OCA Master Use Case: SB284 As A Centralized Platform - Phase 1

April 15, 2020

Liberty Utilities Corp. (Granite State Electric) d/b/a Liberty Utilities ("Liberty Electric"), Public Service Company of New Hampshire d/b/a Eversource Energy ("Eversource"), Unitil Energy Systems, Inc. ("UES"), Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty Utilities ("Liberty Gas"), and Northern Utilities, Inc. ("Northern") (collectively, "the Joint Utilities"), submit for consideration by the stakeholders of docket number DE 19-197, comments on the four submissions in response to a request for use cases by Commission Staff.

These comments are an initial impression and relatively high-level issue spotting meant to further the discussion and development of a Statewide Multiuse Online Data Platform as outlined for exploration in SB 284. While these comments further the purpose of SB 284, no explicit comment contained within, nor any lack of comment on any portion of substantive content of the submissions in response to the use case request should be taken as an endorsement or rejection of what the form, format or content of such a Data Platform should be. The Joint Utilities do not take a position on form or substance for the Data Platform at this time. Rather, the Joint Utilities are engaged in exploring the feasibility of developing a spectrum of features and functionalities as contemplated by the stakeholders, as well as engaging in a robust discussion as to the content—including both the means and ends such content should serve.

OCA Guide to 4/23/2020 written responses to utility comments and data requests to utilities:

Completed	Use Case	
4/23/2020	Primary	SB284 as a Platform
4/23/2020	Primary	SB284 as a Platform
4/23/2020	CORE-01	Billing dataset
4/23/2020	CORE-02	TOU dataset
4/23/2020	CORE-03	Demand Study dataset
4/23/2020	CORE-04	Multi-Utility /Multi State dataset
4/23/2020	CORE-05	Multi Fuel – Electric usage + Gas usage dataset
4/23/2020	CORE-06	Statewide Index
4/23/2020	T-03	Green Button dataset
4/23/2020	T-04	Community Dashboard Integration dataset
4/23/2020	T-09	Customer Data + System Data Integration dataset
pending	T-14	CCA – Community with 3 utilities dataset
pending	T-23	DER Deployment Tracking dataset

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pending	T-10.1	Integration dataset of Utility energy data + non-utility energy data
pending	T-32	Weatherization Assistance Program platform dataset

1. OCA written responses are in blue brackets following each IOU comment {OCA Response…}
2. There are five utility comments where the OCA was unable to fully answer due to lack of understanding etc. The OCA is requesting written responses from the utilities. The requests are in red brackets {**OCA DATA REQUEST TO IOUs: …**}

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Section: Name

SB284 as a Statewide Centralized Platform

Section: Author/ last update Jim

Brennan, NHOCA, 4/3/2020

Section: Description

The primary use case for SB284 is as a statewide data platform that supports multiple and disparate data needs of existing and future IT applications, platforms, processes, workflows and process improvements – collectively referred to as "External IT Systems"[1]. In support of the relevance and importance of OCA Master Use Case "SB284 as A Centralized Statewide Platform" the OCA has drafted and attached 6 CORE use cases and 7 example use cases that can be planned, developed and implemented by stakeholders and 3rd parties as a result of the SB284 statewide data platform making standardized energy data easily accessible.

The purpose of this use case is to define SB284 as a platform – not as one of the External IT Systems depicted in the transformational use cases. The purpose of the following 13 use cases to show examples of External IT Systems that could be planned and implemented based on SB284 Phase one functionality discussed below.

SB284 Phase 1 Functionality: The data platform will securely collect, organize, protect, and share energy and energy related data based on a statewide logical data model, privacy policy, and cyber security policies. The data platform will receive and share energy datasets. SB284 design should follow modern IT architectural design practices employed by world-class IT platforms across many industries. SB284 data platform design principles should include:

1. Versioned Data Model
2. Service oriented architecture
3. Application Program Interface (API)

[Should privacy/security/cyber security of customer ID and usage data be included as a design principle?]

{OCA Response 1: Privacy and Cyber Security are top level cross cutting design requirements Ref Section: Policy Changes recommendation for establishing DPF and DAF Bates . Ref Section "Assumptions" Bates 7 assumes establishing DPF and DAF }

{OCA REQUEST TO IOUs: Outside of security issue, do the utilities agree or disagree (any portions) with OCA Master Use case as described above?}

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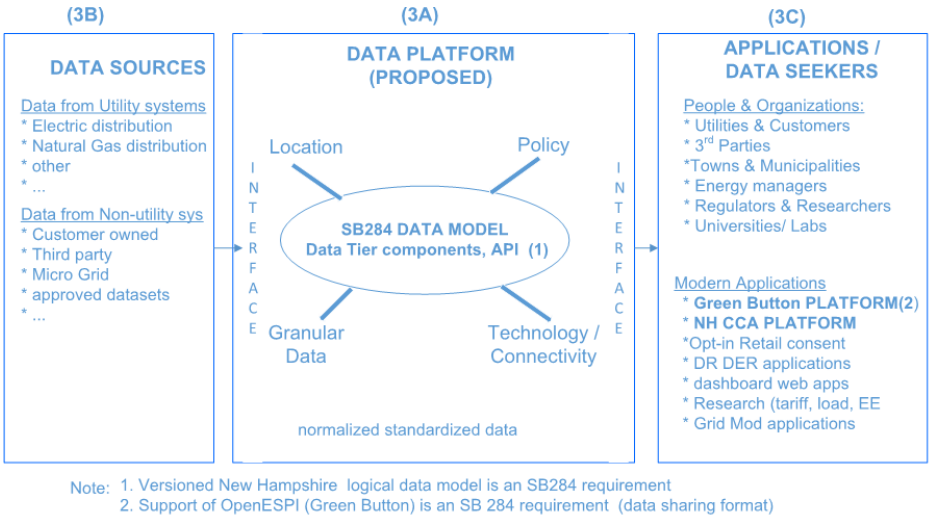
Section: Step-by-Step – what happens

From a high level OCA Master Use Case "SB284 as a Statewide Platform" will be implemented in two steps: 1) build the platform and 2) integrate the platform with External IT Systems.

Step 1: Create SB284 Data Platform according to the 3 design principles listed above. The result of Step 1 is the center box labeled "(3A) DATA PLATFORM PROPOSED" (ref OCA Comments filed DE 19-197)

[1] "External IT Systems" reside in the diagram right hand box labeled (3C) APPLICATION/DATA SEEKERS. Examples of External IT Systems are included in the 13 OCA Example Use cases – specifically, they are shown in sequence diagrams in the system box labeled "External IT Systems" located directly to the left of the system box labeled "SB284 API".



Note: 1. Versioned New Hampshire logical data model is an SB284 requirement
2. Support of OpenESPI (Green Button) is an SB 284 requirement (data sharing format)

New Hampshire Office of Consumer Advocate

[What part of the above design is associated with SB 284 and Docket DE 19-197?]

{OCA Response: The above data flow diagram is a proposed model for statewide data sharing using SB284 platform shown in the center box 3A. Due to integration requirements and goals, all 3 boxes are associated with SB284 and DE 19-197}

[Re: "Data from Non-utility sys", who will agree to share their data in this system? Will it be required of them to populate this?]

{OCA Response: This question is being addressed in DE 19-197 and other energy related dockets. Data flows and stakeholders providing and receiving data are described in basic detail within the 14 OCA Use Cases.}

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Step 2: Prioritize and project manage the phased integration of SB284 enabled External IT Systems into SB284. External IT Systems were described earlier as "existing and future IT applications, platforms, processes, workflows and process improvements". The External IT Systems are developed by stakeholders and 3rd parties, however those data requirements will be closely coordinated and communicated with the SB284 project team to ensure SB284 platform supports the business requirements and can generate datasets contain required data. These third party applications or External IT Systems are located in the diagram as the right side box labeled "(3C) APPLICATION /SEEKERS", and will be integrated into the SB284 platform, the center box "(3A) DATA PLATFORM". [If this is an "External IT System", why would it be integrated into the energy data platform? How?]

{OCA Response: Certain external applications will request, and be approved by SB284 governance through a defined process, to access SB284 data platform through published SB284 APIs. Based on the particular use case, each approved external application will have strict well defined varying levels of rights to perform CRUD operations (create, read, update, delete) on SB284 data}

Comment on steps:

- Steps 1 and 2 should follow a SDLC[2] and may run in parallel to ensure that what is built meets the priority needs identified by the stakeholders.
- Definition of External IT System: The attached 13 OCA transformational use cases represent the list of External IT Systems to be prioritized, project managed and integrated into the SB284 data platform, shown as center box "(3A) DATA PLATFORM".
- Definition of integration: In the above diagram, integration is represented by the arrow leading from center box "(3A) DATA PLATFORM" and extending to right box labeled "(3C) APPLICATION /SEEKERS". This integration arrow represents both the SB284 API as well the SB284 Datasets that the platform must generate to support the third party application. A similar integration arrow exists on the left. Datasets from utilities and vendors in left box labeled "(3B) DATA

[2] OCA's Scoping Comments discuss System Life Cycle SDLC as a standard widely used practice in IT development.

SOURCES" are uploaded to SB284 – center box labeled "(3A) DATA PLATFORM". The SB284 API and SB284 datasets are discussed throughout OCA's 13 transformational use cases and associated step by step sequence diagrams.

Section: Data Fields required

The data fields required will be determined based on the business requirements for the use cases developed and prioritized by DE 19-197 stakeholders. See Table 1: Use Cases below for a list of 13 of 30+ use cases identified by the OCA in conducting research and outreach over the past two years. Each use case has data requirements. Based on OCA research, many use cases have similar data requirements that can be met from a properly designed data platform. See Table 2: Data Elements for examples of energy data that are common to a multitude of potential use cases by 3rd party applications. Multiple use of the same energy data elements, supports the logic and efficiencies of sharing a common pool of data from a single location. This re-use of data is the vision of the OCA Master use case: "SB284 as a Platform" [Could this data be provided via a "virtual" energy data platform as identified by the utilities in joint scoping comments?]

{OCA DATA REQUEST TO IOUs: the OCA requests the IOUs to provide alternative sequence diagrams for any of the attached OCA use cases where "virtual" energy data platform would be part of the data flow and system integration model. Background: If the utilities are able to provide some level of technical information on the "virtual" energy data platform, this will facilitate OCA understanding of the virtual design. Technical discussions of any documentation provided by the utilities on virtual data sharing and systems design patterns will help lead to more informed discussions.}

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The sample use cases provided below are broken down into two categories. There are six "Core" use cases that form the architecture of the SB284 Platform. They are the key functional datasets that will be generated for many types of use cases. We have provided seven examples of use cases that would leverage these Core cases.

Table 1: Use Cases

	Use Case Number	Use Case Name	Type	Page
	Primary	SB284 as a Platform	Master	1
1	CORE-01	Billing dataset	CORE	7
2	CORE-02	TOU dataset	CORE	12
3	CORE-03	Demand Study dataset	CORE	17
4	CORE-04	Multi-Utility /Multi State dataset	CORE	21
5	CORE-05	Multi Fuel – Electric usage + Gas usage dataset	CORE	24

6	CORE-06	Statewide Index	CORE	27
7	T-03	Green Button dataset	Example	31
8	T-04	Community Dashboard Integration dataset	Example	35
9	T-09	Customer Data + System Data Integration dataset	Example	39
10	T-14	CCA – Community with 3 utilities dataset	Example	43
11	T-23	DER Deployment Tracking dataset	Example	46
12	T-10.1	Integration dataset of Utility energy data + non-utility energy data	Example	50
13	T-32	Weatherization Assistance Program platform dataset	Example	54

Table 2 "Required Levels of Data Collection & Granularity – Phase 1 SB284" SB284's Phase 1 data model should be robust and granular, designed to adapt to increasing levels of data scenarios and increasing levels of granularity of data from data sources. This is part of the future proofing strategy to

provide a technical framework and ability to support additional use cases in future phases. In contrast to the data model's robust Phase 1 design, the depth and granularity of actual data loading into the model will be in phases. The granularity and quantity of data elements and data fields actually populated in SB284 Phase 1 use cases are indicated in Table 2 as low, medium high (+ low ++ medium +++ high). The estimated levels of granularity in Table 2 reflect the data requirement of OCA Use Cases presented in this document.

The list of data elements in Table 2, as well as more detailed lists of data elements provided in attached OCA Use Cases, is only illustrative and based on OCA's preliminary analysis and research performed during dockets DE 16-384, DE 15-296 and DE 19-197. We envision that as use cases are formally designed and planned by stakeholders and 3rd parties, that a more precise list of data elements will be developed and communicated to the SB284 phase 1 implementation team.

TABLE 2:

Required Levels of Data Collection & Granularity – Phase 1 SB 284 Platform

Levels of data loaded to SB284

\+ low (selected data fields / elements, placeholder for increased date in future)

++ medium (more data elements, more fields provide increased granularity and insight)

+++ high (robust level)

Categories of Data in SB284	Type of Data in SB284				
	Customer Data	System Data	DER Implementation Data	Transaction data	Market Data
Name Address Account (limited, acct number)	+++		+		
Location (premise, gridsection/node)	+++	+	+		
Power & Energy (UOM readings)	+++	+	+		
Asset (sensors, premises, devices, ownership)	+++	+	+		

Asset Configuration (capacity, settings ,model)	+++	+	+		
Policy (Tariff, consent…)	+++		+		

[How is all of this data (i.e., Grid Section / Node. Sensors, Settings, Model, etc.) related to accessing and sharing data regarding customer energy usage, per the provisions of SB 284 "The utilities shall:

[d]esign and operate the energy data platform to provide opportunities for utilities, their customers, and third parties to access **the online energy data platform** and to **participate in data sharing**" (emphasis added) and the Commission Order of Notice in Docket DE 19-197?]

{OCA Response: With the implementation of SB284, third parties may request customer data integrated with system data - and third parties to access **the online energy data platform** and to **participate in data sharing** from above. For examples of customer and system data scenarios envisioned in Sb284 please refer to

- OCA Use Case T04 Dashboard at Bates 35

- OCA Use Case T-09 Customer and System Data Integration at Bates 39,

- OCA Use Case T-10 DER Deployment Data at Bates 46}

Section: Estimated Cost

Platform cost will be estimated following completion of analysis of business requirements, use cases and functionality requirements currently underway in DE 19-197.

Completion of business requirements, including use case analysis, should occur prior to the step of costing out a system. The role of business requirements as a threshold milestone that occurs prior to costing an IT system was discussed in OCA's 3/11/2020 Scoping Comments: "*the development of the data model will determine initial functionality, future functionality, future proofing (unforeseeable functionality) and cost. In this context, "cost" refers to both the initial cost of building the data platform, as well as the future costs of adding new functionalities in future years. A more robust data architecture may increase the initial costs of building the data platform but, if designed well based on comprehensive business analysis, can provide a lower risk cost effective path to implement additional use case functionality.*"

[How will we estimate costs for "initial functionality, future functionality, future proofing (unforeseeable functionality)"?]

{OCA Response: As discussed in 3/11/2020 OCA Scoping Comments, and here, costs and risks are minimized and system functionality is enhanced when fundamental IT due diligence is completed by stakeholders including analysis and agreement on:

- Platform strategy,
- Business Requirement,
- Use Cases,
- Recognition and execution of key early design decisions,
- Data modeling,
- Phases,
- Project management,
- Effective governance}

Section: Estimated benefits

By itself, the SB 284 platform does not produce direct quantitative benefits. However, there are numerous advantages to the SB284 platform. For example, creating a statewide database of information can provide an authoritative data source for multiple entities that can be relied on as up to date. This prevents duplicative data collection from energy vendors, service providers, government entities and non-profits that saves time and money increasing the efficiency with which NH can invest in various types of energy. Creating transparency and access to information for regulators can save time spent by utilities gathering the information. Increasing transparency for customers will give them the tools to invest in the energy choices that make sense for their home. Estimated quantitative and qualitative benefits of a future proof robust SB284 data platform are under review in DE 19-197 and other PUC dockets sited in SB284 legislation and OCA's 3/11/2020 OCA Scoping Comments.

[Re: "SB 284 platform does not produce direct quantitative benefits", how will we quantify benefits for cost-effectiveness testing?

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{OCA Response: While the SB284 platform will not produce direct quantifiable benefits, we believe that if the platform is built, beneficial external applications and platforms will use the SB284 platform for major portions of their data needs. If a NH Statewide Green Button platform is built and uses SB284 as its data source, that platform will have lower costs and greater (quantifiable) benefits then a Green Button platform that must integrate with multiple NH utilities each with different data models and different system capabilities. Similarly, if a Demand Response platform, or an Energy Efficiency platform is built and they each use SB284 for back end data, these beneficial applications will have lower costs and produce higher quantifiable benefits, compared to each having to integrate to multiple utilities with different modes and different system capabilities. Furthermore, if multiple external applications (Green Button, Demand Response, EE App) all use the same SB284 data platform, then there is a potential of spreading SB284 platform costs over a wider group of beneficial uses. We believe that at the time when the SB284 stakeholders and Commission undertake the process of determining the cost effectiveness of SB284, these factors can potentially make the SB284 platform viable from a cost perspective.

Re: "prevents duplicative data collection", are there any data points that support this is happening now, or that it won't happen in the future? When third parties download data and upload it into their systems, would this be considered duplicating data collection?]

Section: Required Policy Changes

NH should establish policies to address overarching data privacy and data cybersecurity issues. Policies can be established prior and/or in parallel with development of the SB284 Platform. Establishing the following two policies was a primary recommendation of US DOE during on-sight (and conference call) working meetings with the DE 16-384 data working group in 2019:

- Data Privacy Framework (DPF),
- Data Access Framework (DAF)

[What other policy recommendations from US DOE should be incorporated (I.e., Governance, Privacy, etc.)? Are there other legislative or regulatory policy changes that are needed? Will establishing policies in conjunction with developing the platform lead to re-work and additional costs?]

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Section: Project Risks

Project risks include risk of a project failing to reach a finish line (terminated projects), the risk of a competed project producing a systems that underperforms, and the risk of a completed project producing a systems that fail entirely. OCA's 3/11/2020 Scoping Comments discuss the following risks:

[Should cost be considered a risk?]

{OCA Response: Yes. Vulnerabilities that are not fully mitigated represent risks. Risks can be assigned costs and probabilities of occurrence which can be used to calculate overall cost of all identified risks should they be realized.}

Failure to design a good data model – "*A more robust data architecture may increase the initial costs of building the data platform but, if designed well based on comprehensive business analysis, can provide a lower risk cost effective path to implement additional use case functionality*."

And

"*Risks, including delays and high costs, are often incurred by customers when their utility is*

forced to redesign an IT system that has already been designed, built, tested, deployed and in use. Poor data quality is often a contributing factor in the decision to redesign an IT system, including an energy data sharing system"

Failure to plan strategically – "*Failing to design the data platform to meet the future realities of the grid will dramatically reduce its usefulness, create risks and added costs to modify or create new data sharing systems, and overall increase the risk of technology obsolesce*. "

And

Designing the data platform with the capacity to maintain and share granular data provides future- proofing and risk mitigation.

Failure to recognize important design decisions early on - *"It is critical to develop an awareness of future potential requirements, early on, prior to designing the data platform. Design decisions early on, such as adoption of underlying data models, are beneficial in designing the system in such a way that future phases can be added cost effectively, as necessary and appropriate"*

Failure to plan phases of implementing External IT Systems into SB284 – "*Phases are recommended as a means of managing costs and risk when designing and deploying a technology platform*" does not include "implementing External IT Systems". We assume these have already been developed and implemented by private companies at their own expense and risk.

Failure to manage SB284 as an enterprise IT project - *The platform should be governed and managed like a traditional IT project including project planning, project management, and oversight of a documented System Development Life Cycle (SDLC).*

Should the following also be included as Project Risks for this use case? Should these be considered for all of the use cases?

- Risk of not correctly developing a "future proof system" – inherently high-risk due to its speculative nature.
- Risk of excessive scope, beyond "access and share data regarding customer energy usage".

- Protecting and Securing Customer Data.
- Cyber Risks such as
  - Cyber/Malware Attack
  - Data Breach or Loss of Data
  - Insecure Application User Interface
  - Cloud Abuse
  - Hacking
  - Single Factor Passwords
  - Shadow IT
  - Internet of Things
- Project Risks
  - Lack of Executive support or engagement
  - Inaccurate estimates
  - Stakeholder conflict
  - Inadequate change management process
  - Key employee turnover
  - Inadequate communication
  - Inadequate resources
  - Lack of training
  - Architecture doesn't support project
  - Design doesn't pass peer review
  - Integration failure
  - Legal and Regulatory changes

Section: Cybersecurity Issues

Cyber security issues and risks should be as part of the process to create a stakeholder driven Data Privacy Framework (DPF), and a Data Access Framework (DAF) to address overarching issues of data privacy and cyber security.

Sections: Assumptions / Preconditions

1. SB284 Platform is designed based on a logical data model
2. SB284 Platform follows a system architecture design approach
3. SB284 Platform implements a service oriented architecture with an Application Programming Interface (API)
4. Data Privacy Framework (DPF) and Data Access Framework (DAF) address overarching issues of data privacy and cyber security and should be established prior and/or in parallel with development of the SB284 Platform. . [Should security guidelines/requirements be established in the early stages? If not, will this result in additional costs? How/When will we determine these costs?]
5. This use case assumes analysis for prioritization and business requirements has been performed on stakeholder use cases including the attached OCA Core and Sample use cases.

Section: Name

Use Case CORE-01: Billing Dataset

Section: Author/ last update

Jim Brennan, NH OCA April 3, 2020

Section: Description

SB284 Data Platform phase 1 functionality includes generation of a billing dataset. A billing dataset enables regulated utilities and energy service providers to use third party billing services. Authorized third party billing service providers can access SB284 datasets, at a single point of access (API), containing standardized data that is required to create customer bills. The dataset generated in OCA Use Case CORE-01 contains all the data required to create an actual Unitil bill as shown further below.

[How is replacing utility billing systems part of SB 284 or DE 19-197?]

{OCA Response:

-SB284 is a data platform (box 3A Platform, bates 2) and not an external application or billing system (see box 3C Applications, bates 2)

-SB284 data model supports Green Button data sharing standard (required by legislation) which included billing data. This use case is an example of how SB284 could support Green Button data sharing.}

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Related Use Cases:

- OCA Use Cases 1 to 48: This is a CORE use case that other use cases have a dependency to. It provides foundational functionality that other use cases build upon in phase 1 or in later phases of SB284 data platform maturity. Many OCA use cases, including those in this document, rely on completion of steps 1 and 2 of this use case. The data uploaded to SB284 in steps 1 and 2 is reused for purposes and use cases beyond creating a bill – thus demonstrating SB284 as a data platform.

CORE Use Case Testing Note: Actual test data files, containing granular (anonymized) data extracted from back office data systems (MDM, CIS), were provided by Unitil and used in this use case to develop and manually test data model functionality. This CORE use case was tested and approved (User Acceptance Testing) by the DE 16-384 Data Working Group in 2019.

[DE 16-384 was a Unitil Electric Rate Case docket, How was the CORE use case "tested and approved"?

{OCA Response: Testing was performed manually using excel. Data entities were created; test data , designed to support specific unit tests, was mapped and inserted into the model; results were observed, discussed and approved}

For how many customers was this tested for? {OCA Response: One customer was used for Use Case CORE 01}

Does this use case work with all Unitil customers rates? Does it work with the rates for the other NH utilities? Does it work for all Supplier Rates? Does it include utility equipment costs, line extensions, EE on-bill financing, etc.?"] ? {OCA Response: CORE 01 is a proof of concept to test the ability of the beta version generic logical data model to produce a dataset that could be used by a external IT system/application to generate the Unitil bill shown on bates 10}

Section: Step-by-Step – what happens

1. A. An energy company / utility desires to have billing conducted through a third party vendor. The third party vendor enters a contract with the utility that includes all the necessary privacy and data protections as required by the platform and receives corresponding log-in credentials associated with specific data types from specific utilities.

~~3.~~2. SB284 Platform receives the data and uploads it to the database according to designated field names.
~~4.~~3. Dynamic customer information is programmed to export from the utility. Information includes actual usage data in kWh and kW (in the case of TOU for each rate segment). The data is associated with particular account id and customer id.
~~5.~~4. SB284 Platform processes and indexes the data.
~~6.~~5. Billing:

a) A billing clerk of a third party vendor logs in to third party Billing application that is integrated to SB284.
b) The billing platform interacts with SB284.
c) The platform processes the data request

~~7.~~6. The platform exports the billing dataset to the third party vendor. The third party vendor translates the data into a billing document and sends the customer bill.

[Billing data is currently available as part of the Electronic Data Interchange (EDI) transactions between Utilities and Suppliers where the EDI transactions provide the required data for Energy Suppliers to do their own billing. This seems redundant.

{OCA DATA REQUEST TO IOUs Part 1: Based on two years of technical analysis and outreach to experts within NH and nationally, we feel SB284 data platform, in its totality, is not redundant to any existing data sharing system in NH - including EDI. In order for the OCA to be able to evaluate EDI vs SB284 please provide:

- Documentation on EDI data model, governance of the EDI data model and the implementation of EDI at the utilities in NH,

-Technical information how the EDI data model is implemented by each of the utilities. Indicate version and if all utilities use the same version of EDI

-Technical information on EDI security and privacy model,

-Technical information on the EDI Integration model and API that will support a certified Green Button platform including: Billing data, separation of PII and anonymous data,

-Modified version of data elements table on bates 9 showing EDI data elements as alternative to SB284 elements.}

{OCA DATA REQUEST TO IOUs Part 2: Based on IOU's statement that SB284 data seems redundant to EDI, please:

- Prepare an "EDI" alternative sequence diagram to the sequence contained in OCA Use Case CORE 01 "Billing dataset" (reference bates 8) so as to illustrate EDI's data and system integration capability,

-Prepare an "EDI" alternate sequence diagram to the sequence diagram contained in OCA Use Case T-03 "Green Button dataset" (reference bates 33) illustrating how EDI would provide a dataset (step 3e), where that dataset contains billing data consistent with OpenESPI standard used by certified Green Button platform.

-Reference Table 1 "Use Case" at bates 3 and please identify all OCA use cases, (other than CORE 01 and T03) where EDI can be used as an alternative to SB284. For these use cases please provide alternative "EDI" sequence diagram(s) illustrating the data and system flow required to enable the use case.

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OCA Use Case CORE-01: Billing Dataset

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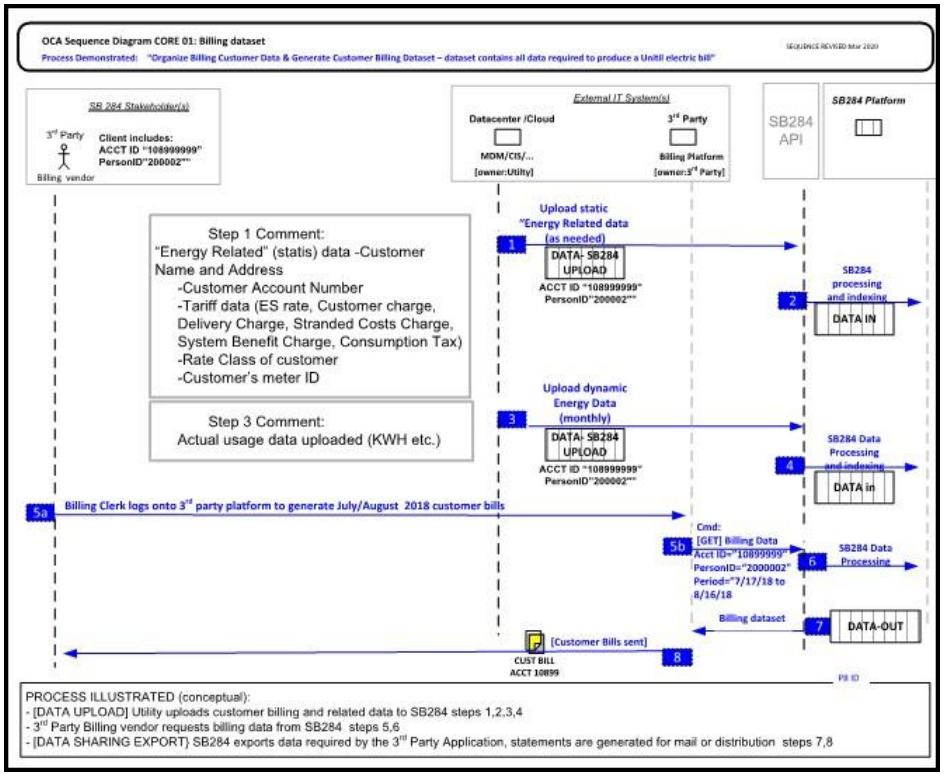
1. Stakeholders (customers, 3rd parties, utilities…),
2. Assets (premises, meters, rooftop PV…),
3. External IT Systems (an existing utility CIS, a future CCA Platform…),
4. SB284 API (proposed) and SB 284 platform (proposed).



Use Case CORE-01: Billing Dataset

Section: Data Fields Required

The table below represents the data required for the CORE-01: Billing Dataset

	SB 284 DATA SET (Data required to produce a customer bill)				"Types" of Data Contained in SB 284 billing dataset						UNITIL BILL - ACTUAL (created with SB284 dataset)	
	SB284 Data Element	Description	Value in SB284		Platform IndexID / Data	Customer Data	System Data	DER Data	Market Data		Label printed on Customer Physical Bill	Value on Physical Bill
1	Account Number		"108999999"	-->		X				-->	"Account Number"	"108999999"
2	Address USPO	Address on account	"74 N Sing Street ..."	-->		X				-->	"Address"	"74 N Sing Street ..."
3	TariffName	Tariff ID Name	D1 Residential	-->	X	X				-->	"Rate Code"	"D"
4	n/a	n/a	(ref TimePeriod)	-->						-->	"Period"	"7/17/18 - 8/16/18"
5	Meter Number	Meer Number in utility system	"46920"	-->						-->	"Meter Number"	"46920"
6	Register Read End	KWH or KW at end of cycle "meter reading previous"	"72042"	-->		X				-->	"Meter Reading Previous"	"72042"
7	Register Read Start	KWH or KW at start of cycle "meter reading present"	"72651"	-->		X				-->	"Meter Reading Present"	"72651"
8	n/a	n/a	(calculated from G-F)	-->						-->	"Meter Usage"	"609"
9	TariffCustomerCharge	Customer Charge per Tariff ID ($rate per customer)	"16.12"	-->		X				-->	"Customer Charge"	"16.12"
10	TariffDelievryChg	Delivery Charge per Tariff ID ($rate X KWH)	"0.06175"	-->		X				-->	"Delivery Charge"	"37.6"
11	TariffStrandedCost	Stranded Costs charge per Tariff ID ($rate X KWH)	"0.0008"	-->		X				-->	"Stranded Cost Charge"	"$0.49"
12	TariffSystemBenefit	System Benefit Charge per Tariff ($rate X KWH)	"0.00456"	-->		X				-->	"System Benefits Charge"	"$2.77"
13	TariffConsumptionTax	Consumption Tax per Tariff ID ($rate X KWH)	"0.0005"	-->		X				-->	"Consumption Tax"	"$0.03"
14	n/a	n/a	n/a (calc SUM above)	-->						-->	"Total Current EL Charge"	"6.34"
15	TariffEneregyServiceRat	Energy Service cost ($rate X KWH)	"0.08238"	-->		X				-->	"Energy Service Charge Fixed"	"50.17"
16	n/a	n/a	n/a	-->						-->	"Total Current Charges"	"50.17"
17	n/a	n/a	n/a	-->						-->	"Total Current Bill"	"$106.51"
	Data use in processing not included in exported dataset											
18	PersonID	Unique SB284 Index	"20002"	-->	X							
19	PremiseID	Unique SB284 Index for a NH premise	"16002"	-->	X							
20	AddressID	Unique SB284 Index for a NH Address	"40007"	-->	X							
21	UsagePointID	Unique SB284 Index for a NH Grid endpoint	"110002"	-->	X							
22	SensorID	Unique SB284 Index for a NH meter	"10002"	-->	X							
23	AccountID	Unique SB284 Index for all NH Utility Accounts	"120002"	-->	X							
24	AssetID	Unique SB284 Index	"7866654"	-->	X							
25	InstanceID	Unique SB284 Index of a reading	multiple	-->	X							
26	TimePeriodID	Unique SB284 Index	multiple	-->	X							
27	ProgramID	Unique SB284 Index all NH programs	multiple	-->	X							
28	BlockDefinitionID	Unique SB284 Index	"07"	-->	X							
29	RateClassID	Unique SB284 Index for a NH rate class	"102"	-->	X							

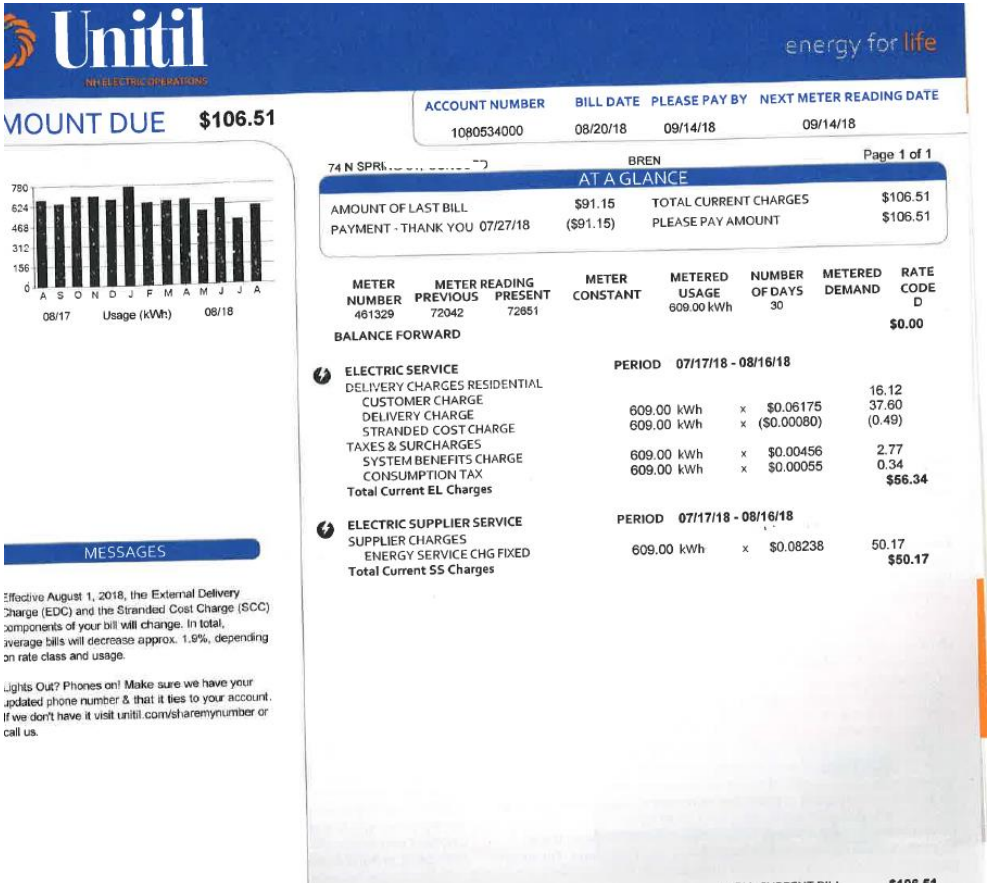
OCA Use Case CORE-01: Billing Dataset

{OCA Response: the dataset is based on DE 16-384 data model. The data model supports OpenESPI which is the basis for Green Button. It was a proof of concept test for 1 customer. }

Is the above data set supposed to include ALL of the data that is on the following bill?]

{OCA Response: The above dataset includes all data necessary to generate the bill. Note that calculation results are not included in SB284. Calculations would be performed by the external billing system using data contained in the SB284 dataset.

Addendum: Actual Unitil account tested by DE 16-384 Data Working Group (with customer consent)



Unitil
NH ELECTRIC OPERATIONS
energy for life

MOUNT DUE $106.51

ACCOUNT NUMBER	BILL DATE	PLEASE PAY BY	NEXT METER READING DATE
1080534000	08/20/18	09/14/18	09/14/18

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AT A GLANCE

AMOUNT OF LAST BILL	$91.15	TOTAL CURRENT CHARGES	$106.51
PAYMENT - THANK YOU 07/27/18	($91.15)	PLEASE PAY AMOUNT	$106.51

780 624 468 312 156 0
A S O N D J F M A M J J A
08/17 Usage (kWh) 08/18

METER NUMBER	METER READING PREVIOUS	METER READING PRESENT	METER CONSTANT	METERED USAGE	NUMBER OF DAYS	METERED DEMAND	RATE CODE D
461329	72042	72851		609.00 kWh	30		

BALANCE FORWARD $0.00

ELECTRIC SERVICE — PERIOD 07/17/18 - 08/16/18

DELIVERY CHARGES RESIDENTIAL				
CUSTOMER CHARGE				16.12
DELIVERY CHARGE	609.00 kWh	x	$0.06175	37.60
STRANDED COST CHARGE	609.00 kWh	x	($0.00080)	(0.49)
TAXES & SURCHARGES				
SYSTEM BENEFITS CHARGE	609.00 kWh	x	$0.00456	2.77
CONSUMPTION TAX	609.00 kWh	x	$0.00055	0.34
Total Current EL Charges				$56.34

ELECTRIC SUPPLIER SERVICE — PERIOD 07/17/18 - 08/16/18

SUPPLIER CHARGES				
ENERGY SERVICE CHG FIXED	609.00 kWh	x	$0.08238	50.17
Total Current SS Charges				$50.17

MESSAGES

Effective August 1, 2018, the External Delivery Charge (EDC) and the Stranded Cost Charge (SCC) components of your bill will change. In total, average bills will decrease approx. 1.9%, depending on rate class and usage.

Lights Out? Phones on! Make sure we have your updated phone number & that it ties to your account. If we don't have it visit unitil.com/shareymynumber or call us.

Section: Estimated Cost

Refer to OCA master use case "SB284 as a Platform"

[Will this estimated cost be needed to determine cost-effectiveness? This is a question for all 24 use cases, but only added here.]

Section: Estimated benefits

Refer to OCA master use case "SB284 as a Platform"

[Will this estimated benefit be needed to determine cost-effectiveness? This is a question for all 24 use cases, but only added here.]

Section: Required Policy Changes

Data Privacy Framework (DPF), and Data Access Framework (DAF)

Section: Project Risks

Refer to OCA master use case "SB284 as a Platform"

Section: Cybersecurity Issues

Refer to OCA master use case "SB284 as a Platform"

[Will protecting Personal Identifiable Information need to be addressed? This note is only added here on this Use Case but is applicable to all Use Cases.]

{OCA Response: As stated earlier, Privacy and Cyber Security are top level cross cutting design requirements Ref Section: Policy Changes recommendation for establishing DPF and DAF. Reference Section "Assumptions" establishing DPF and DAF, bates 7 }

Sections: Assumptions / Preconditions

OCA Use Case CORE-01: Billing Dataset

1. SB284 Platform is designed based on a logical data model
2. SB284 Platform follows a system architecture design approach
3. SB284 Platform implements a service oriented architecture with Application Programming Interface (API)
4. Data Privacy Framework (DPF), and Data Access Framework (DAF) address overarching issues of data privacy and cybersecurity, are established prior and/or in parallel with development of SB284 Platform.

OCA Use Case CORE-02: TOU Dataset

Section: Name

Use Case Core-02: Time of Use (TOU) Dataset

Section: Author/ last update

Jim Brennan, NH OCA April 3, 2020

Section: Description

TOU datasets can be used in applications that are designed to educate consumer as well as help consumers make better choices. Providing time of use information can aid in the analysis of potential new energy products, such as electric vehicles or battery storage, and new energy services such as demand response. The SB284 platform can generate a time of use dataset because it incorporates time, interval and duration for all sensor readings and measurements. TOU datasets can be shared on predetermined parameters established under agreement with the third party platform. Potential users of TOU data include demand response vendor platforms, tariff / rate design analysis, energy management programs, tariff analysis tools, targeted energy efficiency programs, and dynamic customer engagement applications.

The TOU dataset generated in OCA Use Case CORE-02 models the time of use rate design proposed in the net metering docket.

CORE Use Case Testing Note: Actual test data files, containing granular (anonymized) data extracted from back office data systems (MDM, CIS), were provided by Unitil and used in this use case to develop and manually test data model functionality. This CORE use case was tested and approved (User Acceptance Testing) by DE 16-384 Data Working Group in 2019.
[Did this CORE Use Case include testing of Time-of-Use data for all Unitil customer classes? Was it tested and will it for all customer situations for the NH electric and gas utilities?

{**OCA Response**: Use Case CORE 03 TOU manually tested the ability of the DE 16-384 logical data model to organize energy readings into TOU intervals. Based on a generic (non Unitil) architecture, and subject to more testing (and model modification based on test results) the model is designed to support all existing and future TOU rate designs / tariff / programs statewide. Regarding testing, the SB284 data model and platform should be tested for all relevant identified TOU scenarios as part of the SDLC.

{**OCA DATA REQUEST TO IOUs**: Please discuss each utility's current capability to provide interval data TOU datasets for all customer classes, to external third party such as a CCA, PUC, Research organization. Please describe the process.

Related Use Case:

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- OCA Use Case #12 Real Time Data Indexing (granular time interval) not provided in this filing.
- OCA Use Case #23 DER Deployment (Step 7 allows integrated analysis of DERs with TOU by location, by customer)
-

Section: Step-by-Step – what happens

1. Static customer information is uploaded from the utility to SB284. Information includes the customer name, address, account number, meter number, tariff and rate data including block definition and configuration. Frequency of updates is based on changes to data at the utility.
2. SB284 Platform processes and indexes (use case CORE 06) the data received from the data source.
3. Energy usage data is uploaded from the utility to SB284. Information includes actual *hourly* usage data in kWh according to the block definition and configuration. The data is associated with that customers meter, usage point and program name.
4. SB284 Platform processes and indexes (use case CORE 06) the data received from the data source.
5. Customer logs on to her Customer Engagement Platform (CEP) to view her TOU data. Note: while a CEP application is used in this example as a platform using a SB284 TOU dataset, a

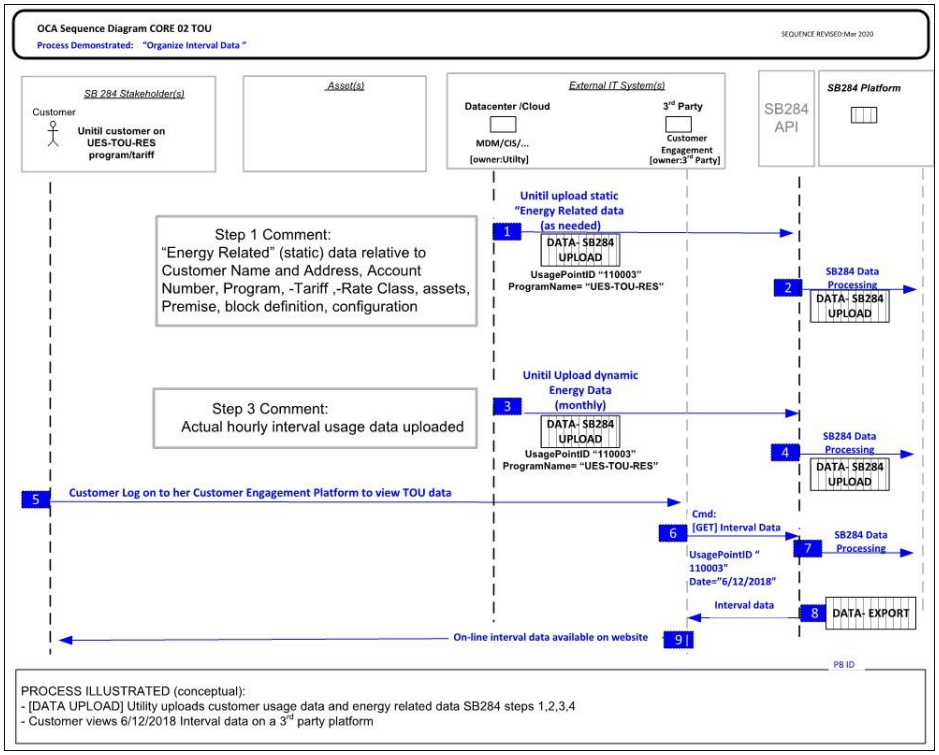
similar need for TOU data exists for demand response vendors, tariff and rate design applications, targeted EE applications, educational applications, home energy management programs, etc.

6. The CEP sends a command to get interval data to the SB284 Platform based on specific usage point id's and date parameters.
7. The SB284 Platform processes the request.
8. The SB284 Platform exports the interval data to the CEP.
9. The CEP displays the interval data on-line for the customer to view through their secure portal.

Sequence Diagram

How to Read: Sequence diagrams illustrates the order of activity (top to bottom) that occur between 4 categories of actors (across the top). The 4 categories of actors are:

1. Stakeholders (customers, 3rd parties, utilities…),
2. Assets (premises, meters, rooftop PV…),
3. External IT Systems (an existing utility CIS, a future CCA Platform…),
4. SB284 API (proposed) and SB 284 platform (proposed).



OCA Use Case CORE-02: TOU Dataset

Section: Data Fields required

Column	Element	Description	Platform IndexID	Customer Data	System Data	DER Data	Market Data
A	Program Name	Program this meter is associated with	X				
B	TOU Block Name	Name of block	X				
C	TimeStart	Time stamp at start of interval	X				
D	ReadValue	value reported from meter	X	X			
E	UOM	Unit of Measurement of configured endpoint	X				
F	Quality	reading quality (9 levels)		X			
		Additional Indexs used (not shown in dataset)					
	PersonID	Unique SB284 Index	X				
	PremiseID	Unique SB284 Index for a NH premise	X				
	AddressID	Unique SB284 Index for a NH Address	X				
	UsagePointID	Unique SB284 Index for a NH Grid endpoint	X				
	SensorID	Unique SB284 Index for a NH meter	X				
	AccountID	Unique SB284 Index for all NH Utility Accounts	X				
	AssetID	Unique SB284 Index	X				
	InstanceID	Unique SB284 Index of a reading	X				
	TimePeriodID	Unique SB284 Index	X				
	ProgramID	Unique SB284 Index all NH programs	X				
	BlockDefinitionID	Unique SB284 Index	X				
	RateClassID	Unique SB284 Index for a NH rate class	X				

Dataset:

(A)	(B)	(C)	(D)	(E)	(F)
Program Name	**TOU Block Name**	**TimeStart**	**ReadValue**	**UOM**	**Quality**
UES TOU-RES	"Mid-Peak Hourly"	6/12/18 8AM	1.25	KWH	Passed Val
UES TOU-RES	"Mid-Peak Hourly"	6/12/18 9AM	0.6875	KWH	Passed Val
UES TOU-RES	"Mid-Peak Hourly"	6/12/18 10AM	0.625	KWH	Passed Val
UES TOU-RES	"Mid-Peak Hourly"	6/12/18 11AM	0.5625	KWH	Passed Val
UES TOU-RES	"Mid-Peak Hourly"	6/12/18 12PM	0.8125	KWH	Passed Val
UES TOU-RES	"Mid-Peak Hourly"	6/12/18 1PM	0.7188	KWH	Passed Val
UES TOU-RES	"Mid-Peak Hourly"	6/12/18 2PM	0.8125	KWH	Passed Val
UES TOU-RES	"CriticalPeak"	6/12/18 3PM	0.7813	KWH	Passed Val
UES TOU-RES	"CriticalPeak"	6/12/18 4PM	0.75	KWH	Passed Val
UES TOU-RES	"CriticalPeak"	6/12/18 5PM	1.3125	KWH	Passed Val
UES TOU-RES	"CriticalPeak"	6/12/18 6PM	0.2344	KWH	Passed Val
UES TOU-RES	"CriticalPeak"	6/12/18 7PM	0.4844	KWH	Passed Val
UES TOU-RES	"Off-Peak"	6/12/18 8PM	1	KWH	Passed Val
UES TOU-RES	"Off-Peak"	6/12/18 9PM	1.0625	KWH	Passed Val
UES TOU-RES	"Off-Peak"	6/12/18 10PM	1.25	KWH	Passed Val
UES TOU-RES	"Off-Peak"	6/12/18 11PM	0.9063	KWH	Passed Val
UES TOU-RES	"Off-Peak"	6/12/18 12PM	0.8125	KWH	Passed Val
UES TOU-RES	"Off-Peak"	6/12/18 1AM	0.5625	KWH	Passed Val
UES TOU-RES	"Off-Peak"	6/12/18 2AM	0.3906	KWH	Passed Val
UES TOU-RES	"Off-Peak"	6/12/18 3AM	0.5	KWH	Passed Val
UES TOU-RES	"Off-Peak"	6/12/18 4AM	0.375	KWH	Passed Val
UES TOU-RES	"Off-Peak"	6/12/18 5AM	0.6563	KWH	Passed Val
UES TOU-RES	"Off-Peak"	6/12/18 6AM	0.7812	KWH	Passed Val
UES TOU-RES	"Off-Peak"	6/12/18 7AM	1.9375	KWH	Passed Val

OCA Use Case CORE-02: TOU Dataset

[Is this supposed to be "interval data", "billing data", or something else?

{OCA Response: The illustrative dataset of 24 rows shows 24 hourly reads (each row representing a reading) from a smart meter configured to measure data in 1 hour intervals (interval data shown in column D titled "ReadValue"). Regarding billing data, column F titled "Quality" is indicating that each of the 24 ReadValue is "PassedVal". PassedVal is one of nine OpenESPI data attribute that maps to the utilities data source (utility) to MDM EMV status. In a production environment, if SB284 is built, utilities will report Quality for all ReadValues uploaded to SB284. If Quality is "PassedVal then it is billing quality data (according to the utility) and the data could be reused as part of a larger SB284 billing dataset that is conceptually illustrated in Use Case CORE 01 Billing dataset (bates 7) }

Is the list of data fields complete? (It does not appear to include the Customer Information from step 1?)

{OCA Response: Due to the extent of data entities in the data model, and in order to illustrate a specific idea, the illustrative dataset shows only a limited portion of data that would be uploaded in Step 1}

For clarification, what is meant by "Program Name", "TOU Block Name" and "configured endpoint"?]

{OCA Response:

Program: *"Programs, are an important type of energy related data. Programs include any type of business / research / regulatory activity that can be tied directly to a specific meter or premise"* (Reference OCA Use Case 30 NHSaves / SB284 Integration bates 62.

TOU Block Name: is the name of an interval period defined in a (TOU) tariff

Configured endpoint: a physical or virtual part of a physical meter/sensor (Note: this term does not appear in the OCA use case document)}

Section: Estimated Cost

Refer to OCA master use case "SB284 as a Platform"

Section: Estimated benefits

Refer to OCA master use case "SB284 as a Platform"

Section: Required Policy Changes

Refer to OCA master use case "SB284 as a Platform"

Section: Project Risks

Refer to OCA master use case "SB284 as a Platform"

Section: Cybersecurity Issues

Refer to OCA master use case "SB284 as a Platform"

Sections: Assumptions / Preconditions

1. SB284 Platform is designed based on a logical data model
2. SB284 Platform follows a system architecture design approach
3. SB284 Platform implements a service oriented architecture with Application Programming Interface (API)
4. Data Privacy Framework (DPF), and Data Access Framework (DAF) address overarching issues of data privacy and cybersecurity, are established prior and/or in parallel with development of SB284 Platform.
5. Operational Assumption: This use case assumes the following use case steps are also being completed in normal course of SB284 operations:
    a. OCA CORE 01 Billing Dataset: Steps 1 & 2 completed by all electric all gas utilities.

OCA Use Case CORE-03: Demand Study Dataset

Section: Name

OCA Use Case CORE-03: Demand Study Dataset

Section: Author/ last update

Jim Brennan, NH OCA, April 3, 2020

Section: Description

Demand studies and historical load analysis by class, time and location are valuable research tools for stakeholders. For example, the PUC Staff is conducting a demand study and instructs the manager of the SB284 platform to enable the PUC Staff to access data particular to the demand study based on data that is automatically programmed to upload from the utility to the SB284 Platform. The platform then processes the dataset information request and provides it to the third party requesting interface. [Is this aggregated data? If so, at what level is it aggregated?]

{OCA Response: The energy data presented in the illustrative data set (bates 19) is the actual data contained in a test data file provided by Unitil. Note: Data uploaded to SB284 can be (further) aggregated based on use case. The goal and the capability of the data sharing platform to contain the most granular data available at the data source (along w/ associated "Quality" indicator previously discussed)

Related Use Case:

- UC 9 Integration Customer data and System Data: Data uploaded to SB284 during UC 9 Step 2 "Upload Circuit ID data", can be combined with granular customer data in this use case CORE-03 Demand Study, and as a result enable Demand Studies in this use case to be performed on a circuit by circuit basis, at either a premise level (building by building), or an aggregated level (groups of premises). [How is all of this system data related to accessing and sharing data regarding customer energy usage, per the Order of Notice in Docket DE 19-197?]
  - {OCA Response: please refer to OCA response to similar question in OCA's Master Use Case "SB284 Platform" at bates 4}

CORE Use Case Testing Note: Actual test data files, containing granular (anonymized) data extracted from back office data systems (MDM, CIS), were provided by Unitil and used in this use case to develop and manually test data model functionality. This CORE use case was tested and approved (User Acceptance Testing) by DE 16-384 Data Working Group in 2019. The purpose of the use case was to test logical data model functionality to collect, organize and report diverse energy data and unit of measurements (UOM) such as KW, KWH, CCF, PF, V.

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Section: Step-by-Step – what happens

1. A. The PUC Staff is conducting a demand study and instructs the manager of the SB284 platform to enable the PUC Staff to access data particular to the demand study.

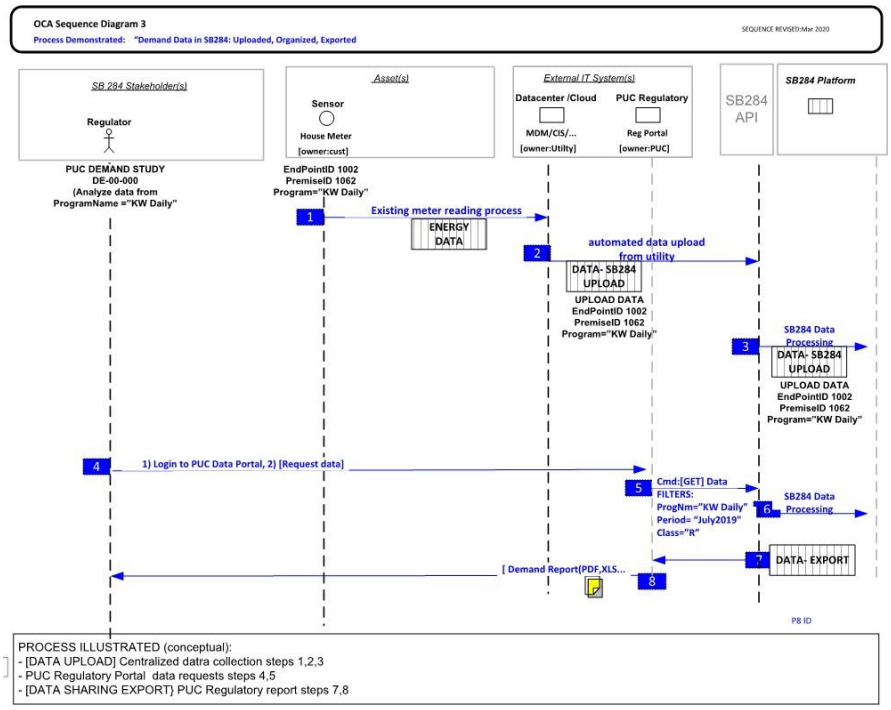
1. B. The existing meter reading process is used to collect daily kW energy demand data from the end point ID and the Premise ID
2. The utility uploads date to SB284.
3. SB284 processes and indexes the data.
4. The PUC Staff logs into the PUC Data Portal that is integrated with SB284 platform. A data request for demand data is made [Is the "PUC Data Portal" an external IT system? Would this be an additional cost? Does this Use Case provide functionality beyond accessing and sharing data regarding customer energy usage, per DE 19-197?] {OCA Response: Yes the portal is an external system - it is external to SB284 API and SB284 Platform. Yes there would be a cost to build the portal. Note the cost to build the portal will be minimized because all CRUD operations (Create Read Update Delete) are 100% handled through the SB284 API and performed inside the SB284 platform. Because CRUD programming is a major part of any application, and because the portal uses SB284 as its data backend, essentially all the costs to develop the portal's CRUD functionality is eliminated. In this case the primary CRUD function is Read (or select & save into a demand report). This is illustrating SB284 as a platform that enables potential development and operation of other applications at lower risk than is SB284 did not exist.
5. The PUC Data Portal sends request to SB284 Platform.
6. The SB294 Data Platform processes the request.
7. The SB284 platform exports the information to the PUC Data Portal.
8. The PUC Data Portal creates a report in the format and to the specifications requested by the PUC Staff.

Sequence Diagram 3

OCA Use Case CORE-03: Demand Study Dataset

How to Read: Sequence diagrams illustrates the order of activity (top to bottom) that occur between 4 categories of actors (across the top). The 4 categories of actors are:

1. Stakeholders (customers, 3rd parties, utilities…),
2. Assets (premises, meters, rooftop PV…) ,
3. External IT Systems (an existing utility CIS, a future CCA Platform…),[Is the "CCA Platform" a separate IT System? Are the costs considered part of the energy data platform, or separate?] {OCA Response: any system outside of SB284 API and SB284 Platform is an external IT system for use cases. As discussed above SB284 APIs can provide CRUD functionality to external systems based on technical discussions with stakeholders. As discussed in OCA Master Use Case Part 2: *The External IT Systems are developed by stakeholders and 3rd parties, however those data requirements will be closely coordinated and communicated with the SB284 project team to ensure SB284 platform supports the business requirements and can generate datasets contain required data. (bates 2*). Note: Detailed discussion and analysis of CCA functionality that could be provided via SB284 is beyond the scope of this document and should be pursued in detail working groups comprised of appropriate stakeholders and technical experts."
4. SB284 API (proposed) and SB 284 platform (proposed).



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OCA Use Case CORE-03: Demand Study Dataset

Section: Data Fields required

The following data is required for the use case and is duplicative of data required for other use cases.

	Element	Description	Platform IndexID	Customer Data	System Data	DER Data	Market Data
A	PremID	Index	X	X			
B	UsagePointID	Index	X	X			
C	MeterID	Index	X	X			
D	Programname	Program Name		X			
E	Class	Customer Class	X	X			
F	TimeStart	ReadID	X				
G	ReadID	Index	X				
H	ReadValue	Value recorded at meter		X			
I	UOM	Unit of Measurement	X				
J	Quality Attribute	Reading quality (9= PASSED VALIDATION)	X	X			

[What are "UsagePointID" and "Programname"?]

{OCA Response:

UsagePointID: a unique index in SB284 identifying where exactly 1 sensor / meter exists.

ProgramName: refer to OCA response to similar question earlier

Illustrative Dataset Generated in Step X of Sequence Diagram:

	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)
	PremID	Usage Point ID	Meter ID	Program name	Class	TimeStart	ReadID	Read Value	UOM	Qlty
1	1602	1002	1222	KW Daily	R	7/17/2018 12:00:00 AM	21032	6.851563	KW	9
2	1602	1002	1222	KW Daily	R	7/18/2018 12:00:00 AM	21233	6.751563	KW	9
3	1602	1002	1222	KW Daily	R	7/19/2018 12:00:00 AM	21334	6.951563	KW	9
4	1602	1002	1222	KW Daily	R	7/20/2018 12:00:00 AM	21435	6.851563	KW	9
5	1602	1002	1222	KW Daily	R	7/21/2018 12:00:00 AM	25036	6.741563	KW	9
6	1602	1002	1222	KW Daily	R	7/22/2018 12:00:00 AM	26037	6.851563	KW	9
7	1602	1002	1222	KW Daily	R	7/23/2018 12:00:00 AM	31038	6.851563	KW	9
8	1602	1002	1222	KW Daily	R	7/24/2018 12:00:00 AM	31439	6.852563	KW	9
...	...	...	...	...	...	...	...	...	...	...
24	1602	1002	1222	KW Daily	R	8/16/2018 12:00:00 AM	51032	6.851511	KW	9

Section: Estimated Cost

Refer to OCA master use case "SB284 as a Platform"

Section: Estimated benefits

Refer to OCA master use case “SB284 as a Platform”

Section: Required Policy Changes

Refer to OCA master use case “SB284 as a Platform”

Section: Project Risks

Refer to OCA master use case “SB284 as a Platform”

Section: Cybersecurity Issues

Refer to OCA master use case "SB284 as a Platform"

Sections: Assumptions / Preconditions

1. SB284 Platform is designed based on a logical data model
2. SB284 Platform follows a system architecture design approach
3. SB284 Platform implements a service oriented architecture with Application Programming Interface (API)
4. Data Privacy Framework (DPF), and Data Access Framework (DAF) address overarching issues of data privacy and cybersecurity, are established prior and/or in parallel with development of SB284 Platform.

Section: Name

OCA Use Case Core-04: Multi-Utility / Multi State dataset

Section: Author/ last update

Jim Brennan, NH OCA April 3, 2020

Section: Description

In this use case the energy data (not shown) for two different customers served by two different electric utilities is physically maintained in the same data model but logically separated at the utility level – in this case UES in NH and Fitchburg in MA. This multi-utility functionality can be referred to as multi- tenant for purposes of this document. As a platform containing both customer data and system data, approved users of SB284 can access energy and energy related data from one or more utilities, located in one or more states, from a single access point (SB284 API). [Why is multi-utility being referred to as multi-tenant? How is multi-state data part of customer energy usage? What approvals would be needed to load and store other state customer usage data with NH energy data? How is "system data" part of "customer energy usage"? What information is envisioned for "system data"?]

{OCA Response Part 1: Primary goals of the SB284 data model and platform are:

1. Generic architecture (able to contain, organize, share energy data for all NH utilities)

2. Centralized architecture (one statewide platform instead of separate systems build by each of the electric and gas utilities)

3. Single access point (all data seeker connect to single API instead of connecting to each of the individual utilities)

For purposes of OCA use cases the terms "multi-utility" "multi-tenant" "multi-state" collectively represent functionality of these 3 design goals listed above.

System and customer data integration are discussed in OCA Use Case 09 bate 39}

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Related Use Cases:

- All OCA Use Cases 1-45: This is a CORE use case that other use cases have a dependency to. It provides foundational functionality that other use cases build upon in phase 1 or in later phases of SB284 data platform maturity. Many OCA use cases in this document can be executed for either a single utility, or multiple utilities, based on the multi-tenant architecture of the data model – demonstrating SB284 as a data platform.

- OCA CORE 6 Platform Index: Data uploaded to SB284 is indexed to allow logical separation of data at the utility level.

CORE Use Case Testing Note: Actual test data files, containing granular (anonymized) data extracted from back office data systems (MDM, CIS) for NH and MA franchises, were provided by Unitil and used in this use case to develop and manually test data model functionality. This CORE use case was tested and approved (User Acceptance Testing) by DE 16-384 Data Working Group in 2019. [Did this CORE Use Case include testing of multi-state functionality or system data? Was it tested for all NH electric and gas utilities?]

{OCA Response: A manual proof of concept test of the data model was performed using test data from Unitil affiliates in NH and MA. Use Case CORE 05 Multi Fuel included UAT for gas utility data }

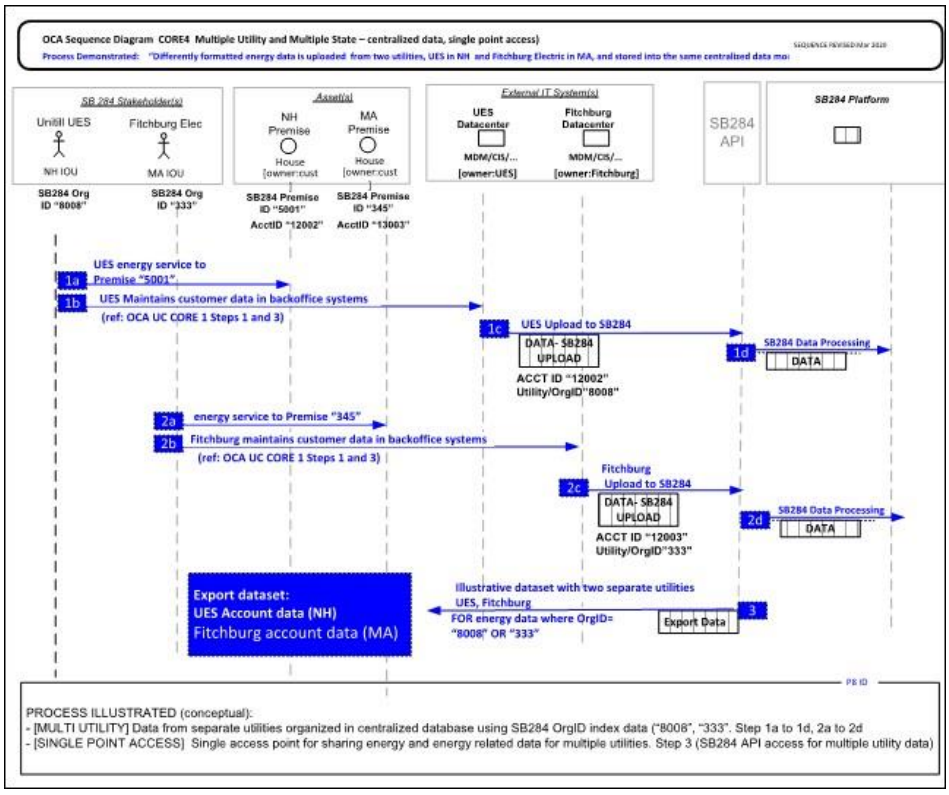
Section: Step-by-Step – what happens

1. Utility A provides energy service to a customer and maintains the static and dynamic data in their backoffice systems. The data is programmed to upload to SB284. SB284 processes the data.
2. Utility B provides energy service to a customer and maintains the static and dynamic data in their backoffice systems. The data is programmed to upload to SB284. SB284 processes the data.
3. A request is put in from an approved third party interface for data that combines information from multiple utilities. SB284 platform creates the data center and exports it to the third party interface.

How to Read: Sequence diagrams illustrates the order of activity (top to bottom) that occur between 4 categories of actors (across the top). The 4 categories of actors are:

1. Stakeholders (customers, 3rd parties, utilities…),
2. Assets (premises, meters, rooftop PV…),

3. External IT Systems (an existing utility CIS, a future CCA Platform…),
4. SB284 API (proposed) and SB 284 platform (proposed).



Section: Data Fields required

Refer to OCA master use case "SB284 as a Platform"

Section: Estimated Cost

Refer to OCA master use case "SB284 as a Platform"

Section: Estimated benefits

Refer to OCA master use case "SB284 as a Platform"

Section: Required Policy Changes

Refer to OCA master use case “SB284 as a Platform”

[Will sharing multi-state customer data require approval from other state regulators? Customer authorization?]

{OCA Response: These questions could be addressed during development of NH DPF and DAF discussed in Master Use Case Section Policy Changes (bates 5)}

Section: Project Risks

Refer to OCA master use case "SB284 as a Platform"

Section: Cybersecurity Issues

A multi-tenant platform model requires appropriate data privacy and data security solutions.

[Will sharing multi-state customer data require customer approval for out-of-state accounts and usage to be included with NH customer energy usage data? Are there any aggregation/anonymization policies that would need to be applied for this data?]

{OCA Response: These questions could be addressed during development of NH DPF and DAF discussed in Master Use Case Section Policy Changes (bates 5)}

Sections: Assumptions / Preconditions

1. SB284 Platform is designed based on a logical data model
2. SB284 Platform follows a system architecture design approach
3. SB284 Platform implements a service oriented architecture with Application Programming Interface (API)
4. Data Privacy Framework (DPF), and Data Access Framework (DAF) address overarching issues of data privacy and cybersecurity, are established prior and/or in parallel with development of SB284 Platform. [Should security guidelines/requirements be established in the early stages? If not, will this result in additional scope, risks and costs? This is included in this use case but applies to all references to the "in parallel" comment,] {OCA Response: Cyber security and privacy are top tier cross cutting issues and risks that must be addressed in platform design, use cases, processes, access rights and a multitude of other issues must be addressed throughout the IT process. The OCA recommends the SB284 project be run and managed as a IT project (Reference OCA 3/11/2020m Scoping Comments page 10) . The OCA recommends cyber security, privacy be addressed formally in a Data Access Framework (DAF) and a Data Privacy Framework (DPF) discussed in Master Use case "Section: Required Policy Changes" at bates 5. **The OCA agrees with the utilities that the issue regarding security guidelines applies to all use cases. This OCA response to security guidelines also applies to all use cases.)}**
5. Operational Assumption: This use case assumes the following use case steps are also being completed in normal course of SB284 operations:
    a. OCA CORE 06 Platform Indexing

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ACCOUNT RELATIONSHIP SUMMARY -UES & FITCHBURG
UAT-4 Multi-tenant

Multi-tenant usage data						
Utility Name	Usage Point (utility ID)	UsagePoint (energy database system ID)	Meter address	State	Account Number (utility)	Account Number (energy database system ID)
Unitil-UES	10[redacted]0	110002	74 N[redacted]G CONCORD NH	NH	[redacted]4000	12002
Unitil-Fitchburg	3000[redacted]	110004	4[redacted] ST FITCHBURG MA	MA	[redacted]3002	12003

Section: Name

OCA Use Case CORE-05: Multi Fuel – Electric usage + Gas usage dataset

Section: Author/ last update Jim

Brennan, NHOCA 4/3/2020

Section: Description

A core requirement in analyzing the data model in DE 16-384 was the ability to process energy data for multiple fuels. The Green Button data model supports gas and electric and was used as a basis for designing this functionality in SB284. Supporting multi fuels data in SB284 enables robust energy efficiency analyst including benchmarking of a buildings overall energy use. [What is meant by "process energy data"? How would a Liberty gas account be linked with a Unitil electric account?]

{OCA Response: "Process energy data" generally means performing CRUD operations (Create Read Update Delete) and other data related request coming from external IT systems via an SB284 API call. Regarding "linked" accounts of different utilities, SB284 architecture is designed around time, location dimensions in order to support complex and holistic data sharing scenarios, and the OpenESP data model. Accounts between Liberty gas and Unitil electric would not be directly linked to each other in Sb284. However they may both be linked to a common location (step 1a and 2a in sequence diagram CORE 05 at bates 25). }

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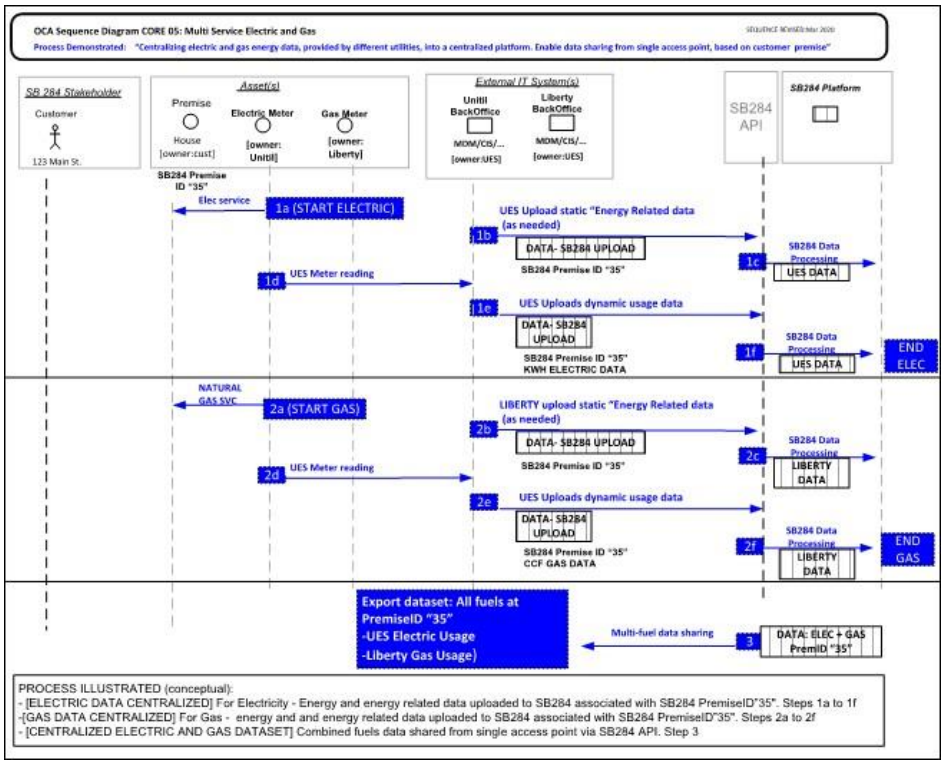
Section: Step-by-Step – what happens

1. Electric utility backsystem is programmed to upload static energy related data and dynamic usage data for a particular premise to the SB284 Platform. The SB284 Platform receives processes and indexes the data from these uploads.
2. Gas utility backsystem is programmed to upload static energy related data and dynamic usage data for a particular premise to the SB284 Platform. The SB284 Platform receives processes and indexes the data from these uploads.
3. An approved and authorized user requests a dataset particular to a premise and time frame for all energy data. The SB284 Platform processes the request and delivers a dataset for the premise that contains both the gas and electric energy data information for the premise.

How to Read: Sequence diagrams illustrates the order of activity (top to bottom) that occur between 4 categories of actors (across the top). The 4 categories of actors are:

1. Stakeholders (customers, 3rd parties, utilities…),
2. Assets (premises, meters, rooftop PV…),
3. External IT Systems (an existing utility CIS, a future CCA Platform…),
4. SB284 API (proposed) and SB 284 platform (proposed).



Section: Data Fields required

Refer to OCA master use case “SB284 as a Platform”

Section: Estimated Cost

Refer to OCA master use case “SB284 as a Platform”

Section: Estimated benefits

Refer to OCA master use case “SB284 as a Platform”

Section: Required Policy Changes

Refer to OCA master use case "SB284 as a Platform"

Section: Project Risks

Refer to OCA master use case "SB284 as a Platform"

Section: Cybersecurity Issues

Refer to OCA master use case "SB284 as a Platform"

Sections: Assumptions / Preconditions

1. SB284 Platform is designed based OCA logical data model
2. SB284 Platform follows a system architecture design approach
3. SB284 Platform implements a service oriented architecture with Application Programming Interface (API)
4. Data Privacy Framework (DPF), and Data Access Framework (DAF) address overarching issues of data privacy and cybersecurity, are established prior and/or in parallel with development of SB284 Platform.

Section: Name

OCA Use Case Core-06: Statewide Index

Section: Author/ last update

Jim Brennan, NH OCA April 3, 2020

Section: Description

The terms "central source of truth", and "the bible" are sometimes used in the technology world to refer to an authoritative source of knowledge or information – which other systems and 3rd parties view as a trusted source of accurate information. SB284 endeavors to be an authoritative list of endpoints, or locations statewide in New Hampshire. The collection and updating of information can be an expensive and time consuming task. Rather than have that task be replicated (differently) by a myriad of program applications across the state, utilities, program administrators, vendors etc. can use the SB284 platform as the authoritative source. [What is meant by "endpoints"? Are endpoints necessary for sharing energy usage data?]

{OCA Response: an endpoint is a unique physical point on the grid connected to a unique sensor/meter}

Indexed NH endpoints, tied to its location are, a key service of a statewide data platform. The use of indexes enables each endpoint/location to be associated with information from different data sources. The location index then allows granular centralized organizing of all energy and energy related data in the platform down to a granular endpoint. For example, there are many types of efficiency and distributed energy resources that a customer may install in their home. They may do weatherization and insulation, install a heat pump, EV charger, solar system, and a battery storage. Each of these could be done at different times by different vendors. Some of that work will have their own submeters or controls that can report information to the database. Contractors can be required to submit data to the database in exchange for the rebate incentives. All of this information may be done by different parties. But if the customer hired a consultant to optimize their energy systems – a database that indexes all the information could provide a dataset indexed to that location. [Would proving this data be voluntary? If not, what would compel third parties to load data into this energy data platform? Can third parties forgo a rebate incentive and not provide this data? How often would third parties upload data? Are third party and customer authorizations required? What types of data would be uploaded (e.g. Make, Model, Size, Usage data)? Are there standard data formats for this type of information? Do all of these examples have rebates/incentives? Would these incentives be contingent upon them entering this information? What would be the impact if they did not enter them? How would this information be verified?]

{OCA Response: These questions are very diverse, not directly related this indexing use case, but are worthy of discussions. It will be more effective to answer these questions when reviewing some of the OCA's other 15 discrete use cases circulated to stakeholders. The OCA is willing to work with the utilities to map these questions to specific OCA Use Cases listed in Table 1 "Use Cases" at bates 3 (plus two additional EE/NH Saves use cases), and respond in that context.}

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Use Case Core 6: Statewide Indexing

Platform indexes are created by the platform, not the utility or non-utility data source. Platform indexing allows data to be sorted, filtered, aggregated and used in granular ways useful to advanced software applications that use SB284. SB284 data sharing is based on time and location dimensions which is powerful, promotes future proofing, and increases data accuracy for the types of complex data request use cases expected from 3rd parties. This will be especially important as data in the platform grows. [How would "platform indexing" be used in this case? Is "platform indexing" available off the shelf or would it require custom development? Where and how has this been used? How would "platform indexing" work to link vendor data and their disparate systems to utility customer data?]

{OCA Response: The SB284 platform will include database(s) designed according to a logical data model containing unique index fields such as those listed in the table on bates 29. An index is a standard customizable function/capability/object in a data management systems, relational database management systems (RDMS), and advanced data architectures. Indexes are widely used in data intensive applications, business applications, platforms, websites, search engines, to optimize performance and accuracy during CRUD (Create Read Update Delete) data operations. SB284 indexes are separate from the indexes that may exists in a vendor (or utility) "disparate systems" located in the left box (3B) DATA SOURCES at bates 2.

Related Use Cases:

1. All OCA Use Cases rely on indexing. Indexing is a core architectural functionality of SB284 that allowing it to organize data and generate datasets illustrated in the 13 use cases discussed in this document.

CORE Use Case Testing Note: Actual test data files, containing granular (anonymized) data extracted from back office data systems (MDM, CIS), were provided by Unitil. The data from Unitil was indexed as part of the data loading (manual). The combination of Unitil test data and SB284 indexes, once imported into SB284 data model was manually tested in each of the 5 other CORE use cases (Billing dataset, TOU dataset, Demand dataset, multi utility dataset and multi service dataset. The CORE 6 Use Case (Indexing) was tested and approved (User Acceptance Testing) by DE 16-384 Data Working Group in 2019.

[Was testing of "external endpoint" data done? What was the result of that testing?]

{OCA Response: The term "external endpoint " is not included in this OCA Use Case document. Regarding the term "endpoint", yes testing was performed on endpoint in each of the CORE use cases 01 to 06, and approved by the DE 16-384 data working group. Test data contained in test data files provided by Unitil was mapped to a SB284 data model (manually) which included SB284 endpoint. In all CORE Use Cases 01-06 user acceptance testing the endpoint, provided by Unitil, was indexed in SB284, and related (linked) to a unique (indexed) physical location also contained in SB284 model (from Until test data).}

Section: Step-by-Step – what happens

The sequence diagram's final step (B2) illustrates energy and energy related data being organized and shared based on a specific PremiseID index. This scenario could illustrate a benchmarking analysis of a given house, building or group of buildings in an energy efficiency use case.

Use Case Core 6: Statewide Indexing

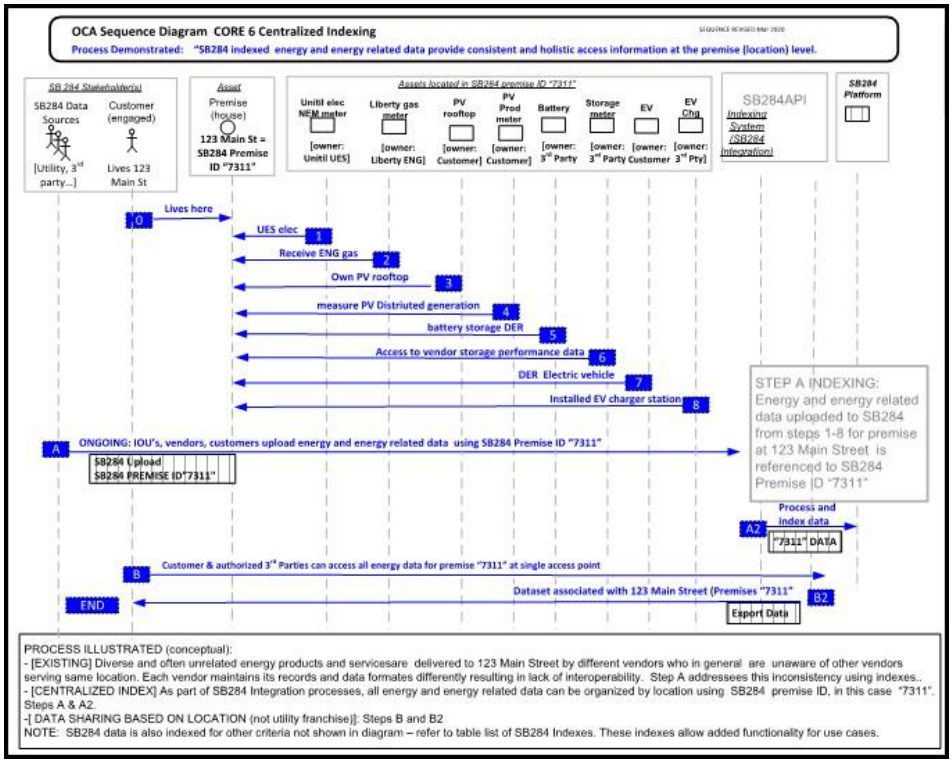
Step	
0	Illustrates all grid assets can indexed with location– see "steps" 1-8 providing information to the database from a variety of different owner/entities regarding that specific PremiseID.
A	[same step as OCA CORE 01 Billing Steps 1 and 3] Energy and energy related data (such as shown in OCA CORE 1 Steps 1 and 3, and in Use Case 09 System Data) is uploaded to SB284 and automatically associated with the premise location of where that asset exists. Step A2 performs the indexing.
B	Data can be requested and filtered based on a specific location (123 Main St.) using PremiseID "7311". This assumes a use cases where location is a required metadata element in the dataset. For example a customer may be looking to invest in energy efficiency and or distributed energy resources. An authorized third party application could request the data specific to the premise in order to facilitate a home energy audit and analysis requested by that customer.
B2	SB284 generates a dataset of all energy and energy related data for the customer using the SB284 PremiseID index of "7311". The data set could be used by a vendor application performing an energy analysis of the home or by an EE EMV contractor analyzing effectiveness of an EERS program.

Sequence Diagram CORE 06

How to Read: Sequence diagrams illustrates the order of activity (top to bottom) that occur between 4 categories of actors (across the top). The 4 categories of actors are:

1. Stakeholders (customers, 3rd parties, utilities…),
2. Assets (premises, meters, rooftop PV…) ,
3. External IT Systems (an existing utility CIS, a future CCA Platform…),
4. SB284 API (proposed) and SB 284 platform (proposed).

UseCaseCore6:StatewideIndexing



Section: Data Fields required

SB284 indexes

			Type of Data				
Column	SB284 Index	Description	Platform IndexID	Customer Data	System Data	DER Data	Market Data
1	UsagePointID	Unique SB284 Index for a NH Grid endpoint	X				
2	PremiseID	Unique SB284 Index for a NH premise	X				
3	AddressID	Unique SB284 Index for a NH Address	X				
4	PersonID	Unique SB284 Index of a person	X				
5	OrgID	Unique SB284 Index of a non-person	X				
6	SensorID	Unique SB284 Index of a sensor (incl meter)	X				
7	AccountID	Unique SB284 Index for all NH Utility Accounts	X				
8	AssetID	Unique SB284 Index of an asset	X				
9	InstanceID	Unique SB284 Index of a reading	X				
10	TimePeriodID	Unique SB284 Index of a timeperiod	X				
11	ProgramID	Unique SB284 Index all NH programs	X				
12	BlockDefinitionID	Unique SB284 Index of a block	X				
13	RateClassID	Unique SB284 Index for a NH rate class	X				
...	...	...	X				
Index data may or may not be included in export dataset illustrated in sequence diagrams							

UseCaseCore6:StatewideIndexing

[What customer and/or usage data would be required for this use case? What are all of these IDs and how do they get created and populated?

{OCA Response: A utility's individual legacy CIS systems currently manages customers to allow unique identification, such as a Location ID. The data provided from Unitil came from their existing systems without alteration. Analysis and understanding of certain aspects of each utility's back office data model is essential in designing how the utility's energy and energy related data gets mapped to the (generic) logical data model. However, by design, there is no requirement for the utility to change its internal data architecture in order to provide test (or production) data for upload to SB284. As stated in previous answer, test data received from Unitil's systems was successfully processed and indexed (manually) into SB284's 6 CORE use cases. (See prior answer). Indexes are created and managed by the SB284 platform, not the utility}

Would Utility Customer systems need to be enhances to includes all of these new indexes in order to link customer data to them?]

{OCA Response: No. The SB284 indexes shown in the table at bates 29, are created in the SB284 platform, not by the utility. In general, SB284 does not change data as it exists inside a utility's existing systems (CIS, MDM, GIS..). Instead, the data platform receives copies of selected data elements already existing inside the various utility back office systems. As the copied data is received it is processed (CRUD) into SB284 platform, generating SB284 indexes if the data is new (new meter, new reading, new customer, new program…). The SB284 data model contains data that already largely exists within utility back office systems, but is not easily shared. However, the data platform relates this data differently based on a different logical data model. The model then provides robust data analysis and data sharing that is not possible (without costly customization) using a utility's existing systems which were designed and are being used for traditional utility operational purposes.

Section: Estimated Cost

Refer to OCA master use case "SB284 as a Platform"

Section: Estimated benefits

Refer to OCA master use case "SB284 as a Platform"

Section: Required Policy Changes

Refer to OCA master use case "SB284 as a Platform"

Section: Project Risks

Refer to OCA master use case "SB284 as a Platform"

Section: Cybersecurity Issues

The index architecture is not exposed to the public, who only have access to the published SB284 API. Granular documentation of aspects of data model indexing architecture that SB284 platform is built upon should be limited to platform owner.

[Does this "PremiseID" index data enable access to other data? How will access to this index impact customer and/or third party vendor privacy?]

{OCA Response: Data access and data sharing should be governed by Data Access Framework and Data Privacy Framework (referenced Master Use Case Policy at bates 5, Cybersecurity issues at bates 7). The underlying architecture and data, including indexes, are not visible to public. All data shared by SB284 is protected and governed by DAF, DPF. Data access is strictly limited to data exposed through the secure SB284 API. Other than administrators of the system, no one has direct access to the platform data itself.}

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Sections: Assumptions / Preconditions

1. SB284 Platform is designed based on a logical data model
2. SB284 Platform follows a system architecture design approach
3. SB284 Platform implements a service oriented architecture with Application Programming Interface (API)
4. Data Privacy Framework (DPF), and Data Access Framework (DAF) address overarching issues of data privacy and cybersecurity, are established prior and/or in parallel with development of SB284 Platform.

Section: Name

OCA Use Case T-03: Green Button Dataset

Section: Author/ last update

Jim Brennan, NH OCA April 3, 2020

Section: Description

A primary Phase 1 function of SB284 is to support a Certified Green Button Connect My Data application platform. The primary role of SB284 in this use case, as Illustrated in sequence diagram 3 step 3E below, will be to provide the primary energy data and energy related data, of requested granularity, to a 3rd party Green Button Platform. The SB284 dataset shared with the Green Button platform will contain required electric data and gas data, for all NH customers regardless of which electric and gas utility serves that customer. The dataset illustrated in Step 3E is based on an underlying data model that can support the data requirements of a certified API based Green Button Connect My Data platform. OCA's data model was informed by its analysis of the OpenESPI standard (Green Button standard) as well as outreach and technical discussions with utilities who have implemented Green Button platforms in California (PGE) and NY (ConEd), and technical discussions with the Green Button Alliance.

The purpose of this use case is to illustrate some of the high level conceptual data flows and technical interactions that may occur between different (often unrelated) stakeholders and systems involved in this data sharing use case. The diagram, and this use case in general, does not illustrate a number of complex business and technical data sharing aspects that need to be addressed. These aspects include, but are not limited to, business model, governance, registration by 3rd parties, customer consent, secure authentication process model and other items that will need to support SB284's envisioned statewide centralized approach to Green Button data sharing.

{OCA DATA REQUEST TO IOUs: Please comment on this description of a Green Button implementation.

Related Use Case:

- OCA CORE 01 Billing Dataset Steps 1 and 3 – all utilities are uploading energy and energy related data to SB284 daily or as scheduled. Data collected in CORE 01 Steps 1 and 3 are a primary source of data contained in the dataset shown in Step 3E of this Green Button use case.
- OCA 23 DER Deployment Tracking. All DERs installed in NH should be tracked in SB284 by premise and by DER type. Reference Sequence Diagram 03 Step 5 below. [Is "DER Deployment Tracking" intended to be part of the DE 19-197 effort, or separate efforts/system?"]
  - {OCA Response: DER Deployment Tracking is one of 30+ use cases identified by OCA. DER Tracking Data type is recommended part of SB284 day one data model capability (ref

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OCA Master Use Case Table 2 Types of Data in SB284 at bates 4). However, as also stated, the actual prioritization and integration of use cases, such as Use Case 23 DER Deployment tracking dataset (bates 46) is dependent on stakeholder agreement on use case priorities "Prioritize and project manage the phased integration…" (bates 2).

Section: Step-by-Step – what happens

1. As a result of a sales call from a DER vendor, a customer agrees to share their utility energy data, for a specific meter(s), for a specific length of time, with a third party through the Green Button platform. [Is the Green Button "Platform" envisioned to be part of the DE 19-197 effort, or a separate effort/system?]

   ~~1.~~ {OCA Response: The OCA considers a certified Green Button Connect My Data Platform, shown inside Box 3C APPLICATIONS, to be a phase 1 use case supported by the SB284 Platform, shown as Box 3A DATA PLATFORM (bates 2). Certified Green Button CMD sharing is a requirement of SB284 legislation. Green Button CMD and was included, for illustrative purposes, as one of three phase 1 priorities in OCA scoping comments: *"Phase 1: Green Button Connect My Data, Community Choice Aggregation shared services, regulatory datasets"* (OCA Scoping Comments Section VII Phases/Deferral page 13 }
2. The customer consents to share the data, including personally identifiable information (PII) and successfully completes the secure authentication and consent process that is represented by box 2b. The DER Vendor also completes a security and agreement process – not shown.
3. Data Processing
   a. Green Button Platform, once authenticated, requests data from SB284 API.
   b. SB284 Platform receives and processes the request.

c. SB284 Platform creates a dataset based on the valid request and parameters provided by the Green Button Platform in step 3a.
d. (empty) [Was this overlooked? What is this intended to be?]{OCA Response: typo}
e. The SB284 dataset is securely delivered to the Green Button Platform.
f. Green Button Platform, now enabled with required accurate data from SB284, processes the data, creates formatted xml files conforming to the OpenESPI Green Button standard (certified) and securely delivers the files containing the customer's data to the authorized DER vendor.

4. The DER vendor and the customer use the data provided to engage in a business transaction to install PV rooftop at this location.
   a. Contract signed
5. The DER Vendor installs a DER.
6. The DER Vendor executes a version of OCA Use Case 23 "DER Deployment Tracking"
   a. Log into the SB284 DER Tracking Portal and entering a new DER at SB284 Premise ID "7311" (123 Main Street) including DER type and location. [Will DER Vendors be "required" to enter a new DER into this system (rather than using their own internal customer relationship management system)?]{OCA Response: This question warrants broader strategic discussions outside of an in-line written response. Technical working group discussions with appropriate subject matter experts is a possible alternative. To facilitate a working group discussion, please also refer to OCA's footnote 5 on bates 58 which has been repeated below w/ slight modification to address this question's context. Footnote 5: *"Injection of a major new technology, such as a data platform, usually is accompanied by significant process reengineering in order to be fully effective. Due to the fact that ~~HEA~~ DER Tracking steps already exist while the SB284 platform is in analysis proposal phase, the steps outlined and illustrated in sequence diagram 01a are conceptual and for discussion purposes only. The OCA envisions technical working groups will be established to analyze and agree on exactly how SB284 data integrates to the existing ~~HEA~~ DER Tracking process (and other legacy processes). The working groups would analyze how the multitude of stakeholders, processes, and associated stakeholder external systems (customers, utilities, agencies, CCA, 3rd Party platforms etc.), will interact with the SB284 as the platform evolves in phases (and prioritized use cases) over time"*. Reference OCA Use Case 01a Energy Efficiency Dataset, bates 58.
   b. Green Button uploads the data to the SB284 Platform, indexing this promise as a DER host. [Would this be a Green Button Connect certified transaction or some other format?]

   ~~b.~~ {OCA Response: The OCA apologizes, the words "Green Button" are a typo. The text should read "DER Vendor uploads data to the SB284 Platform" (step not fully shown in sequence diagram.)}

How to Read: Sequence diagrams illustrates the order of activity (top to bottom) that occur between 4 categories of actors (across the top). The 4 categories of actors are:

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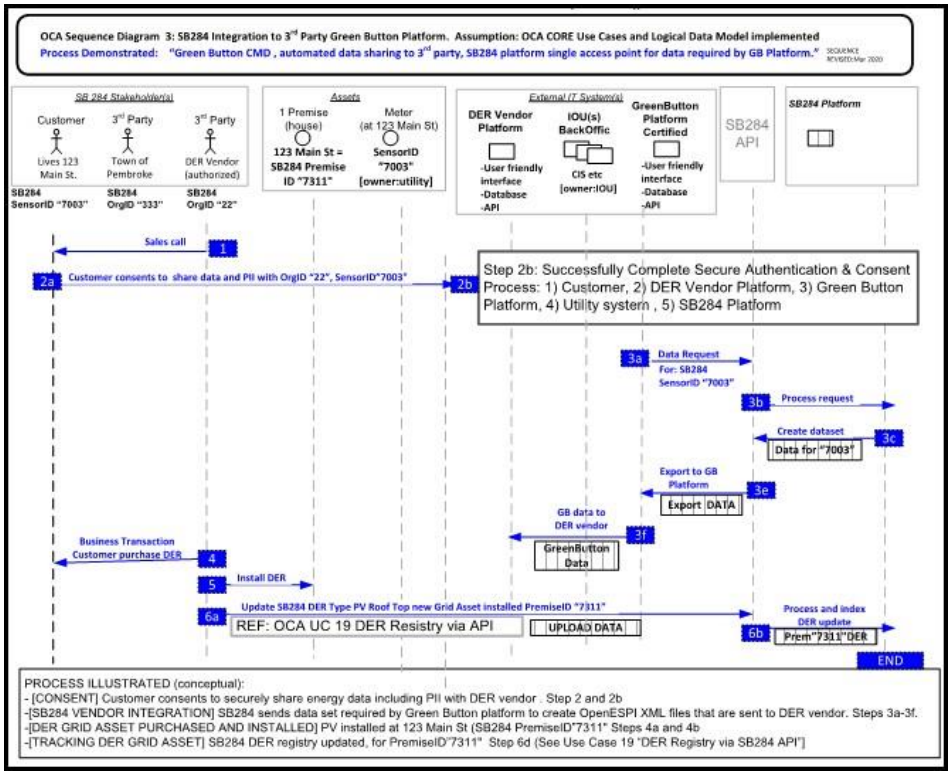
OCA Use Case T-03: Green Button Dataset

1. Stakeholders (customers, 3rd parties, utilities…),
2. Assets (premises, meters, rooftop PV…),
3. External IT Systems (an existing utility CIS, a future CCA Platform…),
4. SB284 API (proposed) and SB 284 platform (proposed).

OCA Use Case T-03: Green Button Dataset



Section: Data Fields required

Please refer to Green Button OpenESPI data model

Please refer to OCA's logical data model

Section: Estimated Cost

Refer to OCA master use case "SB284 as a Platform"

Section: Estimated benefits

Refer to OCA master use case "SB284 as a Platform"

[When and how will "a number of complex business and technical data sharing aspects that need to be addressed" actually be addressed? When and how will costs be estimated for this?}

{OCA Response: The OCA appreciates and acknowledges the complexity of discussing and planning a use case such as this. As stated in OCA Scoping Comments, and in this document, SB284 needs to be managed as a traditional IT software/systems project. A project team, operating under a proper governance model, is required to execute a project plan successfully completing, amongst other tasks, "when and how" complex issues are addresses.

> *"Regardless of what legal form the governance of the platform takes, adoption of the right governance concepts and principles will be critical to the project's success. The platform should be governed and managed like a traditional IT project including project planning, project management, and oversight of a documented System Development Life Cycle (SDLC), an approach that has enjoyed widespread acceptance in systems engineering since the 1960s. In general, there are six stages to the SDLC; four of the five terms listed in the Staff's question (development, implementation, change management, and versioning, all quoted directly from RSA 378:51, II(a)) map directly to the six stages:*
> - *Requirement analysis,*
> - *Design,*
> - *Development and testing,*
> - *Implementation (includes change management and versioning),*
> - *Documentation, and*
> - *Evaluation*
>
> *In our view, the sooner the SDLC process can begin – informed in significant part by the work already undertaken among the OCA, Staff, and Unitil in the wake of DE 16-384 – the better."* (Reference OCA Scoping Comments, IV Database Structure and Management, page 10)

Section: Required Policy Changes

Sequence diagram 3 step 5, require all new DER installations to be tracked in SB284 based on extension of OCA Use Case 23 DER Deployment Tracking.

Section: Project Risks

Refer to OCA master use case "SB284 as a Platform"

Section: Cybersecurity Issues

Data Privacy Framework (DPF), and Data Access Framework (DAF) address overarching issues of data privacy and cyber security, are established prior and/or in parallel with development of SB284 Platform

Sections: Assumptions / Preconditions

1. SB284 Platform is designed based on a logical data model
2. SB284 Platform follows a system architecture design approach
3. SB284 Platform implements a service oriented architecture with Application Programming Interface (API)
4. Data Privacy Framework (DPF), and Data Access Framework (DAF) address overarching issues of data privacy and cyber security, are established prior and/or in parallel with development of SB284 Platform. [Should security guidelines/requirements be established in the early stages? If not, will this result in additional costs?]

   ~~4.~~ {OCA Response: Yes – please refer to OCA response on prior utility comment on cyber security appearing in CORE 04 Multi Utility use case at bates 23}
5. Operational Assumption: This use case assumes SB284 platform is regularly updated with energy and energy related data of the electric and gas utilities. Therefore the following partial list of use case steps are assumed to be completed in normal course of SB284 operations:
   a. OCA CORE 01 Billing Dataset: Steps 1 & 3 completed by all electric all gas utilities.
   b. OCA CORE 04 Multi-Utility
   c. OCA CORE 05 Multi service electric and gas uploads
   d. OCA CORE 06 Platform Indexing

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Section: Name

OCA Use Case T-04: Community Dashboard Integration Dataset

Section: Author/ last update

Jim Brennan, NH OCA April 3, 2020

Section: Description

Community Energy Dashboards are excellent ways for citizens to learn from and be influenced by their neighbors. Understanding what is going on in your neighborhood can influence a customer's comfort level with technology and give them local resources to reach out to for sharing experiences and information. The dashboards are only as relevant as they are up to date. The information that is collected by the SB284 platform for other purposes can be used to update the dashboard and keep it relevant. [Would this replace the existing systems or processes that utilities currently have in place?]

{OCA Response: This question is vague, does not list "existing systems and processes" the utility is referring to. The OCA believes discussions of current processes and systems are an important step in creating greater levels of benefits and higher value of a statewide data sharing platform. Such strategic analysis can be performed in a separate technical working group with appropriate subject matter experts. Please refer to OCA footnoted discussion on "process reengineering" included in OCA response to comments in Use Case 03 Green Button at bates 32.

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Community Energy Dashboard experience similar to that in Vermont: 1) open pc/mobile browser; 2) click dashboard URL; 3) land on a home page with data and maps based on the user's community providing robust community data access [Would a "Community Energy Dashboard" be part of DE 19-197 or a separate system?]

{OCA Response: Community Energy Dashboard Integration with SB284 is one of 30+ use cases identified by OCA. Systems data and DER Tracking Data are both Data type recommended to be part of SB284 day one data model capability (ref OCA Master Use Case Table 2 Types of Data in SB284 at bates 4). However, as also stated, the actual prioritization and integration of use cases, such as Dashboard, is dependent on stakeholder agreement on use case priorities "Prioritize and project manage the phased integration…" bates 2,

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Section: Step-by-Step – what happens

1. A required set of data SB284 data (data that is already maintained in SB284) is negotiated for daily data sharing with the dashboard platform (for example data from Use Case CORE 01, and Use Case 09 System Data). Database tables being updated cold include: DER assets (type, community location, etc.);

aggregated usage data (organized by class, community etc). An SB284 automated overnight data process is designed to automatically send updated data to the Community Energy Dashboard Platform. Permissions, authentication processes, desired file formats are agreed to and tested. The overnight process runs nightly generating data for the dashboard. [What is meant by "database tables being updated ~~cold~~ could"?{OCA: this is a typo corrected} How would customers and DER providers be encouraged to update DER info in this Community Energy Data Platform?

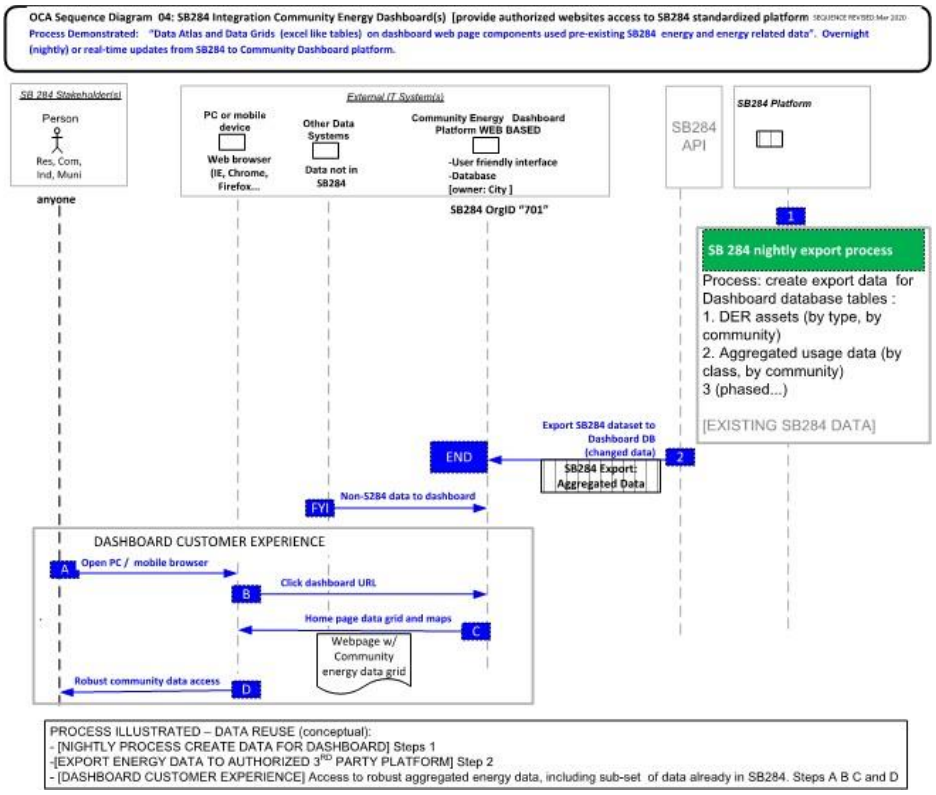
{OCA Response: Customers and DER providers would not need to enter data into Community dashboard when that data is provided by SB284 platform via dataset in step 2 (non-quantifiable benefit of SB284). Note that this use case assumes DER data and System data are being uploaded to SB274 (Use Case 23 bates 46, and Use Case 9 at bates 39). Data sent to Dashboard is a reuse of data already managed in SB284. The Dashboard application would potentially operate with lower costs if it uses SB284 as a data source }
Would every customer be required to register a DER at their home or business, or would this be voluntary? Would customers be required to waive their privacy rights when entering this data? Or when assigning or enabling third party access to their data?]

~~1.~~ {OCA Response: This question should be addressed in Use Case 23 DER Tracking Data stakeholder working group. Privacy should be addressed in a NH Data Privacy Framework (reference Master Use Case Section "Required Policy Changes" bates 5 }

2. SB284 provides updated data dashboard platform.

How to Read: Sequence diagrams illustrates the order of activity (top to bottom) that occur between 4 categories of actors (across the top). The 4 categories of actors are:

1. Stakeholders (customers, 3rd parties, utilities…),
2. Assets (premises, meters, rooftop PV…),
3. External IT Systems (an existing utility CIS, a future CCA Platform…),
4. SB284 API (proposed) and SB 284 platform (proposed).



Demonstration: Here is a brief manual demonstration of the above sequence diagram using the Brighter Vermont Community Energy Dashboard shown below. The annotated webpage shown below has 2 callouts citing two OCA use cases that capable of providing data needed for this webpage. The two OCA use cases (which discussed elsewhere in this document) are:

1. OCA Use Case #23 "DER Deployment Tracking Data" (annotated in Dashboard web page below)
2. OCA Use CORE 06 "Statewide Index" (annotated in Dashboard web page below)

Demonstrating this webpage in Sequence Diagram 04 above, the data contained in Step 2 export dataset would provide the underlying data used by the dashboard platform to render the webpage in Step C "Homepage data grid and maps" (located inside the Dashboard Customer Experience box above).

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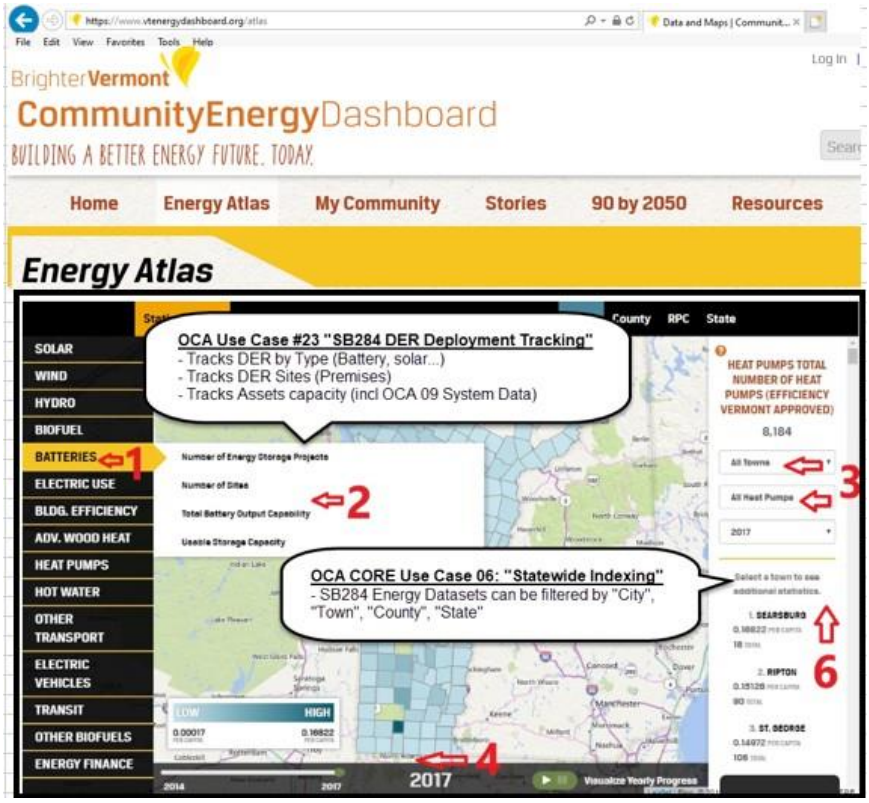

Section: Data Fields required

Refer to OCA master use case “SB284 as a Platform”

Section: Estimated Cost

Refer to OCA master use case “SB284 as a Platform”

Section: Estimated benefits

Refer to OCA master use case “SB284 as a Platform”

Section: Required Policy Changes

Refer to OCA master use case “SB284 as a Platform”

Section: Project Risks

Refer to OCA master use case "SB284 as a Platform"

OCA recommends addressing these risks as part of the process to create a stakeholder driven Data Privacy Framework (DPF), and a Data Access Framework (DAF) address overarching issues of data privacy and cyber security [Should security guidelines/requirements be established in the early stages? If not, will this result in additional costs?]

{OCA Response: Yes – please refer to OCA response on prior utility comment on cyber security appearing in CORE 04 Multi Utility use case at bates 23}

Sections: Assumptions / Preconditions

1. SB284 Platform is designed based OCA logical data model
2. SB284 Platform follows a system architecture design approach
3. SB284 Platform implements a service oriented architecture with Application Programming Interface (API)
4. Data Privacy Framework (DPF), and Data Access Framework (DAF) address overarching issues of data privacy and cyber security, are established prior and/or in parallel with development of SB284 Platform.
5. Operational Assumption: This use case assumes the following use case steps are also being completed in normal course of SB284 operations:
    a. OCA CORE 01 Billing Dataset: Steps 1 & 2 completed by all electric all gas utilities.
    b. OCA Use Case 09 Integration of Customer data and System Data.

Section: Name

Use Case 09 – System Data and Customer Data Integration dataset

Section: Author/ last update

Jim Brennan, NH OCA, April 3, 2020

Section: Description

The integration of customer and basic system data can increase transparency and facilitate analysis by the PUC Staff in LCIRP dockets and grid modernization analysis to name just a few. The OCA feels the data platform will need to integrate system data in order to remain relevant as NH's grid modernizes. This use case includes a very basic set of system data in order to give visibility and context to customer data, like the premise and meter as shown below. This use case has associated system level data including Node ID, the Section ID, and the Circuit ID where residential assets are located. Based on granularity of data provided, datasets can be filtered, sorted and aggregated in various ways to associate customer data at specific locations to the distribution and transmission grid. [What type of analysis is the NHPUC planning to do?

{OCA Response: It is the opinion of the OCA that NHPUC Staff, and its contracted experts, performs some level of analysis on utility distribution systems and these experts base their analysis in part on system data. NHPUC analysis spans numerous key dockets and ongoing proceedings concerning grid modernization (IR 15-296), net metering (DE 16-576), and the energy efficiency resource standard (DE 15-136 and DE 17-136), electric vehicle (EV) rate design (IR 20-004) and the work the Commission has recently begun to implement Community Power (i.e., opt-out community choice aggregation) as contemplated by SB 286 from the 2019 legislative session. With better data access (standardized, secure, integrated) envisioned in SB284, it possible and highly likely that further and more robust analysis will occur at NHPUC. Such analysis becomes increasingly important once distribution utilities embark on multi-million dollar grid mod investments over the next 5- 7 years. It would be risky and imprudent to embark on major grid investments but not put into place the technical ability to collect and analyze system data that the new grid mod investments will provide.

What is "basic system data"? What is NodeID and SectionID? At what level is data reporting being discussed for IRP?]

{OCA Response: levels of system data the utilities have ad are willing to share are being discussed in this proceeding (use cases from all stakeholders) and in the Grid Mod docket (including Grid Mod technical sessions held second half 2019 specifically discussing base line systems data utilities will include in their plans). The terms NodeID and Section ID are place holders in the data model where grid assets are located and where readings are generated. The OCA believes the SB284 data model must have the day one capability to handle increasing levels of system data (Reference OCA Master Use Case Section "Data Fields Required" bates 3-4)}

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Use Case 09 System Data and Customer Data Integration

The use case below illustrates one example of what we mean by system data being part of the Data Platform model in Phase 1.

Section: Step-by-Step – what happens

1. Many utilities currently track an increasing portion of grid assets, including asset type, rating, and locations, into a Geographic Information System GIS. This operational process is represented Sequence Diagram 09 box labeled "Existing Process – utilities track grid assets in GIS database". Data points "a", "b", "c", "d", "e" represent grid assets Meter/Sensors, Transformers, Devises, Sub-Stations, and DER. [Is this data being treated as confidential data in the IRP process?]
   {OCA Response: Confidentiality should be addressed as part of the Data Access Framework (Reference OCA Master Use Case Section "Required Policy Changes" bates 5}
2. The categories are intended to be flexible and allow increased levels of system data to be shared over time based on future priorities. Meters can include residential meters on phase 1, and more strategic sensors in phase 2 or 3. Likewise, with the other categories represented. The strategy is a phased approach.
3. During DE 19-197 technical session utilities have expressed willingness to share basic static system data such as circuits, transformers, and meters. Associated data elements would then include type, location, and nameplate rating. Agreed Phase 1 system data elements would be included in the dataset represented in this step and uploaded from each of the utilities back office system to the SB284 data platform. [There are some restrictions on some transmission assets where disclosure of it not allowed. More analysis is needed here to verify this. Is this data being treated as confidential data in the IRP process?]
   ~~2.~~ {OCA Response: The OCA agrees collaborative analysis is needed}
4. Step 3 SB284 processes and indexes data discussed in OCA Use Case CORE 06. This results in system data being integrated with other platform data. For example house meters are associated with feeder circuit. DER deployments (Use Case 23 DER Deployment Tracking) are associate with a circuit. This processing allows SB284 to develop datasets that add more context to data, and provide a helpful view into the connectivity of a variety of utility owned assets in

the distribution system that can be further sorted, for example, by specific locations or geographic areas, nodes, or circuits, etc.

5. The energy and load data associated with the grid assets discussed in steps 1 and 2 above (meter, transformer etc.) is currently being recorded as part of normal utility operations. Some of this load data can be shared in Phase 1, which occurs in step 5. [FYI. Will it matter that energy and load data is only tracked and available for relatively few distribution transformers?]

~~4.~~ {OCA Response: From an SB284 IT technical level, the OCA's position is that the SB284 data model shod be capable of handling robust levels of system data even of those levels of system data are not available until future phases of grid modernization are realized in NH. *"In contrast to the data model's robust Phase 1 design, the depth and granularity of actual data loading into the model will be in phases. The granularity and quantity of data elements and data fields actually populated in SB284 Phase 1 use cases are indicated in Table 2 as low, medium high (+low ++medium +++high)"* Reference OCA Master Use Case Section "Data Fields Required" bates 4.

~~5.~~6. Negotiated portions of that energy and load data associated with the asset are uploaded to SB284. Again, as in Step 2, the amount of energy and power measurements included in Step 5 can start at basic level; and increase over time, in a phased approach.

~~6.~~7. SB284 Platform processes and indexes (use case CORE06) the data received from the data source. SB284 can process that data to combine customer and system data for different types of analysis by third party applications. Indexing as descried in step 3 above occurs on all energy and power data loaded t SB284. As described in step 3, indexing allowed for better visibility into NH's increasingly modernized and distributed distribution grid. Applications, some discussed in DE 15-296 Grid Modernization docket, can be developed when energy data and grid assets are integrated. For example circuits could get color coded by capacity; customer information could get aggregated at circuit levels (which is more useful to the grid than simple geographical aggregation).

~~7.~~8. Restricted Access: SB284 dataset of integrated customer and system data.

Related Use Cases:

- UC 23 DER Deployment Tracking (Tracking non-utility DER deployments by circuit ID)
- UC 24 Integration utility and not utility data (step 5a analyze aggregated real time data at circuit level

Sequence Diagram 09:

How to Read: Sequence diagrams illustrates the order of activity (top to bottom) that occur between 4 categories of actors (across the top). The 4 categories of actors are:

1. Stakeholders (customers, 3rd parties, utilities…),
2. Assets (premises, meters, rooftop PV…) ,
3. External IT Systems (an existing utility CIS, a future CCA Platform…),
4. SB284 API (proposed) and SB 284 platform (proposed).

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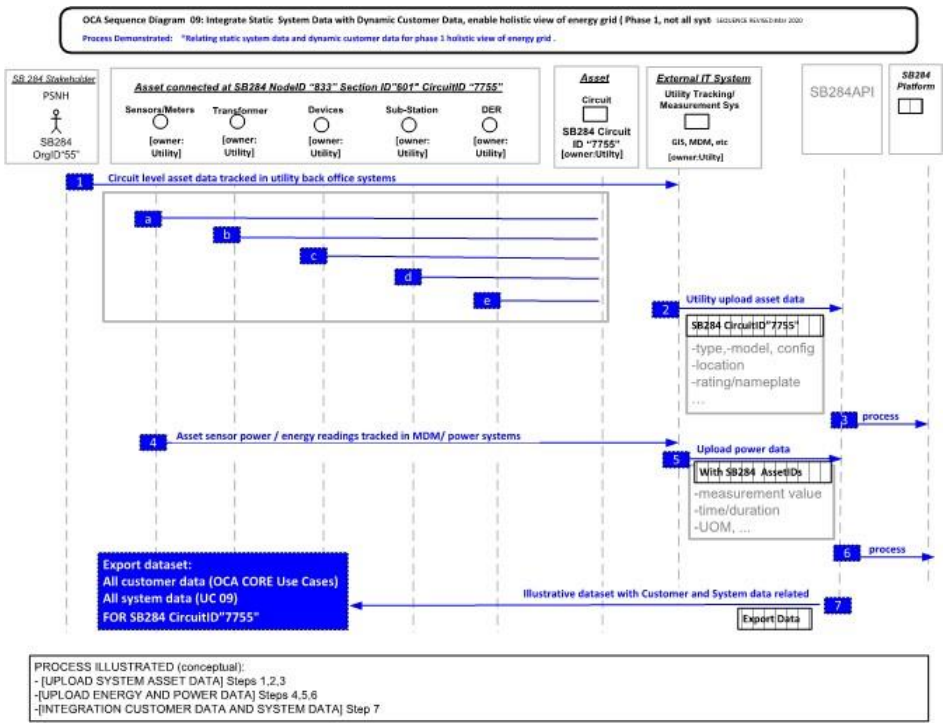
Use Case 09 System Data and Customer Data Integration



Section: Data Fields required

Data elements:

	Elements in dataset	Description	Platform Index ID	Cust Data	System Data	DER Data	Mkt Data
A	Premise ID	SB284 ID of building	X	X			
B	Usage Point ID	SB284 Unique grid point	X	X			
C	Asset ID	SB284 ID of grid asset	X	X			
D	Asset Category	Category of asset		X			
E	Asset Owner	Asset owner	X	X			
F	Node ID	SB284 ID Point on circuit	X		X		
G	Section ID	SB284 ID Section of circuit	X		X		
H	Circuit ID	SB284 ID of utility circuit	X		X		
I	Circuit Type ID	SB284 ID circuit type	X		X		
J	Circuit Owner	Circuit owner	X				

Illustrative SB284 dataset:

	Dataset (accessed via Data Platform API)									
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)
	Prem ID	Usge Point ID	Asset ID	Category name	Own	node ID	Section ID	Circuit ID	Type ID	Circuit Owner
1	1612	4658	1515	Meter R	UES	3177	4	22233	2	UES
2	1677	4963	4141	Meter R	UES	3999	1	55522	2	UES
3	1689	4333	1155	Meter EV	Cust	9333	6	99112	2	GSEC
4	*1674*	*4274*	*1874*	*Meter NM*	*PSNH*	*8888*	*7*	*21123*	*2*	*PSNH*
…	…	…	…	…	…	…	…	…	…	…

Section: Estimated Cost

Refer to OCA master use case "SB284 as a Platform"

Section: Estimated benefits

Refer to OCA master use case "SB284 as a Platform"

Section: Required Policy Changes

Refer to OCA master use case "SB284 as a Platform"

Section: Project Risks

Refer to OCA master use case "SB284 as a Platform"

Section: Cybersecurity Issues

System data and distribution design data would not be available to general public for viewing. OCA recommends addressing these risks as part of the process to create a stakeholder driven Data Privacy Framework (DPF), and a Data Access Framework (DAF) address overarching issues of data privacy and cyber security. [What is envisioned for "system data" and "distribution design data"?]

{OCA Response: Cyber security is a major topic / challenge / requirement for SB284 that could potentially be spun off into a technical working group.}

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Sections: Assumptions / Preconditions

1. SB284 Platform is designed based OCA logical data model
2. SB284 Platform follows a system architecture design approach
3. SB284 Platform implements a service oriented architecture with Application Programming Interface (API) [What is a "service oriented architecture"? Are there examples of this architecture that we could look at?]

   ~~3.~~ {OCA Response: Examples of well-known platforms with service oriented architecture are cloud vendors (Amazon AWS, Microsoft Azure), Salesfrce.com, Weather.com. Applications interact (integrate) with these services using that platform's interface - published APIs . From google" What is a service in SOA? A service is a self-contained unit of software that performs a specific task. It has three components: an interface, a contract, and implementation.
4. Data Privacy Framework (DPF), and Data Access Framework (DAF) address overarching issues of data privacy and cybersecurity, are established prior and/or in parallel with development of SB284 Platform.

Section: Name

Use Case 14: Community Choice Aggregation – 3 utilities, 1 dataset

Section: Author/ last update

Jim Brennan, NH OCA, April 3, 2020

Section: Description

Some towns in New Hampshire have as many as three utilities in one town. With a statewide SB284 Platform all of that data is already collected and updated automatically. So when an aggregator seeks information on a specific town or geographic area they can (with the proper authorizations and agreements) access the information through one dataset and update the dataset as frequently as they like. SB284 indexing allows data being uploaded by utilities (OCA Use Case CORE 01) to be organized by municipality and by customer class. In this use case the energy manager for Town of Pembroke can retrieve electric and gas data uploaded by Eversource, Unitil and Liberty in a single dataset from SB284 centralized platform.

Related Use Cases:

- OCA Use Case CORE 01 Steps 1 and 3 – Eversource (electric), Unitil (electric) and Liberty (gas)
- OCA Use Case CORE 06 Statewide Index

Section: Step-by-Step – what happens

1. PSNH uploads energy and energy related data to SB284 (per OCA Use Case 01).
2. Unitil uploads energy and energy related data to SB284 (per OCA Use Case 01).
3. Liberty uploads energy and energy related data to SB284 (per OCA Use Case 01.

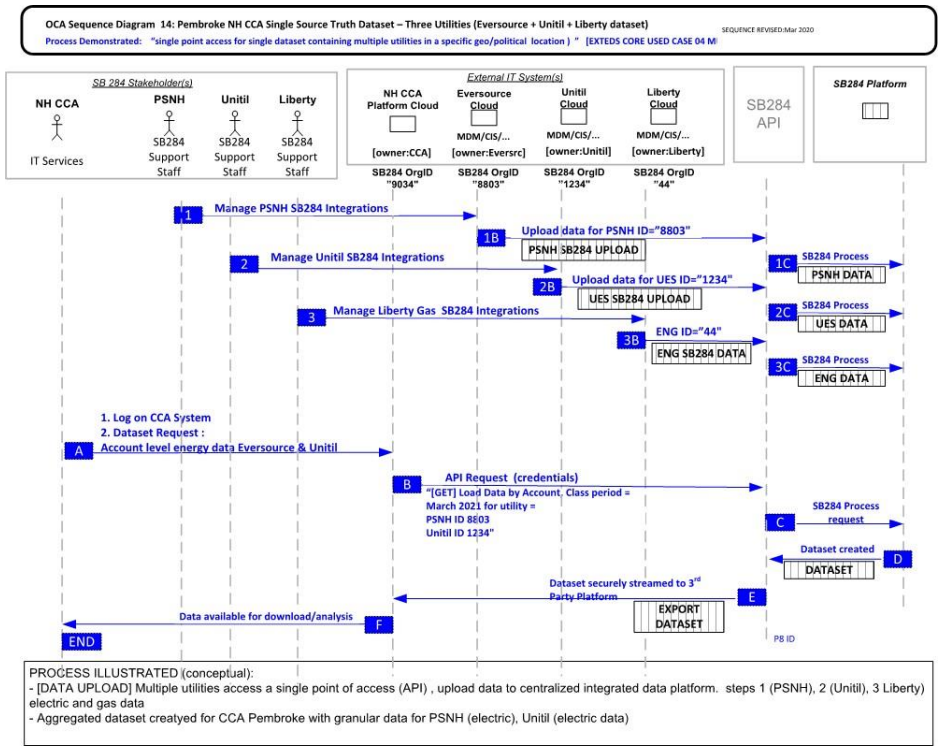
A. A NH Community Choice Aggregation (CCA) logs onto the CCAs Platform. (The CCA Platform is integrated with SB284 and authorized to request data). A request is made by the CCA for dataset of allowed (based on NH policy and law) energy and energy related data for the specific town, such as Town of Pembroke NH.
B. The CCA Platform make a request for the data to SB284 API. An authorization process is completed and the SB284 API will execute the request.
C. The SB284 platform processes the request.
D. SB284 creates a dataset containing energy data for the Town of Pembroke.
E. SB284 securely shares / exports the requested dataset to the NH CCA's data platform.

OCA Use Case 14: Community Choice Aggregation – 3 utilities, 1 dataset

F. Staff at the NHCCA can view the data, download the data to excel, or input to a data application used by its analyst. Data is handled according to agreed security policy. [Is the "CCA Platform" available today? Is it part of energy use data or will it be a separate IT System?]

How to Read: Sequence diagrams illustrates the order of activity (top to bottom) that occur between 4 categories of actors (across the top). The 4 categories of actors are:

1. Stakeholders (customers, 3rd parties, utilities…),
2. Assets (premises, meters, rooftop PV…),
3. External IT Systems (an existing utility CIS, a future CCA Platform…),
4. SB284 API (proposed) and SB 284 platform (proposed).



Section: Data Fields required

Refer to OCA master use case “SB284 as a Platform”

Section: Estimated Cost

Refer to OCA master use case “SB284 as a Platform”

Section: Estimated benefits

Refer to OCA master use case “SB284 as a Platform”

Section: Required Policy Changes

Refer to OCA master use case "SB284 as a Platform"

Section: Project Risks

Refer to OCA master use case "SB284 as a Platform"

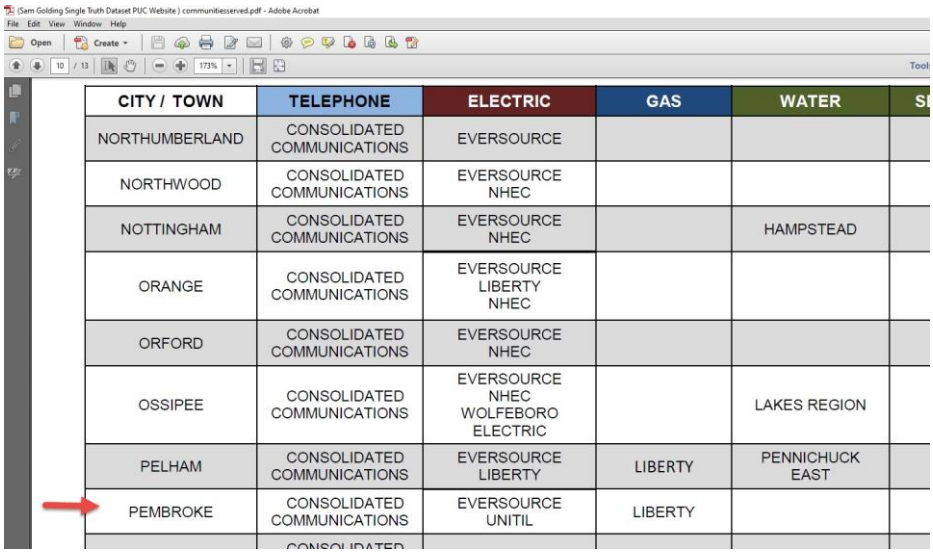
Section: Cybersecurity Issues

Refer to OCA master use case "SB284 as a Platform"

Sections: Assumptions / Preconditions

1. SB284 Platform is designed based OCA logical data model
2. SB284 Platform follows a system architecture design approach
3. SB284 Platform implements a service oriented architecture with Application Programming Interface (API)
4. Data Privacy Framework (DPF), and Data Access Framework (DAF) address overarching issues of data privacy and cybersecurity, are established prior and/or in parallel with development of SB284 Platform. [Should security guidelines/requirements be established in the early stages? If not, will this result in additional costs?]

Notes (use for row in "master OCA Use Case SB284 As A …":



CITY / TOWN	TELEPHONE	ELECTRIC	GAS	WATER	SE
NORTHUMBERLAND	CONSOLIDATED COMMUNICATIONS	EVERSOURCE			
NORTHWOOD	CONSOLIDATED COMMUNICATIONS	EVERSOURCE NHEC			
NOTTINGHAM	CONSOLIDATED COMMUNICATIONS	EVERSOURCE NHEC		HAMPSTEAD	
ORANGE	CONSOLIDATED COMMUNICATIONS	EVERSOURCE LIBERTY NHEC			
ORFORD	CONSOLIDATED COMMUNICATIONS	EVERSOURCE NHEC			
OSSIPEE	CONSOLIDATED COMMUNICATIONS	EVERSOURCE NHEC WOLFEBORO ELECTRIC		LAKES REGION	
PELHAM	CONSOLIDATED COMMUNICATIONS	EVERSOURCE LIBERTY	LIBERTY	PENNICHUCK EAST	
PEMBROKE	CONSOLIDATED COMMUNICATIONS	EVERSOURCE UNITIL	LIBERTY		

OCA Use Case #23: Distributed Energy Resource Deployment Data

Section: Name

Use Case #23: Distributed Energy Resource Deployment Data

Section: Author/ last update

Jim Brennan, NH OCA, April 3, 2020

Section: Description

The growth of distributed energy resources such as renewables and storage is an issue important to a variety of stakeholders from the PUC, to legislators, to other portions of government, to non-profits, and for profits. Understanding where and how those resources are distributed across the state can inform policy decisions. For example, the data could help people understand the correlation between DER installations and utility, or DER installations in towns that have enacted property tax exemptions.

Related Use Cases:

- Use Case 04 Community Dashboard (displays DER Deployment data statewide)
- Use Case 09 Integration System Data and Customer Data (circuit, large transformer system data is shown along with customer DER data in the illustrative dataset below).

Section: Step-by-Step – what happens

Conceptual functionality with possible reengineering (automating/streamlining of NEM process:

1. The PUC seeks to track, analyze, and report on the growth of distributed energy resources in the NH electric grid. Here, a house at SB284 Premise ID "1674" currently owns a battery device and is applying for PV and interconnection. DER data is valuable information regarding NH's grid.
2. Customers complete interconnection applications for net energy metering (NEM) using the DER Tracking Portal. The utility will be notified, in step 4, and will process the application. The interconnection contains a variety of information on the future NEM project. Customers also send updates as necessary. This step assumes the interconnection application was made uniform this allowing customers to submit the application through a new DER Tracking Portal that is integrated with SB284 data platform. [Is the "DER Tracking Portal" part of DE 19-197 or a separate IT system? Would this replace the existing systems or processes that utilities currently have in place?]
3. The DER Tracking Portal submits the data to the SB248 database and the application to the utility.

OCA Use Case #23: Distributed Energy Resource Deployment Data

4. The utility reviews the interconnection application and the status of the grid infrastructure at the NEM location. If the utility requires payment for system modifications that description and estimate of cost is sent to the customer.
5. The customer provides approval and payment. The utility completes the modifications and provides a signed approval to the customer and updates the SB248 platform with the grid modifications.
6. The DER is installed at PremiseID "1674".
7. SB284 is updated with data - a new DER exists (type PV rooftop) at PremiseID "1674" as of this date. The data is processed and indexed. The DER data could be related/analyzed in context of a TOU analysis (CORE 02 TOU Dataset)

OCA Use Case #23: Distributed Energy Resource Deployment Data

8. The PUC Staff uses the DER Portal to request DER integration data from the SB248. The SB248 platform processes the request. The PUC Staff analyzes the data and formulates reports for the Commissioners and the Legislators.

Related Use Cases:

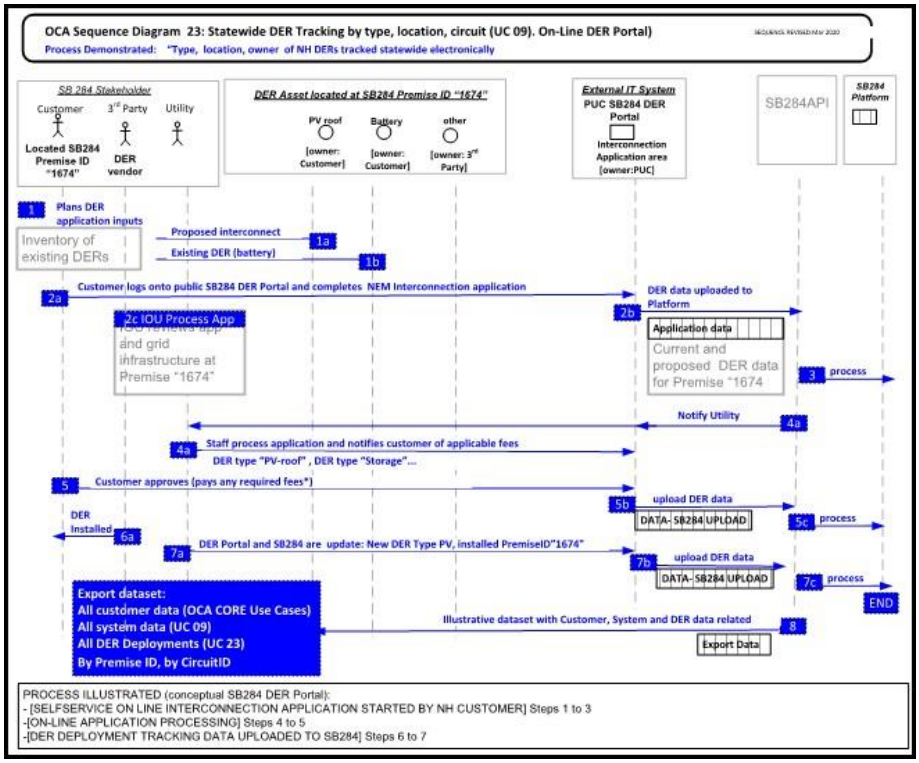
- OCA Use Case CORE 02 TOU Dataset (step 7 allows integrated analysis of DERs with TOU by location, by customer)

Sequence Diagram 23:

How to Read: The sequence diagram illustrates the order of activity (top to bottom) that occur between 4 categories of actors (across the top). The 4 categories of actors are:

1. Stakeholders (customers, 3rd parties, utilities…),
2. Assets (premises, meters, rooftop PV…) ,
3. External IT Systems (an existing utility CIS, a future CCA Platform…),
4. SB284 API (proposed) and SB 284 platform (proposed).

OCAUseCase#23:DistributedEnergyResourceDeploymentData



Section: Data Fields required

Data elements:

	Elements in dataset	Description	Platform Index ID	Cust Data	System Data	DER Data	Mkt Data
A	Premise ID	SB284 ID of building	X	X			
B	Usage Point ID	SB284 Unique grid point	X	X			
C	Asset ID	SB284 ID of grid asset	X	X		X	
D	Asset Category	Category of asset		X	X	X	
E	Asset Owner	Asset owner	X	X		X	
F	Node ID	SB284 ID Point on circuit	X		X		
G	Section ID	SB284 ID Section of circuit	X		X		
H	Circuit ID	SB284 ID of utility circuit	X		X		
I	Circuit Type ID	SB284 ID circuit type	X		X		
J	Circuit Owner	Circuit owner	X		X		

Illustrative dataset:

	UC #23-B **"Customer + System Data + DER Data; Grid Asset Locations & Type by circuit, display category name"** **(Filter: residential DER + large transformers, by circuit)**									Data Access Policy: Group Name (ex PUC, PSNH) Data Privacy Policy ID: section name	
	Use: DER tracking. Dataset can be extended to include load, time, generation data, direction, etc.										
	Dataset (accessed via Data Platform API)										
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	
	Prem ID	Usge Point ID	Asset ID	Category name	Own	node ID	Section ID	Circuit ID	Type ID	Circuit Owner	
1	1666	4113	9588	Storage-R	Cust	6633	3	26666	2	*PSNH*	
2	1611	4888	9336	Storage-R	OrgX	3366	3	26666	2	*PSNH*	
3	*1674*	*4444*	*9974*	*PV roof-R*	*Cust*	*4777*	*3*	*26666*	*2*	*PSNH*	
	2501	*5801*	*4888*	*Transfr LG*	*Util*	*2102*	*3*	*26666*	*2*	*PSNH*	
…	…	…	…	…	…	…	…	…	…	…	

Please Refer to OCA master use case "SB284 as a Platform" for additional discussion on use case data requirements.

Section: Estimated Cost

Refer to OCA master use case "SB284 as a Platform"

[Should the DER Tracking Portal be part of this estimated cost?]

Section: Estimated benefits

Refer to OCA master use case "SB284 as a Platform"

Section: Required Policy Changes

Changes to the NEM process and workflow – can be done in phases. Refer to OCA master use case "SB284 as a Platform"

Section: Project Risks

Refer to OCA master use case "SB284 as a Platform"

Section: Cybersecurity Issues

Refer to OCA master use case "SB284 as a Platform"

Sections: Assumptions / Preconditions

1. SB284 Platform is designed based OCA logical data model
2. SB284 Platform follows a system architecture design approach
3. SB284 Platform implements a service oriented architecture with Application Programming Interface (API)
4. Data Privacy Framework (DPF), and Data Access Framework (DAF) address overarching issues of data privacy and cybersecurity, are established prior and/or in parallel with development of SB284 Platform.

OCA Use Case #24: Integration of utility and non-utility energy data

Section: Name

Use Case #24: Integration of utility and non-utility energy data

Section: Author/ last update

Jim Brennan, NH OCA, April 3, 2020

Section: Description

The SB284 statewide platform enables the integration of utility data with non-utility energy data. Non- utility energy data is data collected by a stakeholder or 3rd party other than the utility. In NH today, motivated consumers can purchase advanced sub meters allowing them to better understanding their energy usage in ways not possible with utility owned meter already installed on their home and used by the utility for billing purposes. With increasingly affordable technology, a customer owned/customer installed sub meter can be configured to stream real time data directly to the vendor's cloud providing granular data for that location. In this scenario, real time data in vendor cloud could be integrated with SB284 (already containing other robust utility energy and energy related data discussed in other use cases in this document) based on SB284 PremiseID. This scenario is illustrated in this use case. Other non-utility scenarios include renewable installations that often have a meter installed by the renewable energy company that collects data differently. There are similar potentials with electric vehicles and battery storage. The combination of the information from all of those sub-meters at a customer location can provide that customer or an authorized third party with a more holistic energy view of that premise. [How will utility and non-utility data be integrated? For other non-utility meter data, what will be done to ensure privacy, integrity and accuracy?]

The purpose of this use case is to illustrate the concept (and potential advantages) of analyzing energy data holistically - at the premise level, and with multiple data sources. SB284 allows such analysis by providing functionality share data based on location, including SB284 PremiseID.

Section: Step-by-Step – what happens

1. Customer purchased a real time sub meter from 3rd party EK, Inc.
2. Customer hires electrician to installs the EK sub meter behind the existing utility meter. The meter is configured to records real time measurements, direction of energy flow import/export, and interval data. The sub meter is configured to upload the real time data to the vendor's cloud using homeowners Wi-Fi. [How will proper cyber protections be ensured when relying on customer WIFI as the communications medium? Are customers, or third parties, who upload data expected to certify their systems for proper cyber protections?]
3. Energy usage data collected by the utility meter is uploaded to SB284 Platform. Reference OCA CORE 01 Billing use case steps 1 and 3.
4. The purchased EK real time meter collects usage data in real time. Usage data is uploaded an EK Inc. cloud API (Application programming interface) using local Wi-Fi. If Wi-Fi service is interrupted, datas

storedlocallyinsidethesubmeteranduploadlateronceWi-Fiserviceisre- established inthehome. The customer can view data in cloud via smart applications.

5. An authorized third party application, designed to analyzed energy usage and generate reports for homeowners and researchers, connected to SB284 (w/ credential) and requests available usage data (utility and non-utility) for 5 Maple Street using SB284 PremiseID "980".
    a. (NOTE: Another scenario could involve non PII data, for example a research request for aggregated data from all premises on a circuit, or on a specific tariff. In this scenario

data contained in the SB284 dataset step 5c would be anonymous, subject to following aggregation guidelines in NH Privacy policy). [How does the NH Privacy policy relate to utility or non-utility customer info and/or energy use data?]

6. The SB284 platform processes the request and exports the dataset (monthly data from the utility and the real time data from the non-utility sub-meter) to the third party. [Where is the non-utility sub-meter data stored? If on the cloud, how would a customer request work from the energy data platform to initiate an extract? Is there a specific Green Button Connect standard transaction that the vendor cloud software would be required to adhere to, or would this be new transaction type?]
7. The third party aggregates and presents the information to the customer in a digestible format.

Related Use Cases:

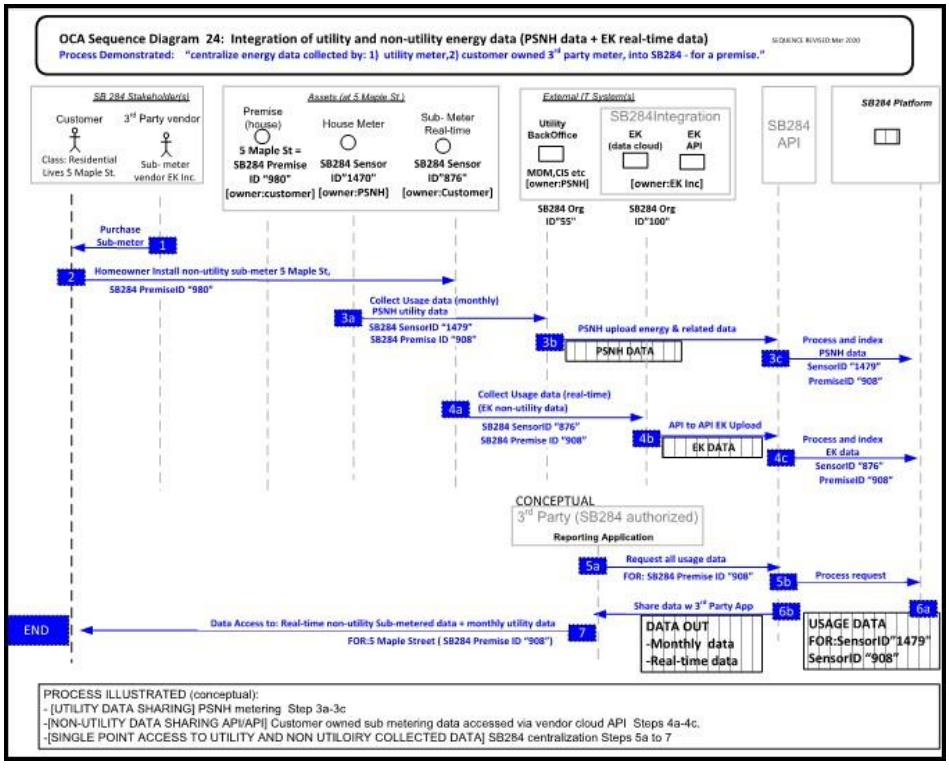
- CORE 01 Billing, steps 1 and 3 (uploading energy and energy related data collected by the utility)
- CORE 06 Indexing (Premise ID used to integrate readings from different data sources within same home)
- UC 9 Integrate Customer data and System data (to enable step 5a analysis of real time data by circuit ID)

OCA Use Case #24: Integration of utility and non-utility energy data

Sequence Diagram 24

HowtoRead:Thesequencediagramillustratestheorderofactivity(toptobottom)thatoccurbetween 4 categories of actors (across the top). The 4 categories of actors are:

1. Stakeholders (customers, 3rd parties, utilities…),
2. Assets (premises, meters, rooftop PV…) ,
3. External IT Systems (an existing utility CIS, a future CCA Platform…),
4. SB284 API (proposed) and SB 284 platform (proposed).



Section: Data Fields required

Refer to OCA master use case "SB284 as a Platform"

Section: Estimated Cost

Refer to OCA master use case “SB284 as a Platform”

OCA Use Case #24: Integration of utility and non-utility energy data

Section: Estimated benefits

Refer to OCA master use case "SB284 as a Platform"

Section: Required Policy Changes

Establishing NH Data Privacy Framework discussed in step 5. Please refer to OCA master use case "SB284 as a Platform"

Section: Project Risks

Refer to OCA master use case "SB284 as a Platform"

[Will this particular use case have more risk due to the integration of various data sources and disparate systems?]

Section: Cybersecurity Issues

Refer to OCA master use case "SB284 as a Platform"

Sections: Assumptions / Preconditions

1. SB284 Platform is designed based on a logical data model
2. SB284 Platform follows a system architecture design approach
3. SB284 Platform implements a service oriented architecture with Application Programming Interface (API)
4. Data Privacy Framework (DPF), and Data Access Framework (DAF) address overarching issues of data privacy and cybersecurity, are established prior and/or in parallel with development of SB284 Platform.

Section: Name

WAP Tracking Platform Integration to SB284

Section: Author/ last update

Jim Brennan, NH OCA, April 3, 2020

Section: Description

OSI's management of the Weatherization Assistance Program (WAP) requires them to track information. They have struggled with tracking data by contractor. To improve this process OSI is in the process of issuing an RFP for a tracking platform. The SB284 platform and the new WAP platform can be integrated. Under this scenario, normalized standardized machine readable customer and energy data already maintained (updated, accurate, indexed) in SB284 can be provided to the OSI tracking platform, for example on a nightly basis. With some of the basic customer and utility information provided by SB284 datasets, the OSI tracking platform (and staff) does not need to duplicate that work. [Discussion Notes: OSI will need to ensure that customers have authorized the release of their usage data to CAAs AND to OSI. Once OSI has the usage data, is it subject to the "right to know" act where anyone can ask for that data? We are only asking because low income customer information is sensitive. If OSI "struggled with tracking data by contractors" today, how will this "integration" help them track data by contractors in the future?]

Section: Step-by-Step – what happens

Nightly processing: Step A and B: Based on an agreement between the OSI tracking platform provider and the SB284 platform, the SB284 platform sends any changes to WAP data being tracked on the OSI tracking platform. The data from SB284 is the same data collected for other purposes – customer name, address, premise, meter, etc. SB284 can also collect agreed upon WAP information for inclusion in the SB284 database. Data uploaded from WAP to SB284 is automatically indexed to reflect a particular remise has received weatherization services – illustrated in Nightly steps C and D.

1. A customer requests participation in the WAP program. (WAP programs are part of SB284 existing indexing process, reference CORE 06 Statewide Index use case)
2. CAP processes the request and updates the application information in the new OSI WAP tracking platform. WAP tracking platform has been prepopulated with basic utility customer information that already exists in the SB284 Platform so that it is not a siloed system. If the WAP platform requires historical usage data on the premises, that data can be included in the nightly processing (Step A). The WAP platform sends updated information to the SB284 Platform. [What updated data would be sent from the "WAP platform" to the "SB284 Platform"? Would a specific data transfer format be used, and if so, which one?]

OCA Use Case # 32 WAP Integration to SB284

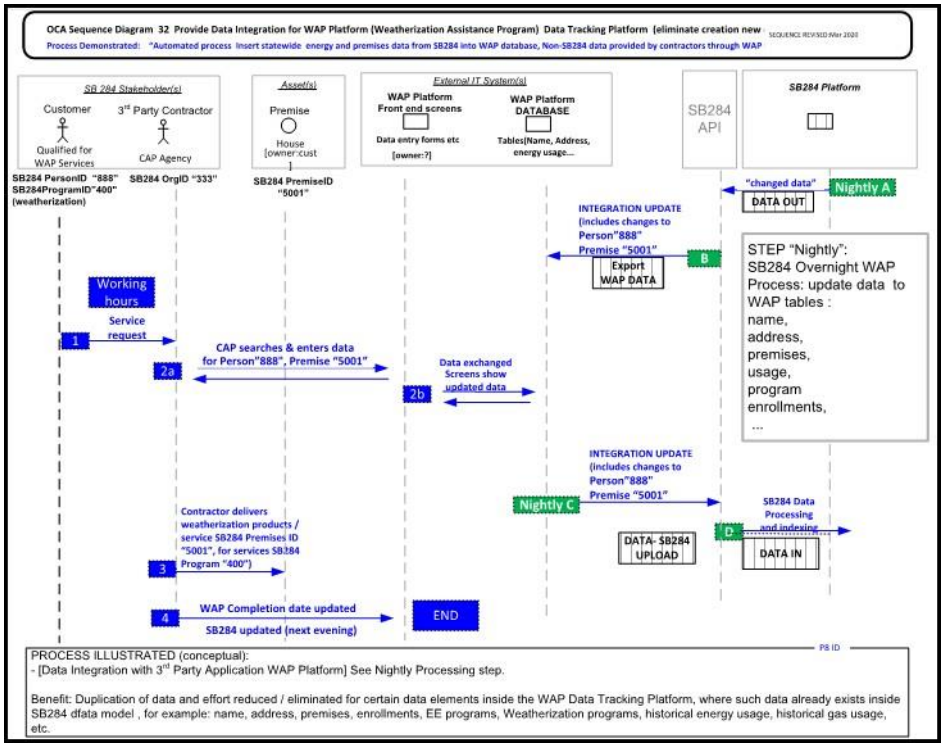
3. Contractor performs weatherization services (SB284 Program ID "400" insulation) at the customers home (SB284 Premise ID "5001"). Information is uploaded to the WAP tracking platform the program participation of the customer (for example insulation, heat pump, etc.) according to an established definition of programs.
4. The WAP tracking platform updates the SB284 Platform with the negotiated information relative to SB284 Premise ID "5001" (the customers home). This provides updated information should PUC Staff, utility staff, or other authorized entities be seeking information regarding that premise. In addition, the SB284 Platform provides updates to the WAP tracking platform with any changes to premise information uploaded by the utilities. [What standard transaction would be used to accomplish this?]

OCA Use Case # 32 WAP Integration to SB284

Sequence Diagram 32

HowtoRead:TheSequencediagramillustratestheorderofactivity(toptobottom)thatoccurbetween 4 categories of actors (across the top). The 4 categories of actors are:

1. Stakeholders (customers, 3rd parties, utilities…),
2. Assets (premises, meters, rooftop PV…) ,
3. External IT Systems (an existing utility CIS, a future CCA Platform…),
4. SB284 API (proposed) and SB 284 platform (proposed).



Section: Data Fields required

Refer to OCA master use case "SB284 as a Platform"

Section: Estimated Cost

OCA Use Case # 32 WAP Integration to SB284

Refer to OCA master use case “SB284 as a Platform”

Section: Estimated benefits

Refer to OCA master use case "SB284 as a Platform"

Section: Required Policy Changes

Refer to OCA master use case "SB284 as a Platform"

Section: Project Risks

Refer to OCA master use case "SB284 as a Platform"

Section: Cybersecurity Issues

Refer to OCA master use case "SB284 as a Platform"

Sections: Assumptions / Preconditions

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