company Profile
 - XBRL Standard Financial Statement
 - XBRL Work on Hand
 - XBRL Interconnection
 - XBRL/agcXML Progress Payment

- h. Transparency and self-regulation
 - XBRL Interconnection
 - XBRL/agcXML Progress Payment

6. How can solar datasets be improved to benefit multiple stakeholders?

What are technical, legal, or economic barriers to improvement? How can the interests of these different stakeholders be incorporated into designing, and making these datasets available and accessible?

Response

How can solar datasets be improved to benefit multiple stakeholders?

Interoperability with XBRL or an extension to another standard synergized with XBRL.

Several stakeholders come to mind:

- **Regulators**
Financial regulators that need significant amounts of complex performance and risk information about the institutions that they regulate.

Tax authorities that need financial statements and other compliance information from companies in order to process and review their corporate tax affairs.
- **Companies**
Companies that need to provide information to one or more of the regulators mentioned above.

Enterprises that need to accurately move information around within a complex group.

Supply chains that need to exchange information to help manage risk and measure activity.
- **Governments**
Government agencies that are simplifying the process of businesses reporting to government and reducing red tape, by either harmonizing data definitions or consolidating reporting obligations (or both).
- **Data Providers**
Innovators and data providers that use performance and risk information published into the market place and create comparisons, ratings and other value-added information products for other market participants.
- **Analysts and Investors**
Analysts that need to understand relative risk and performance.

Investors that need to compare potential investments and understand the underlying performance of existing investments.

What are technical, legal, or economic barriers to improvement?

Technical – There are no technical issues with implementing XBRL other than a lack of some data fields in the taxonomy.

Legal - As a public resource there are no legal barriers to XBRL.

Economic- As a public resource there is no economic value to any one company or entity bearing the expense to develop XBRL.

The XBRL taxonomy needs to be funded by public funds, implemented by public entities, and supported by private industry.

How can the interests of these different stakeholders be incorporated into designing, and making these datasets available and accessible?

Datasets will be both public and private, some contain confidential information and others public data.

The only way to protect the interests of different stakeholders is to let their respective systems be as private and proprietary as warranted and focus instead on how the data can be exchanged securely and efficiently using an open standard like XBRL.

CATEGORY 2: Administrative/ Legal Considerations

7. What types of models for data collection and management exist, other than government-mandated or incentivized methods (e.g. California Solar Initiative, U.S. Energy Information Administration)?

Green Button. It represents a collaborative approach to develop consensus on what data should be included in the energy usage Data Set, and how the energy usage Data Set would be structured for both export and import.

This predictability enabled a wide range of system and application developers to create innovative ways to analyze the data and make recommendations.

The number and sophistication of Green Button apps has helped reduce energy consumption at peak periods, resulting in great efficiency for the grid and better planning tools for the utilities.

How can solar deployment datasets remain robust in a post-incentive world?

Improving access to capital, and reducing exposure to risk, thereby reducing the cost of capital, will make solar projects more financially feasible and attractive, regardless of incentives.

Data Sets that can exchange information and help manage risk will be critical.

8. What roles do state, local & Federal governments play in data disclosure?

For data disclosure, clear rules and regulations that dictate what data must remain private.

For data exchange, adoption and implementation of open data standards like XBRL.

Implementation of open data standards like XBRL to promote efficiency, allowing secure data exchange, and rejection of policies and procedures that impose proprietary systems for exchanging data where the data could be shared without consent.

What is the private sector's role?

Implementation of open data standards like XBRL to promote efficiency, allowing secure data exchange, and rejection of policies and procedures that impose proprietary systems for exchanging data where the data could be shared without consent.

9. How might private entities improve and make datasets available?

Adoption and implementation of open data standards like XBRL.

How can this be done without disclosing proprietary business practices?

Private proprietary systems that process data for whatever reason and/or function would not have to share how their systems generated the data, or how it used data.

Those proprietary systems would only be exchanging data it wanted shared for business or regulatory purposes. XBRL is commonly used throughout the world now, across companies and organizations, promoting efficiency and clear communication, without giving away proprietary information.

10. How can data disclosure increase benefits to consumers?

Data disclosure, or exchange, during solar project planning, procurement and construction increases efficiency which impacts the financial merits of investment.

The more these tools and resources evolve, the more investment there will be in solar facilities, which is good for consumers.

What are the primary issues associated with privacy and solar data?

Means and methods for construction and financing, construction pricing and strategies that improve competitiveness.

What examples of privacy violations are relevant or commonplace in other industries?

N/A

11. For a given data type (deployment data, performance data) what rights might stakeholders (consumers, utilities, financial community, state and local program administrators, etc.) have to confidentiality, IP, privacy, ownership, or other issues?

If a solar project has public financing, either direct or by incentives and/or tax breaks, then disclosure of some level is appropriate.

If the solar project is critical to an area's energy plan, and relied on for peak period delivery, then disclosure of some level is appropriate.

If, however, the solar project does not rely on public funds, and not a critical component infrastructure, then stakeholders should not have to disclose anything and their internal systems and applications should be confidential.

12. How might legal uncertainties about proper usage of datasets be reduced?

Clear rules, policies and procedures for what data is public and subject to disclosure, and what is private and confidential. Much of this is already baked-in to the existing XBRL standard and can easily be leveraged.

CATEGORY 3: Data Systems and Interoperability

13. What are the best practices for data management, quality, and security in other industries?

Established data standards for exchanging data.

Established data terminology for exchanging data.

Direct secure data exchange between stakeholders instead of third party repositories.

What can the solar industry learn from these industries regarding data management?

Individual systems that manage data and part of how entities administer and manage their internal affairs are a competitive advantage. Instead of trying to have data systems uniform, just have the data exchange uniform and based on an open standard like XBRL, and preserve the competitive advantage of stakeholder systems.

14. What are the requirements (legal or otherwise) for sharing or exchanging data, including buying or selling?

Dependent on the stakeholders, but generally written consent unless part of standard business practice, such as regulatory reporting or reinsurance placements.

What are unique requirements for solar data?

Certain solar data is critical for planning overall grid sufficiency, and for determining load and resiliency considerations. Public need for information therefore is paramount.

How solar projects are privately financed, or how they are built more efficiently, or how they are better monetized is confidential and can be a competitive advantage, which is in contrast to public funding. The delineation between the two can be confusing.

What obligations for data collection or data warehousing and sharing might exist?

For the repository of solar facility data to understand the difference between publicly financed projects that serve the public and those projects that serve investors. Rules and regulations need to be different for public, which allow sharing more information that is in the public interest. For private facilities the data needs to be restricted with respect to confidential information, but available to the regulatory agencies and utilities for planning purposes.

15. How do you define aggregated or anonymized data?

Aggregated Data - The sum of data that can be analyzed, with the ability to drill down to the complete data source.

Anonymized Data - The sum of data that can be analyzed, without the ability to drill down to the complete data source.

What are the costs and benefits associated with aggregated and/or anonymized data?

Aggregated Data Cost - Exposes sensitive entity or individual competitive advantage or proprietary methodology to unauthorized access.

Aggregated Data Benefit - Provides the best information for evaluating programs and policies and better intelligence for future planning and strategy.

Anonymized Data Cost - Could undermine the value of the data. It could introduce unnecessary risk and/or costs since the data is not tied to a specific organization or project.

Anonymized Data Benefit - Protects confidential information.

What are the technical, legal and/or financial challenges to high resolution data and/or data quality?

Defining what are the legal rights for protection of confidential pricing, strategies, means and methods.

The ability to recover financial damages should confidential information be disclosed, either on purpose, by innocent actions, or in response to regulatory requirements.

16. What level of data granularity (spatial, temporal, data variables) best balances industry needs and costs?

The ability of stakeholders to exchange any level of granularity is best for industry needs, and enabling that ability to easily and securely exchange data should be a matter of public policy.

How that granular data is treated, public or private, should be dependent on the business case for any particular situation, and the desires and intentions of the stakeholders themselves.

Industry is best served when adopted data standards have full granularity available at the discretion of the stakeholder.

17. How might a multi-use industry data standard be created?

We believe that creating a brand new standard is unnecessary since the XBRL is already in wide use and can be leveraged to directly support solar financial information-sharing and decision-making with minimal modifications.

It was mandated by the Securities and Exchange Commission for all public companies, regardless of their industry, to submit financial reporting in XBRL.

What might those standards look like?

The standard would have clear definitions, testable business rules, a scalable and extensible business information model, multi-lingual support, and strong software support. It would look like XBRL.

With support from the SunShot FOA it will be broadened to include synergy with other standards like IEP XML, agcXML, and AcordXML.

18. What other technical challenges are preventing data exchange and access?

The major technical challenge is a universally adopted data standard that encompasses enough data fields to meet the needs of a wide range of stakeholders.

The biggest challenge is not technical, it is securing multi industry consensus with universal adoption and implementation from all stakeholders.

As state level solar incentive programs are phased out, there has been a trend to migrate data collection and disclosure traditionally associated with those programs to the interconnection process (e.g. California's proposed model). What are the potential costs and benefits of this model as compared to other approaches?

The benefit can only be realized if the data collected can be combined and aggregated with other data sources for more informative analysis.

The cost of having state, federal or local public program data in proprietary or a nonconforming data standard will make detailed analytical analysis expensive and inefficient.

CATEGORY 4: Competitive/Innovative Data Driven Business Models

19. How might non-solar entities help the solar industry collect/analyze/monetize solar data?

The financial services, insurance and construction sectors could be valuable partners in developing industry insights and best practices, helping to better define project and locational risks, and develop historical pricing and actuarial analyses.

20. Who is buying and/or selling solar data?

Financial services are always looking for ways to better underwrite solar projects and would be potential buyers of information.

Insurance companies are always looking for ways to better underwrite solar projects and would be potential buyers of loss and risk related information.

Construction companies are always looking for ways to better build solar projects and would be potential buyers of information.

Utilities are interested in solar power cost and performance data when developing and budgeting project plans and to meet regulatory reporting requirements.

What successes can the solar industry build on?

The Green Button for securing consensus on a Data Set and structure so that system and application developers had a reliable and predictable Data Set to innovate with.

What business models can incentivize consumers to release their data?

With standardized forms and Data Sets the financial markets can streamline their underwriting and approval process, which will encourage more qualified applicants to work with those entities that have adopted interoperability.

With better default risk management for construction of solar facilities lenders would provide better terms and conditions for lending.

21. What tools already exist in the marketplace that can be (or are being) applied to solar data?

XBRL is already used by public utilities, solar related companies and construction companies.

XBRL could be implemented immediately, and extended for maximum benefit.

22. The value of data is often abstract until there is a mature product. How do other industries monetize data, and how might the solar industry begin to monetize its data?

The insurance industry has standardized its data around the Acord data standards and routinely aggregates that standardized data for actuarial analysis for underwriting and pricing.

The financial services industry monitors outstanding credit activity through credit reporting agencies that have standardized reporting from subscribers.

The financial services industry responds to positive monitoring by offering lower interest rates and increased borrowing capacity.

23. What value streams throughout the solar lifecycle might be monetized?

Design, procurement and Construction utilizing XBRL with the various stakeholders to improve efficiency in administration of the project review, underwriting and default risk management to improve access to capital and reduce the cost of financing.

24. What “blue skies” exist for solar data?

Universal adoption and implementation of XBRL with synergized industry specific data standards as extensions. There is an enormous opportunity for innovation, such as occurred with Green Button, once a standardized information exchange mechanism is identified and implemented.

What might the future look like?

Interoperability throughout the system, regardless of industry, creating efficiencies for all stakeholders and removing the barriers caused by inefficient data and redundant processing. Opportunities for continued innovation resulting in more pervasive solar power across North America.