



# Orange Button Briefing Enabling a Digital Ecosystem for Infrastructure

April 28, 2021



## Orange Button Briefing Enabling a Digital Ecosystem for Infrastructure

Overview

Problem Statement

The Federal Button

Digital Ecosystem

The Data Stack

Where We Are Today

Digital Surety Bond and Smart Contract



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### **Executive Summary:**

While "Big Data," "Data Analytics," "Predictive Analytics," and "Data is the New Oil" have become commonplace terms in global business parlance, managing "data overload" remains a fundamental and consequential challenge:

### fragmented data from multiple sources in the ecosystem that lacks the data consistency to be of value.

The 'Orange Button' initiative aims to solve the challenge of data consistency across the construction infrastructure ecosystem which will enable and facilitate data interoperability between and among stakeholders — public or private — as well as generate innovations to improve efficiency, reduce risk, and provide the transparency to attract capital (cash funding sources) and financial markets (bank and trade credit, insurance, surety) with greater capacity as well as improved terms and conditions.

This 'Big Data' approach will facilitate measuring and monitoring key performance indicators to improve risk management as well as to strengthen policies and capabilities.

Data interoperability will become an increasingly significant factor in determining risk, accessing capital, and/or securing trade credit, and the costs of insurance or surety will likely also be impacted.



### **Todays Reality**

Fragmented data from multiple sources in the ecosystem that lacks data consistency is of little value

### **Tomorrows Objective**

### Internally:

- Efficient internal data exchange
- Consistent data that allows aggregation of data that can be accurately analyzed to identify failure points and best practices

### Externally

- Efficient entire ecosystem data exchange
- Smart Contracts
- Digital Financial Products and Services
- Reporting to Capital and Financial Markets
- Surety Based Risk Management
- Insurance Administration



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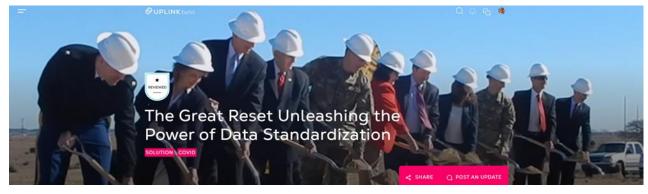
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### **Problem:**

Legacy systems that cannot exchange data reliably

#### **Solution:**

Leverage open data standards so legacy systems can reliably exchange data



Link to World Economic Forum

Video





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#### Problem:

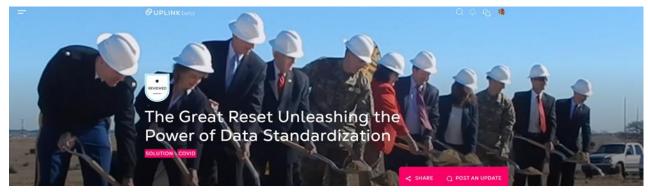
Legacy systems that cannot exchange data reliably

### **Solution:**

Leverage open data standards so legacy systems can reliably exchange data

#### Outcome:

• Significant cost and time savings throughout ecosystem



Link to World Economic Forum

Video

- Data interoperability promotes innovation enabled by data analytics and AI throughout ecosystem
- Improved risk management for construction of energy and transportation infrastructure.
- Reduce soft costs for clean energy projects so they are more financially viable, bankable and bondable.

### Measure of Success

- Implementation of data standards in the entire ecosystem for the Construction of Energy and Transportation infrastructure Projects to reduce soft costs and enable improved risk management that will make clean energy projects more financially viable, bankable and bondable.
- Electronic transactions, smart contracts, electronic surety bonds and digital communications replace manually prepared inefficient paper documents
- National standards established for common data sets like construction permits and similar regulatory documents to replace thousands of individual and inefficient data requirements.
- Better source data for Environmental, Social, and Governance (ESG) reporting



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The Blue Button represents a national movement that enables consumers to have easy access to their own health information in a format that they can use.

The Blue Button logo signifies that a consumer can download a single electronic file that contains their available health data.



The Green Button provides utility customers with easy and secure access to their energy usage information in a consumer-friendly and computer-friendly format.

Customers are able to securely download their own detailed energy usage with a simple click of a literal "Green Button" on electric utilities' websites.



Orange Button targets a reduction in soft costs by streamlining the collection, security, management, exchange, and monetizing of solar datasets across the value chain of solar.

Creating an industry-driven standardized data landscape will facilitate the growth and expansion of distributed solar.

Website

Website

Website



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Green Button – Energy Consumption

The Green Button focused on getting the 3,000+ utilities to generate one standardized data set for energy consumption so that new and innovative software applications could provide data analytics to bring awareness to consumers with the goal to reduce energy consumption.

A uniform ecosystem of just utilities.

**Utility Company** 

Energy Consumption



One data set for energy consumption





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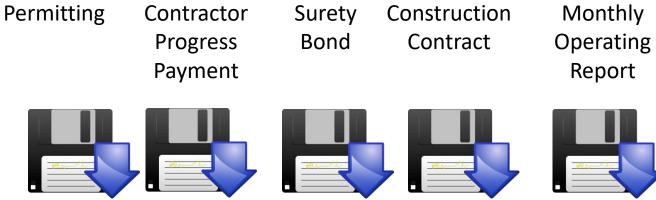


Orange Button – Energy Production

The Orange Button generates data sets for the entire energy ecosystem, from permitting through ongoing operations, to enable data analytics to all stakeholders in the ecosystem with the goal to bring awareness to efficiencies that reduce the cost of energy production.

A fragmented ecosystem of regulatory, finance, construction, insurance, surety and supply chain. Each with old legacy software that needs to be modified and modernized.



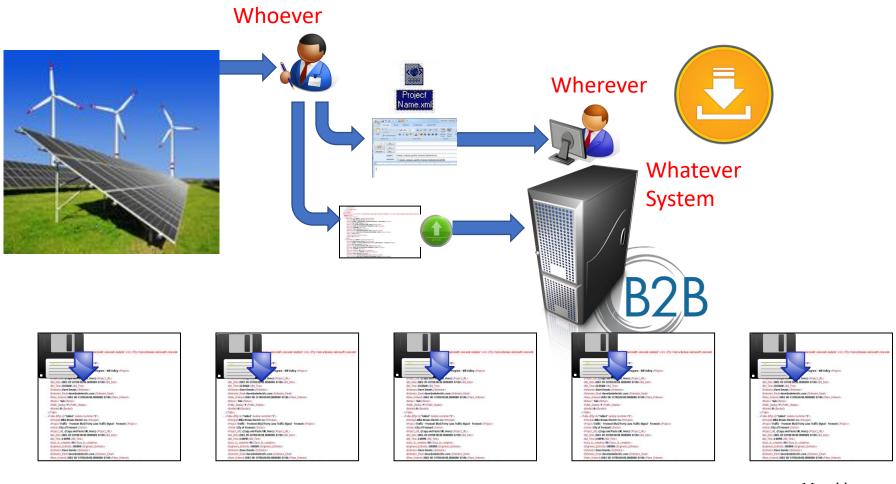


Multiple data sets for energy production





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Permit Data

Company Profile Contract Data

Contractor Monthly Progress Payments Monthly Operating Report



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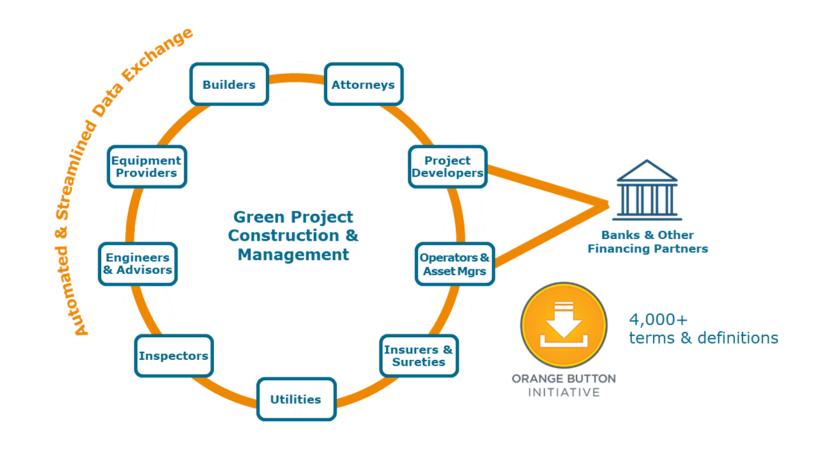
The Data Stack

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### Ecosystem Stakeholders with Need for Common Data Elements





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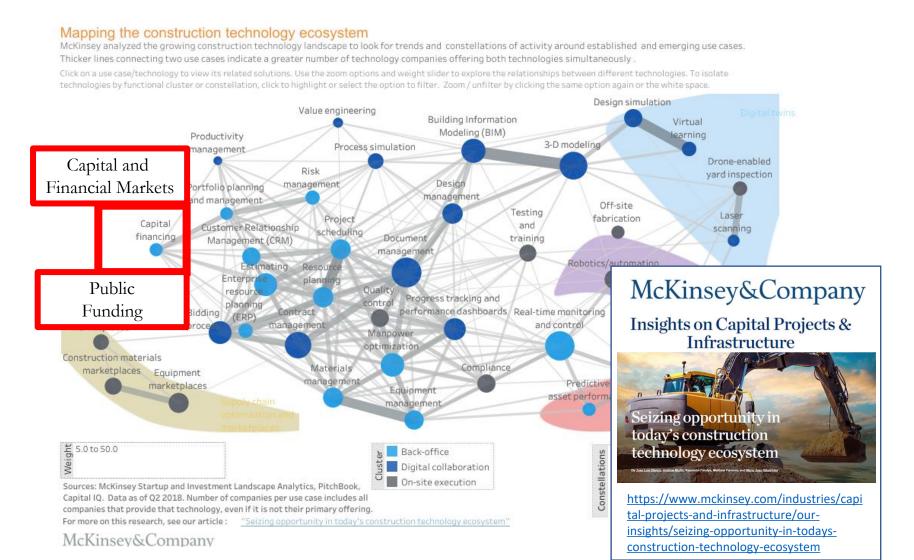
### Ecosystem Stakeholders with Need for Common Data Elements

### **Capital Markets**

Specific project cash funding sources, like banks, VC's, green bond funds, hedge funds, etc.

### **Financial Markets**

Credit providers, insurance companies, surety markets and trade credit. Not necessary project specific but utilized on projects as financial producers and services.





### Ecosystem Stakeholders with Need for Common Data Elements

## \$500,000,000 Utility Scale Interconnection to the Smart Grid

**Developer Prepares** to Build Solar Facility **Financial Stakeholders Underwrite Project** 

**Utility Prepares to Receive Solar Facility** 

**Solar Facility is Constructed by** Contractor

**Solar Facility is Completed and Operational** 

**Solar Facility is Operational** 

### Some of the stakeholders in the construction ecosystem that can utilize the same project data

Lender Finance Contractor Bank Authority with Jurisdiction Public Program Administrator Solar Contractor Surety Broker Solar Contractor Surety Company Project Owner Solar Contractor Solar Contractor Insurance Broker Project Developer Solar Contractor Insurance Company Solar Project Supply Chain Project Owner Insurance broker

Regulatory

Environmental, Social and Governance

(ESG) reporting.

**Building Owner** Prepares to Build a **Solar System** 

Solar Contractor IT systems

**Financial Stakeholders Underwrite Project** 

**Utility Prepares to Receive the Solar System** 

**Solar Facility is Constructed by** Contractor

**Solar Facility is Completed and Operational** 

**Solar Facility is Operational** 

\$50,000 Small DER Interconnection to the Smart Grid



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# ORANGE BUTTON INITIATIVE

### Orange Button Briefing

### Enabling a Digital Ecosystem for Infrastructure





## Project Lifecycle Data Generated

Project Information

Initial	Architectural	Construction	Ongoing	Sale to New Own
Concept and	Design		Operations	
Planning	Contract			
	Specifications			
		1		
				I



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Ongoing construction monitoring

Contractors Monthly Application for Payment	Contractors Monthly Application for Payment
Surety Data Set – SBA	Data elements for SBA
Surety Data Set – Decommissioning Bond	Data elements for surety performance and payment bond on solar installer
Surety Data Set – Solar Installation Contract Bond	Data elements for surety decommissioning bond
Surety Data Set – Permit Bond	Data elements for surety permit bond
Bank Reference Data Set	Data elements for verification of standing with bank
Utility Reference Data Set	Data elements for verification of standing with utility
Regulatory Reference Data Set	Data elements for verification of license and regulatory compliance
Solar Installation Contract Data Set	Data elements for solar installation contract
Insurance Data Set	Data elements for insurance products and services issued
Project Finance Data Set	Data elements for bank financial products and services issued
Applicant Financial Data Set	Data elements for financial underwriting
Solar Decommissioning Data Set	Data elements for decommissioning
Solar Permit Data Set	Data elements specific for solar systems
Basic Construction Permit Data Set	Basic Construction Permit Data Set The basic data elements for all construction permits
Applicant Company Data Set	Data elements for applicant company profile



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Contractors Monthly Application for Payment

Contractors Monthly Application for Payment

Contractors Monthly Application for Payment enables monitoring of the construction progress and risk factors from the start of construction to completion.

Supports Surety Based Risk Management

The ongoing aggregation of monthly reports enables data analytics, trending and AI.

Surety Data Set - SBA Surety Data Set – Decommissioning Bond Surety Data Set - Solar Installation Contract Bond Surety Data Set - Permit Bond Bank Reference Data Set Utility Reference Data Set Regulatory Reference Data Set Solar Installation Contract Data Set Insurance Data Set Project Finance Data Set Applicant Financial Data Set Solar Decommissioning Data Set Solar Permit Data Set Basic Construction Permit Data Set Applicant Company Data Set

Contractors Monthly Application for Payment Surety Data Set - SBA Surety Data Set - Decommissioning Bond Surety Data Set - Solar Installation Contract Bond Surety Data Set - Permit Bond Bank Reference Data Set Utility Reference Data Set Regulatory Reference Data Set Solar Installation Contract Data Set Insurance Data Set Project Finance Data Set Applicant Financial Data Set Solar Decommissioning Data Set Solar Permit Data Set Basic Construction Permit Data Set **Applicant Company Data Set** 

Construction Start

Contractors Monthly Application for Payment Surety Data Set - SBA Surety Data Set - Decommissioning Bond Surety Data Set - Solar Installation Contract Bond Surety Data Set – Permit Bond Bank Reference Data Set Utility Reference Data Set Regulatory Reference Data Set Solar Installation Contract Data Set Insurance Data Set Project Finance Data Set Applicant Financial Data Set Solar Decommissioning Data Set Solar Permit Data Set Basic Construction Permit Data Set Applicant Company Data Set Six Months after

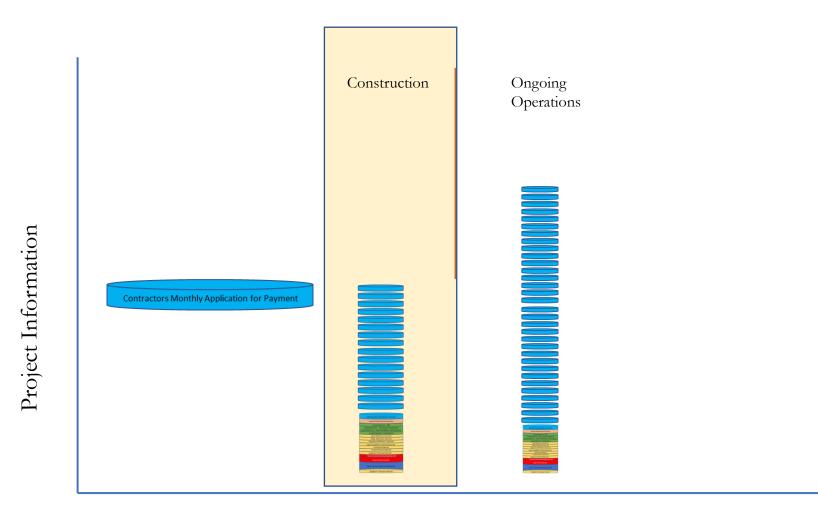
One Year After Construction Start First Month after Construction Start

Construction Start

However Long the Project Takes to Build

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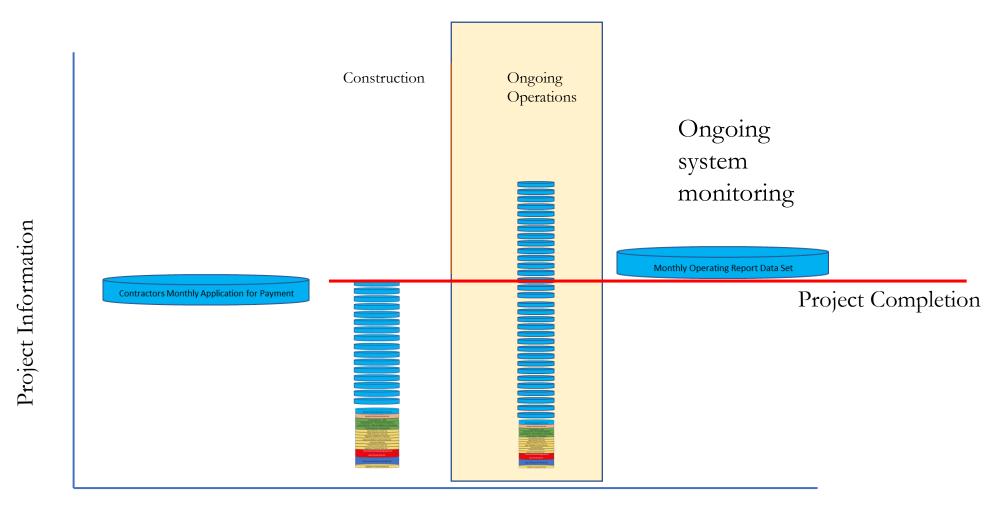
## Project Risk



Project Duration

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## Project Risk



Project Duration



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Monthly Operating Report enables monitoring of risk factors from the end of construction for the lifespan of the asset.

Supports Surety Based Risk Management and Insurance Administration

The ongoing aggregation of monthly reports enables data analytics, trending and AI.

Monthly Operating Report Data Set System Performance Data Set Surety Data Set - SBA Surety Data Set – Decommissioning Bond Surety Data Set – Solar Installation Contract Bond Surety Data Set - Permit Bond Bank Reference Data Set Utility Reference Data Set Regulatory Reference Data Set Solar Installation Contract Data Set Insurance Data Set Project Finance Data Set Applicant Financial Data Set Solar Decommissioning Data Set Solar Permit Data Set Basic Construction Permit Data Set Applicant Company Data Set

Commercial Operation Date (COD)

Monthly Operating Report Data Set Monthly Operating Report Data Set System Performance Data Set Surety Data Set - SBA Surety Data Set - Decommissioning Bond Surety Data Set - Solar Installation Contract Bond Surety Data Set - Permit Bond Bank Reference Data Set Utility Reference Data Set Regulatory Reference Data Set Solar Installation Contract Data Set Insurance Data Set Project Finance Data Set Applicant Financial Data Set Solar Decommissioning Data Set Solar Permit Data Set Basic Construction Permit Data Set Applicant Company Data Set

First Month after Commercial Operation Date (COD)

Monthly Operating Report Data Set System Performance Data Set Surety Data Set - SBA Surety Data Set - Decommissioning Bond Surety Data Set - Solar Installation Contract Bond Surety Data Set – Permit Bond Bank Reference Data Set Utility Reference Data Set Regulatory Reference Data Set Solar Installation Contract Data Set Insurance Data Set Project Finance Data Set Applicant Financial Data Set Solar Decommissioning Data Set Solar Permit Data Set Basic Construction Permit Data Set Applicant Company Data Set

Monthly Operating Report Data Set

Monthly Operating Report Data Set

Monthly Operating Report Data Set

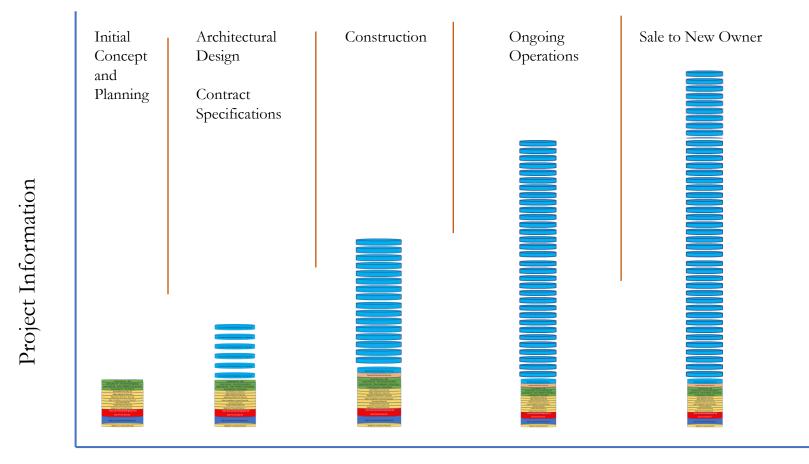
Six Months after Commercial Operation Date (COD)

Monthly Operating Report Data Set Basic Construction Permit Data Set

One Year After (COD) Multiple Years After (COD)

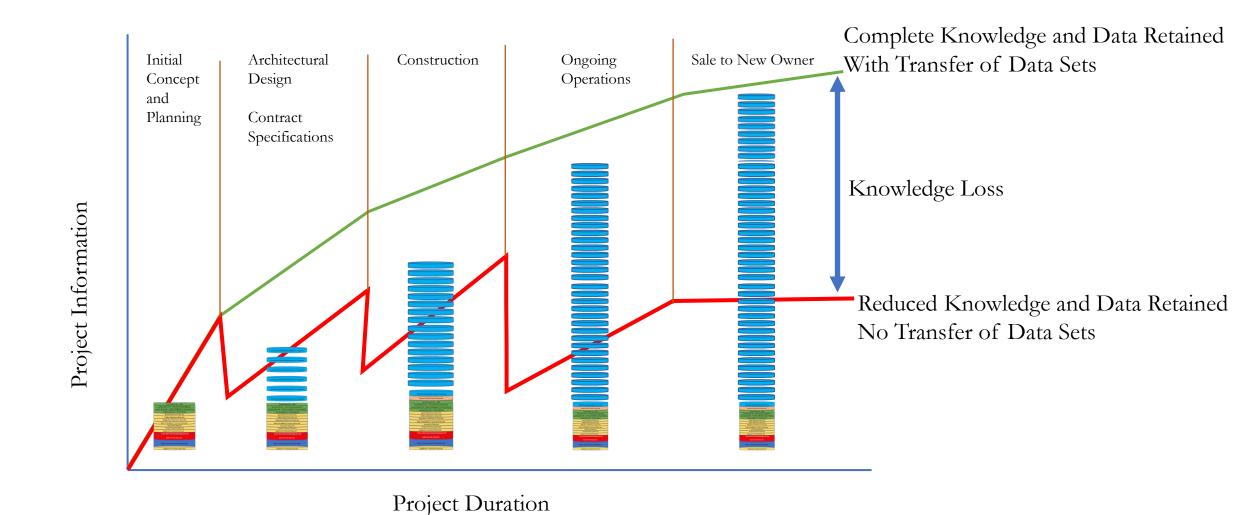
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## Project Lifecycle Data Generated



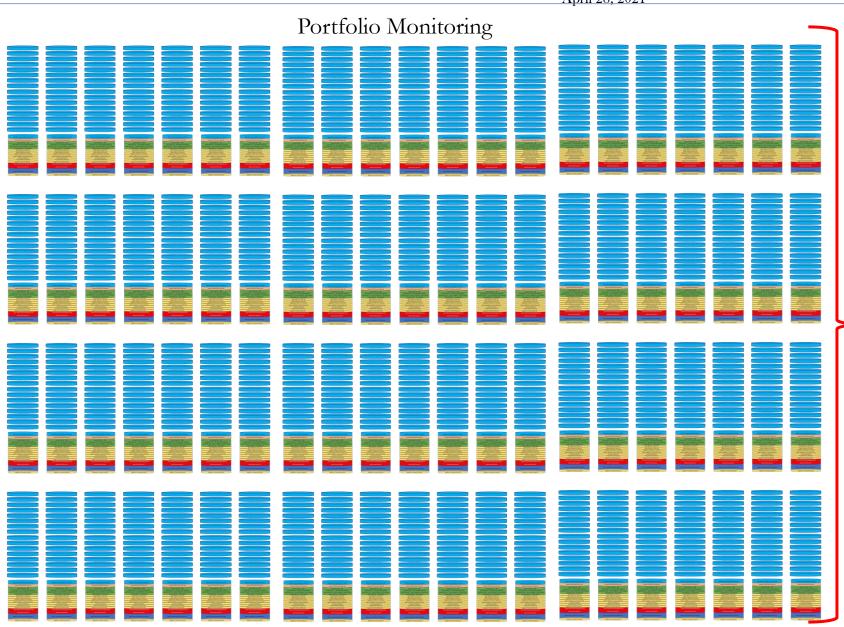
Project Duration

## Knowledge and Data Retained or Lost During Transitions





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### **Tomorrows Objective**

Consistent data that allows aggregation of data that can be accurately analyzed to identify failure points and best practices

Efficient entire ecosystem data exchange

**Smart Contracts** 

Digital Financial Products and Services

Reporting to Capital and Financial Markets

Surety Based Risk Management

Portfolio Insurance Administration



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## Where We Are Today



# DATA Act

BETTER DATA. BETTER DECISIONS.

BETTER GOVERNMENT.

2014

May 9, 2014 [S. 994]

Digital Accountability and Transparency Act of 2014. 31 USC 6101 note. 31 USC 6101 note. Public Law 113–101 113th Congress

### An Act

To expand the Federal Funding Accountability and Transparency Act of 2006 to increase accountability and transparency in Federal spending, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

#### SECTION 1. SHORT TITLE.

This Act may be cited as the "Digital Accountability and Transparency Act of 2014" or the "DATA Act".

#### SEC. 2. PURPOSES.

The purposes of this Act are to—

- (1) expand the Federal Funding Accountability and Transparency Act of 2006 (31 U.S.C. 6101 note) by disclosing direct Federal agency expenditures and linking Federal contract, loan, and grant spending information to programs of Federal agencies to enable taxpayers and policy makers to track Federal spending more effectively;
- (2) establish Government-wide data standards for financial data and provide consistent, reliable, and searchable Government and a searchable Government and a searchable growth and search growth and search growth growth and search growth growt



## Where We Are Today



### Sustainable Development Goal 7

Ensure access to affordable, reliable, sustainable and modern energy for all

### Sustainable Development Goal 9

Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

### Sustainable Development Goal 11

Make cities and human settlements inclusive, safe, resilient and sustainable

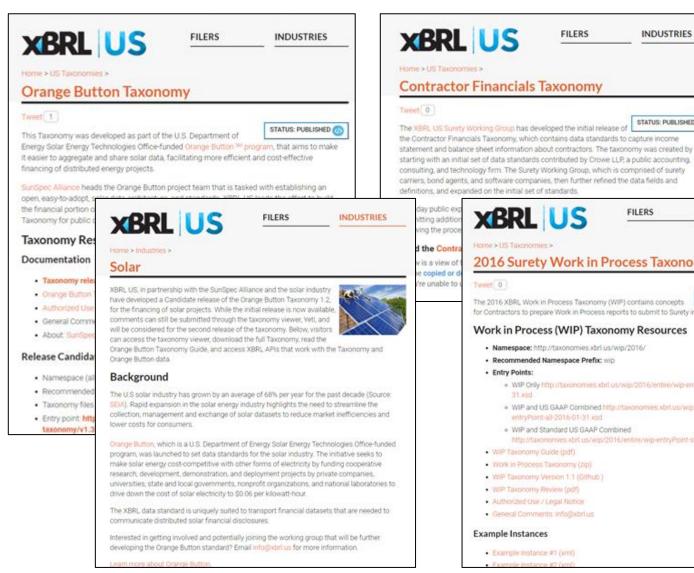
## Sustainable Development Goal 13

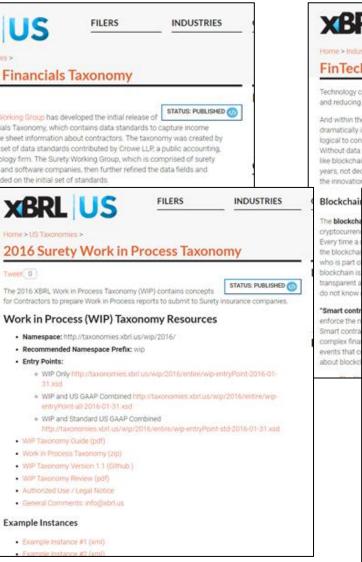
Take urgent action to combat climate change and its impacts



## Where We Are Today

FILERS







### Blockchain a

The blockchain cryptocurre Every time a the blockchain ar who is part of the blockchain is transparent

#### "Smart contract" enforce the nego Smart contracts complex fina

**XBRL US** 

**FILERS** 

### Surety

Home > Industries >

Surety providers review the contractor's financial statements to identify risks and determine eligibility for surety bonds. Financial statements include a Work in Process (WIP) report that describes the financial performance and status of a contractor's construction projects. Today surety underwriting process is highly manual and therefore, laborintensive, time-consuming and costly.

#### Using Data Standards to Streamline the **Process and Reduce Costs**

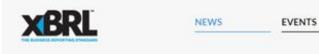
The XBRL data standard renders paper-based information computerreadable, reducing costs and delays. Bringing XBRL into the surety underwriting process will make the WIP report and supporting financial computer-readable with data that can be extracted automatically into t sureties financial system without rekeying. The XBRL data standard wi not change the underwriting process or what data is used, it will simply change how the data needed for underwriting is conveyed.

The first version of the XBRL Surety Work in Process Taxonomy was published in September, 2016. Details for the current published version



## Where We Are Today





Home > News > XBRL Spreads to Small Business Administration

#### XBRL Spreads to Small Business Administration

Posted on April 26, 2019 by Editor

Wee



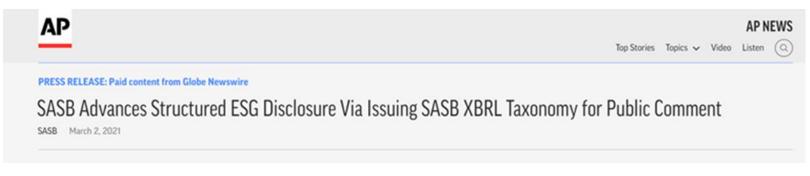
Great news from the US as contractors and bond agents can now submit data in XBRL format, automating what was a laborious manual process and freeing up valuable time for small businesses.

Great news from the US as contractors and bond agents can now submit data in XBRL format, automating what was a laborious manual process and freeing up valuable time for small businesses.



## Where We Are Today





SAN FRANCISCO, March 02, 2021 (GLOBE NEWSWIRE) -- Today the Sustainability Accounting Standards Board (SASB) announced that the SASB eXtensible Business Reporting Language (XBRL) taxonomy is now open for a 60-day public comment <u>period</u>.

SASB engaged PwC to support in the development of an XBRL taxonomy encompassing SASB's 77 industry Standards.

By integrating into the common language for business reporting, the SASB XBRL taxonomy can further enhance the quality and usefulness of SASB disclosures.



## Where We Are Today



### FERC Adopt XBRL for Utilities Reporting

Posted on June 21, 2019 by Editor

Twee!



Yesterday, the Federal Energy Regulatory Commission (FERC) announced that they are adopting the XBRL standard for utilities reporting on Form Nos. 1, 1-F, 2, 2-A, 3-Q electric, 3-Q natural gas, 6, 6-Q, 60, and 714. The final rule states:

Yesterday, the Federal Energy Regulatory Commission (FERC) announced that they are adopting the XBRL standard for utilities reporting on Form Nos. 1, 1-F, 2, 2-A, 3-Q electric, 3-Q natural gas, 6, 6-Q, 60, and 714. The final rule states:

"The use of XBRL will make the information in these forms easier for filers to submit and data users to analyse, and assist in automating regulatory filings. The Commission believes that transitioning from the current Visual FoxPro system to XBRL will decrease the costs, over time, of preparing the necessary data for submission and complying with future changes to filing requirements set forth by the Commission."



### NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 4.0

Avi Gopstein Cuong Nguyen Cheyney O'Fallon Nelson Hastings David Wollman

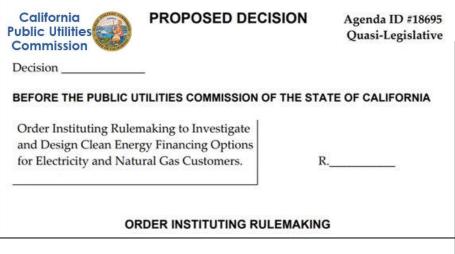
This publication is available free of charge from: https://doi.org/10.6028/NIST.SP.1108r4

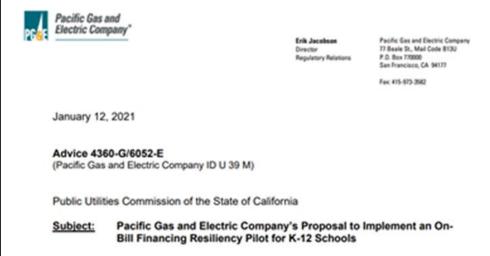
# Where We Are Today

NIST Framework for Smart Grid Interoperability

CPUC Order Instituting Rulemaking to Investigate and Design Clean Energy Financing Options for Electricity and Natural Gas Customers.

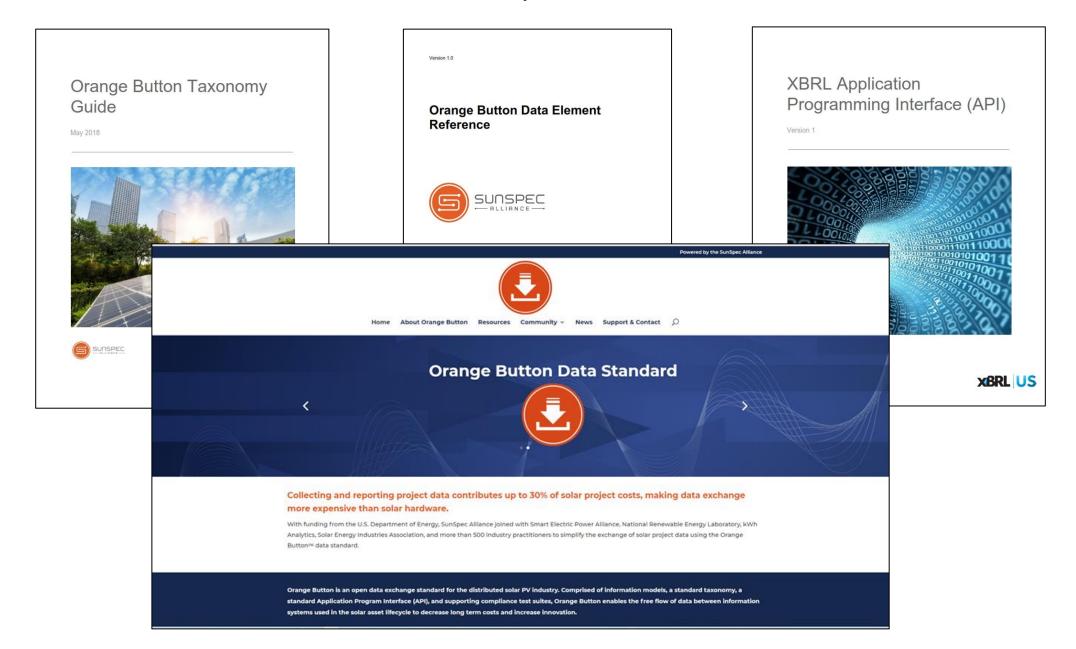
PG&E On Bill Finance Pilot







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# Digital Surety Bond



### Traditional Paper Surety Bond

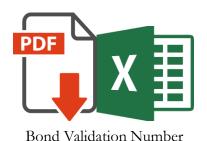
Issued manually with wet signatures for each person signing the bond.

- Distributed via mail, FedEx or hand delivery.
- Limited data elements extracted manually or by OCR with potential errors.



Issued manually with digital signatures for each person signing the bond.

- Digital signatures provided by companies like DocuSign, JotForm, HelloSign, PandaDoc, Adobe Sign,
   Qwilr, HoneyBook, AND.CO, Proposify, GleanQuote, SignNow and eSign Genie.
- Distributed via email.
- Limited data elements extracted manually or by OCR with potential errors.



### Digital Surety Bond

Issued online, with Bond Validation Number (BVN)

- BVN distributed by email
- Surety bond retrieved by secure download with both PDF and importable surety bond data set.
- Expanded data elements are importable error free.



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# Digital Surety Bond

KBRL te thatel years trappe XBRCCET	On Bill Finance		
onstruction Energy ansportation  Bond Type	Solar Projects Utility Payment Bond Page 1 of 11  On Bill Financing – Solar Projects- Utility Payment Bond	XBRL-CET Construction Energy Transportation	On Bill Finance Solar Projects
Surety Bond Form and Version Number	2018 03-04 XBRL-CET On Bill Financing - Solar Projects - Utility Payment Bond		Utility Payment Bond
Principal			Page 2 of 11
Principal Email.			
Obligee			. MEN BY THESE PRESENTS, that Principal and Surety are held and firmly bound unto Obligee in the Bond Amount as the penal viul money of the United States of America for the payment of which amount Principal and Surety bind themselves, their successors,
Obligee Email			administrators and assigns, jointly and severally firmly by these presents
Name of surety company	Data elements, including		, the said Principal has entered into an On Bill finance Contract as of the Contract Description under Utility Account
Surety NAIC Code	identifying the bond form		finance the purchase and installation of assets including those identified in the Schedule of Detachable Assets which is provided as the surety under this bond in the event of default.
Bond Number			
Bond Amount	to incorporate the text	both the cos	, as a condition of said Contract, the Principal is required to file security to guarantee the payment of the monthly utility bill, inclusive of st of utility services and repayment of the On Bill financing.
Surety Email  Name of Electronic Surety Provider  Electronic Surety Provider Website for validating bonds			REFORE THE COMPITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall comply with the conditions of the Contract ed. then this obligation shall be void, otherwise to remain in full force and effect.
Electronic Surety Provider Bond Verification Number  Annual Surety Premium			, HOWEVER, THAT THIS BOND IS EXECUTED BY THE PRINCIPAL AND SURETY AND ACCEPTED BY THE OBLIGEE SUBJECT DLLOWING EXPRESS CONDITIONS:
Bond Effective Date		1) Inispo	nd is effective as of the Bond Effective Date and shall be continuous without amendment until canceled or exonerated.
Contract Date		21 This ho	nd is automatically cancelled, and Surety exonerated, when the obligations of the Principal under the Contract have been fulfilled, or
Contract Description			stract terminated by mutual consent of Obligee and Principal.
Legal Jurisdiction			s bond may be cancelled by Surety by 60 days' prior notice in writing from Surety to Principal and to Obligee that the Surety elects not to
Utility Account Number		renew t	his bond for any such additional period.
Attachment - Schedule of Detachable Assets	-	4) Any not	ice of cancellation must be delivered to Obligee email with receipt acknowledged by Obligee.
The surety hand h	eas two basis parts		r cancellation shall not affect any liability incurred or accrued under this bond prior to the effective date of such termination or

### The surety bond has two basic parts

- 1. The fixed text of the bond depending on the bond form
- 2. The data elements in the bond which need to be exchanged

or cancellation shall not affect any liability incurred or accrued under this bond prior to the effective date of such termination or inderstood and agreed that the Obligee may recover the full amount of the bond (less any previous amounts paid to Obligee Surety cancels or non-renews the bond and, within thirty (30) days prior to the effective date of cancellation or nonrenewal, ceived replacement financial security acceptable to it to replace the bond.

2018 03-04 XBRL-CET On Bill Financing - Solar Projects - Utility Payment Bond



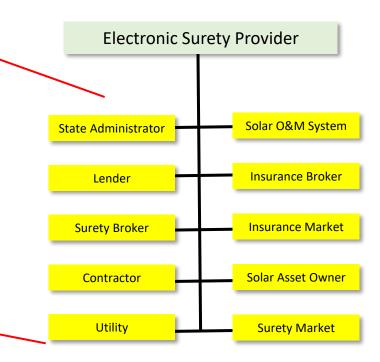
# Digital Surety Bond

t tappage 7 7 Too	On Bill Finance Solar Projects Utility Payment Bond Page 1 of 11
Bond Type	On Bill Financing – Solar Projects- Utility Payment Bond
Surety Bond Form and Version Number	2018 03-04 XBRL-CET On Bill Financing - Solar Projects - Utility Payment Bond
Principal	
Principal Email	
Obligee	
Obligee Email	
Name of surety company	
Surety NAIC Code	
Bond Number	
Bond Amount	
Surety Email	
Name of Electronic Surety Provider	
Electronic Surety Provider Website for validating bonds	- <u>-</u> -
Electronic Surety Provider Bond Verification Number	
Annual Surety Premium	
Bond Effective Date	
Contract Date	
Contract Description	
Legal Jurisdiction	
Utility Account Number	
Attachment - Schedule of Detachable Assets	

### The surety bond has two basic parts

- 1. The fixed text of the bond depending on the bond form
- 2. The data elements in the bond which need to be exchanged

Digital Surety Bond
PDF of Surety Bond
Importable Surety Bond data Set



Final Data Distribution



# Smart Contract / Digital Surety Bond

XBRL Streets bearing Legal	
XBRL-CET	
Construction	
Energy	
Transportation	

### Digital Surety Bond Blockchain

Bond Type	On Bill Financing – Solar Projects- Utility Payment Bond
Surety Bond Form and Version Number	2018 03-04 XBRL-CET On Bill Financing – Solar Projects - Utility Payment Bond
Principal	
Principal Email	
Dbligee	
Obligee Email	
Name of surety company	
Surety NAIC Code	
Bond Number	
Bond Amount	
Surety Email	
Name of Electronic Surety Provider	
Electronic Surety Provider Website for validating bonds	
Electronic Surety Provider Bond Verification Number	
Annual Surety Premium	
Bond Effective Date	
Contract Date	
Contract Description	
egal Jurisdiction	
Utility Account Number	
Attachment - Schedule of Detachable Assets	

2018 03-04 XBRL-CET On Bill Financing - Solar Projects - Utility Payment Bond

Smart Contract	
Blockchain	
On Bill Financing – Solar Projects- Utility Payment Bond  2018 03-04 XBRL-CET On Bill Financing – Solar Projects - Utility Payment Bond	_