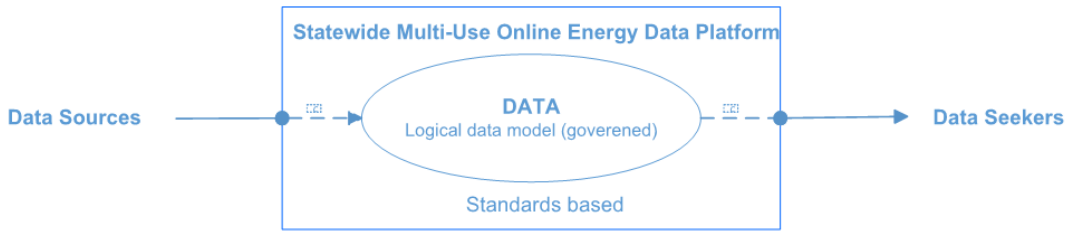
SENATE BILL 284
HOUSE SCIENCE, TECHNOLOGY AND ENERGY
Tuesday April 2, 2019
11:00AM

Room 304, LOB

SB 284, Establishing a Statewide, Multi-Use Online Energy Data Platform



James Brennan, Finance Director

NH Office Consumer Advocate

April 2, 2019

Outline of Topics

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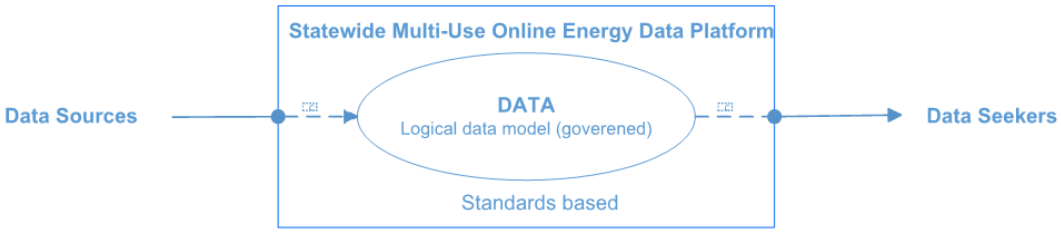
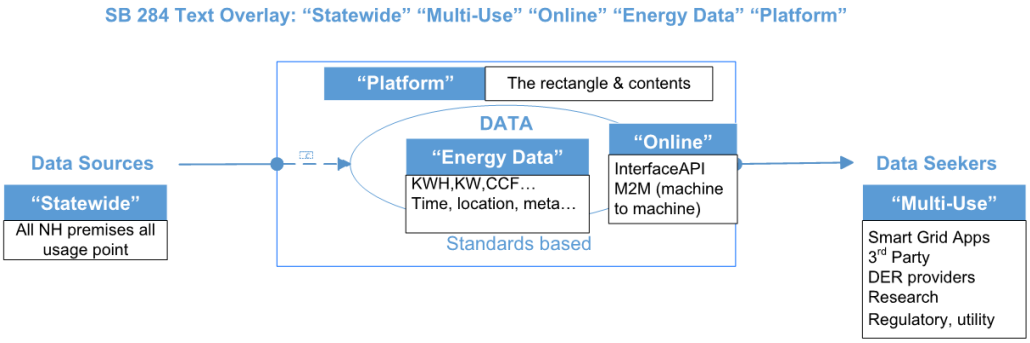
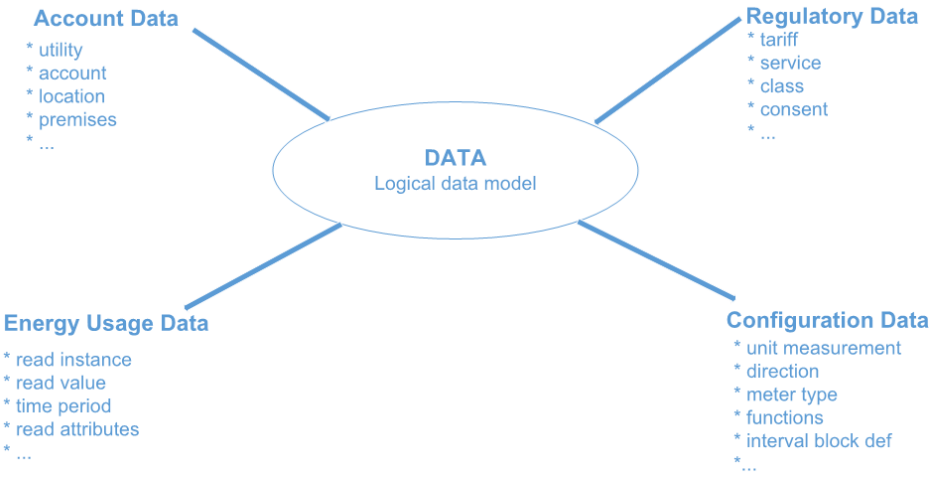
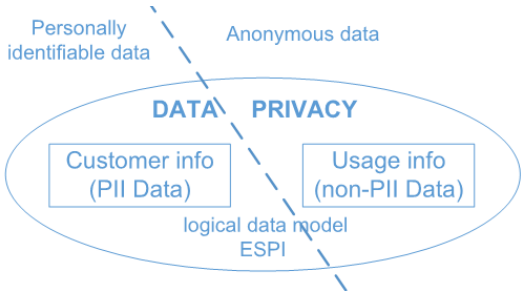
Ia. What is the proposed Energy Data Platform? (four perspectives)

Table 1: What is the Data Platform? What Data is Included?	Four Perspectives
	#1 Platform parts: APIs relational database components standards (ESPI)
	#2 Map the title of SB 284 to physical world
	#3 Data contained in platform (Ref JJB-1 list of entities)
	#4 Data Privacy: The Energy Service Provider Interface ESPI (Green Button CMD) being deployed nationally in CA, CO, IL, MI, NJ, NY, TX

IIa. Why build a centralized data platform?

Support Energy Policy Goals: The data platform supports and enables many New Hampshire policy and energy goals including important PUC dockets such as IR 15-296 Grid Modernization and dockets related to Grid Mod including DE 16-576 Net Metering Distributed Generation Tariff, the energy efficiency dockets DE 15-137 DE 14-216 and DE 17-136.

Accelerate Energy Efficiently: Energy Efficiency programs are currently evaluated using deemed (estimated) savings estimates. SB 284 platform measures actual energy consumption, electric KWH and gas CCF, over time facilitating longitudinal analysis of EE programs and trends including electrification. A standardized data platform enables 3rd parties to offer customers new products and services such as smart phone apps that help you save energy usage, or email updates that analyze your usage data or make tailored recommendations for how to conserve.

Support Time of Use (TOU): SB 284 data platform can manage data generated by three upcoming TOU pilots filed at the PUC by Liberty, Eversource and Unitil. Rather than each utility designing, building, paying for separate data sharing platforms to organize and collect granular interval data, a reusable standards based platform saves time and money. (Ref use cases multi-utility Appx JJB-1)

Support Distributed Energy Resources (DER): SB 284 platform shares data needed by DER providers to size/design systems, calculate benefit cost proposals, market products and services at scale in NH. The 1/30/2019 IR 15-296 Staff Report on Grid Mod labels second stage of Grid Mod "*DER Integration and Operational Markets*" which can only occur with electronic access to standardized customer usage data proposed SB 284. The data platform can also enable aggregators, support emerging Residential C&I Demand Response platforms and other M2M systems. In California where CPUC mandated utilities to implemented Green Button Connect My Data (GB CMD) platforms, GB CMD usage is rising exceeding 100k in 2018.

PUC Staff's recommendations and proposed next steps listed in IR 15-296 Grid Mod Report (pp 61 and 71 shown below) are consistent with SB 284 Three Phase Roadmap on Bates page 6.

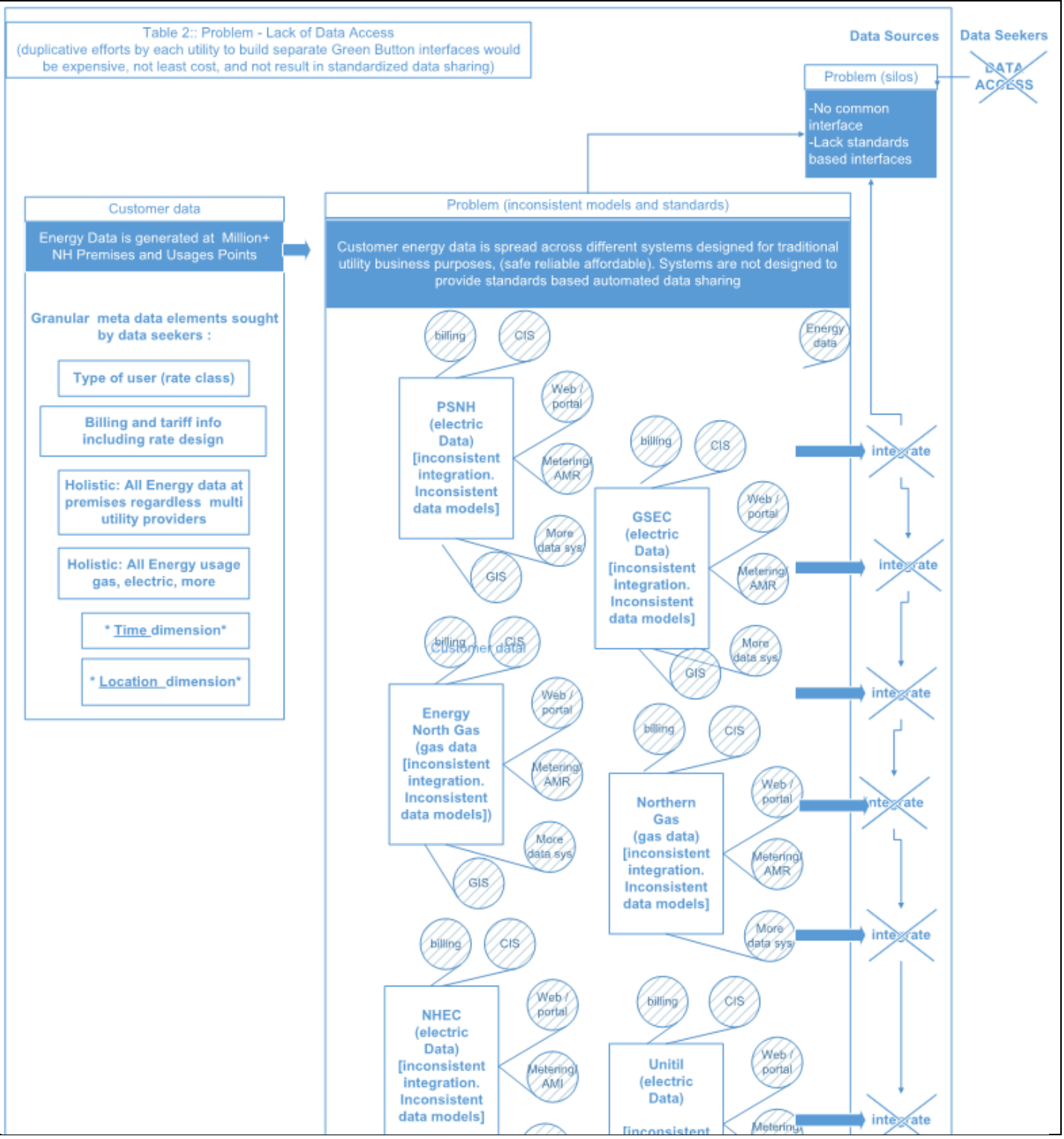
> Page 61: "***Electronic Data Access System***" Staff "supports customer usage data transparency" and recommends that "an electronic access data platform be further investigated"
>
> Page 77: Proposed Next Steps Utility and Customer Data and Data Access - determine technology requirements and data access options, and outline a timeline for installing appropriate technology and providing the data.

Data Portability: The capability of a customer to consent to share information with a service provider.

Value: The centralized data platform is a cost effective approach to achieve standards based data sharing. The platform is multi-use, built once and reuse in many different ways to create value.

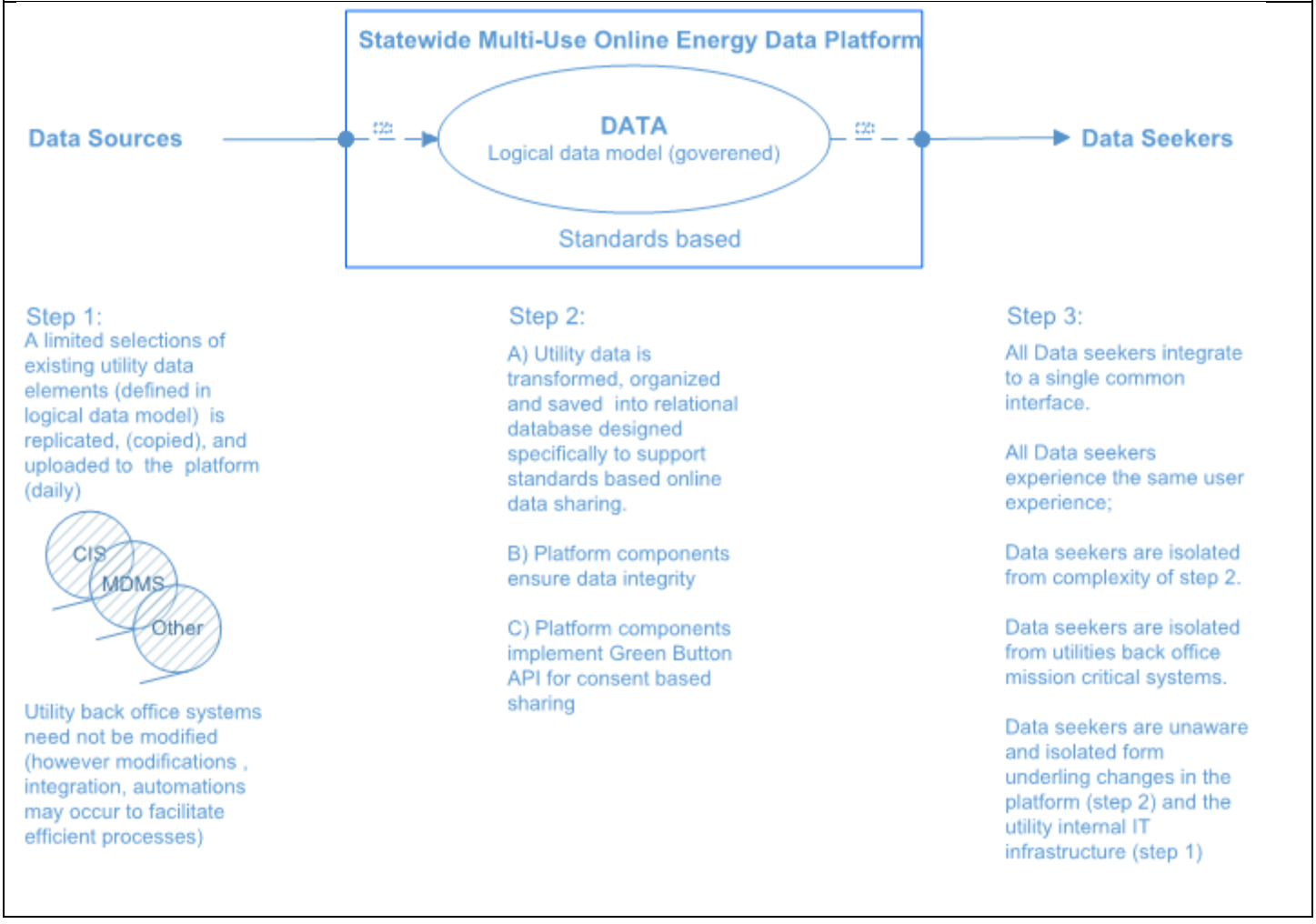
Solution: SB 284 solves the current data sharing limitation summarized on Table 2.

IIb.
Table 2: Problem Being Solved – Lack of Standardized Data Access. Robust data generated at grid edge (below left) is locked within traditional utility IT systems not designed for customer data sharing (below center). Data is not accessible to data seekers (below right)

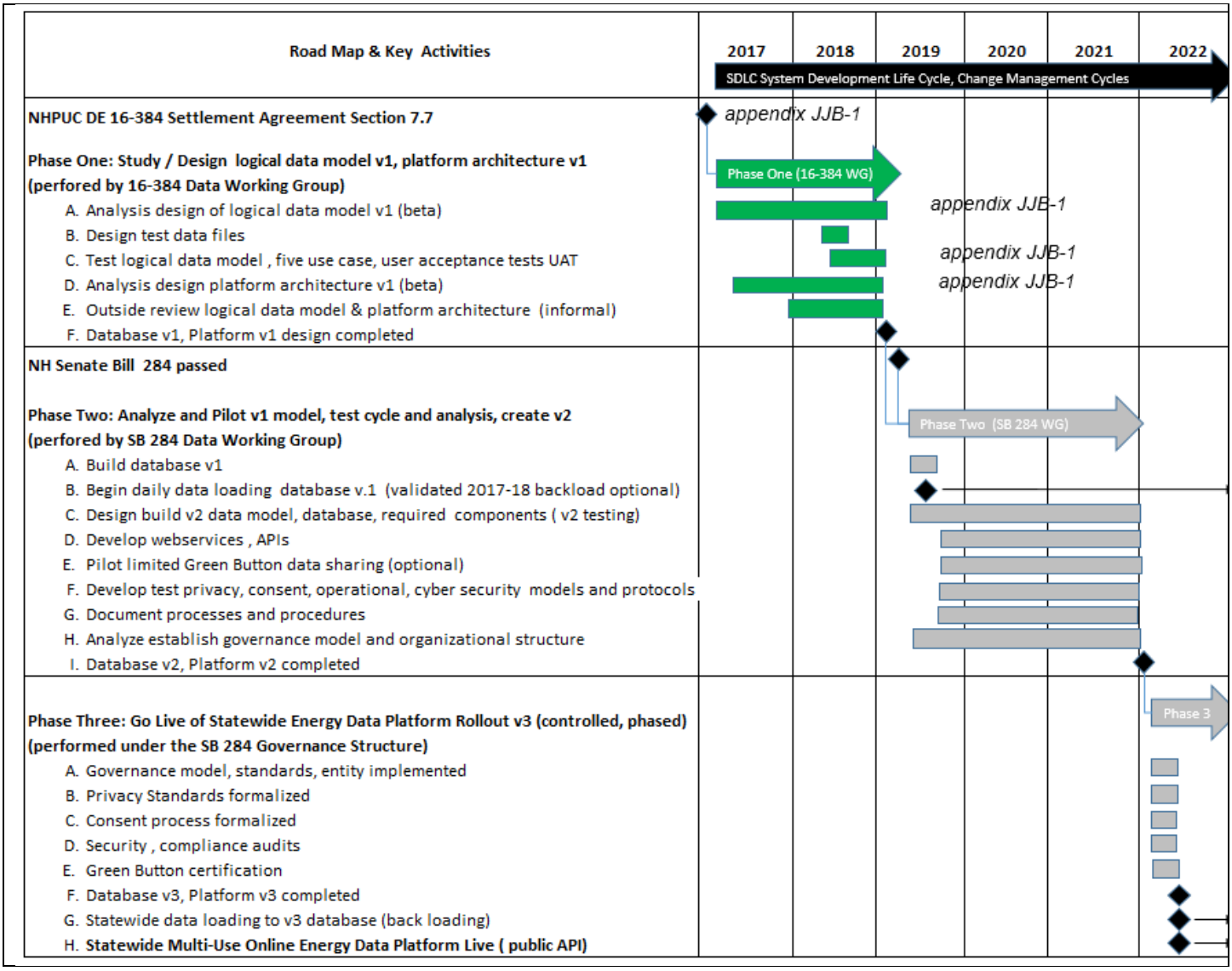


IIc. Solution to Problem

Table 3: Solution – SB 284 Centralized Data Platform (below center) is inserted between the Data Sources (below left) and the Data Seekers (below right). Energy data is replicated within a normalized data model and shared using national standards such as Green Button Connect My Data GB CMD



IIIa. Gantt Chart of Key Activities



IV Other

IVa. PLATFORM GOVERNANCE:

Reference Roadmap Gantt Chart Phase Two (Bates page 6):
-Activity Row H “Analyze Governance Model”

Reference Roadmap Gantt Chart Phase Three (Bates page 6):
-Activity Row A “Governance Model Implementation”

IVb. PLATFORM COST

Statewide + Centralized + Standards+ Proper Planning == lowest marginal cost of data sharing

IIIb Phase One of Roadmap Completed

Appendix JJB-1 DE 16-384 Data Working Group Summary and Deliverables

Sections:

Sections:

I. 16-384 Data Working Group Members

Jim Brennan, Finance Director, NH OCA
Kurt Demmer, Engineer Utility Analyst, NHPUC
Justin Eisfeller, Chief Technology Officer, Unitil
David Goyette, Utility Analyst, NHPUC
Jeremy Haynes, Head Application Development, Unitil

II. Date of Formation and Purpose: By stipulation, and subsequent order, in DE 16-384 Rate Case 2/22/2017 Settlement Agreement section 7.7 page 14. The working group met over 14 month period to study energy sharing plan, and design and document a logical data model for an energy database.

DE 16-384 Unitil Distribution Rate Case
Settlement Agreement
Page 14 of 19

7.7 The Company, Staff, and the OCA agree to hold a series of working meetings during the second half of 2017 to develop a data sharing plan (Energy Data Plan). The Energy Data Plan will assess and describe a plan for the collection, management, and reporting of granular energy data from a dedicated database (Energy Database). The Energy Data Plan will include documentation of tables and relationships (Logical Data Model) within the Energy Database. The Logical Data Model will accurately define the data relationships between tables in the Energy Database. The Logical Data Model will provide a version 1 reference architecture which may be used to create a physical Energy Database that could be hosted within the Company's secure IT infrastructure. The Energy Data Plan will take into account data privacy, data security, data retention, data loading, and data maintenance, and other relevant issues as necessary. All work performed, and all recommendations made, will be informed by environmental (technical) and operational constraints of the Company.

III. Working Meetings / review of deliverables:

11/7/2017	16-384 Data Working Group Meeting #1 - Unitil existing systems
12/13/2017	16-384 Data Working Group Meeting #2 - methodology
12/19/2017	16-384 Data Working Group Meeting #3 - data model relationship analysis
1/19/2018	16-384 Data Working Group Meeting #3 - data model relationship analysis
2/28/2018	16-384 Data Working Group Meeting #5 - ESPI Green Button Privacy model
4/5/2018	16-384 Data Working Group Meeting #6 - TOU modeling, Project Planning
6/21/2018	16-384 Data Working Group Meeting #7 - Status , UAT Testing, ESPI, platform design
7/24/2018	16-384 Data Working Group Meeting #7a - Green Button, Platform, generic/statewide
8/15/2018	16-384 Data Working Group Meeting #7b - Model Testing UAT
9/7/2018	16-384 Data Working Group Meeting #7c - Complex Meter configurations
11/19/2018	16-384 MODEL TESTING STAFF #7d - UAT 2 "TOU" accepted by staff
11/20/2018	16-384 MODEL TESTING UNITIL #7e - UAT 1 "Billing Data" review with Unitil
11/30/2018	16-384 MODEL TESTING STAFF #7f - UAT 1, UAT 2, UAT 3, UAT 4
12/11/2018	16-384 MODEL TESTING UNITIL #7f - UAT 1, UAT 2, UAT 3, UAT 4
12/19/2018	16-384 MODEL TESTING STAFF #7f - UAT 1, UAT 2, UAT 3, UAT 4
1/24/2019	16-384 MODEL TESTING STAFF - UAT 5 Multi Service Electric & Gas same premises
1/25/2019	100% User Acceptance Test UAT Sign-off on five use cases OCA, PUC, Unitil
2/8/2019	16-384 Data Working Group Meeting #8 - Status , review remaining 7.7 requirements
3/15/2019	16-384 Data Working Group Meeting #9 DOE Data Privacy Framework Presentation

IV. Primary goals: Analyze and design a future proof (flexible), generic (multi utility, multi fuel/service), standards based (Green Button Connect My Data), multi-use (five use cases) logical data model. The data model design must be foundation to consent based, standards based, statewide online data sharing platform.

V. Methodology:

1. DESIGN MODEL (OCA, PUC, Unitil): Detail analysis using Object Role Modeling (ORM) of 25+ entities including relationships and constraints. See sample documentation at end
2. TEST MODEL (OCA, PUC, Unitil): Table top testing and revision of model using 15 test data file provide by Unitil . Five use cases developed illustrate support of primary goals
    a. Use Case UAT #1: Dataset to Recreate Customer Bill (register reads KWH);
    b. Use Case UAT #2: Dataset of TOU interval data (Three time blocks Off-Peak, Mid-Peak, Critical-Peak);
    c. Use Case UAT #3: Dataset Demand One Month Study (KW, residential);
    d. Use Case UAT #4: Multi-tenant, multi-state Dataset (Unitil UES NH + Unitil Fitchberg MA);

e. Use Case UAT #5: Dataset containing multi-fuel, holistic energy usage at a specified premises (separate Fitchberg accounts, KWH electric , CCF gas, one premises);

3. OUTSIDE REVIEW OF MODEL (OCA): Data sharing and aspects of 16-384 data model and platform architecture model were reviewed with Green Button Connect My Data experts including utilities implementing Green Button CMD in California and New York, and the Green Button Alliance.

VI. Work Group Documentation:

Example of documentation of Logical Data Model v1 and Platform Architecture v1 follow.

Tables modeled (Energy Database)

		Entity / Table Name
T	001	Meter
T	002	Person
T	003	Org
T	004	Address
T	005	Customer
T	006	MeterReading
T	007	EndPoint
T	008	Function
T	009	ServiceCategory
T	010	RateClass
T	011	UsagePoint
T	012	Account
T	013	ServiceAgreement
T	014	CISR
T	015	Tariff
T	016	Premises
T	017	Utility
T	018	HAN
T	019	UOM
T	020	IntervalBlock
T	021	IntervalReading
T	022	TimeBlock
T	023	ProgramMapping
T	024	ReadingType
T	025	ReadingTypeAttribute

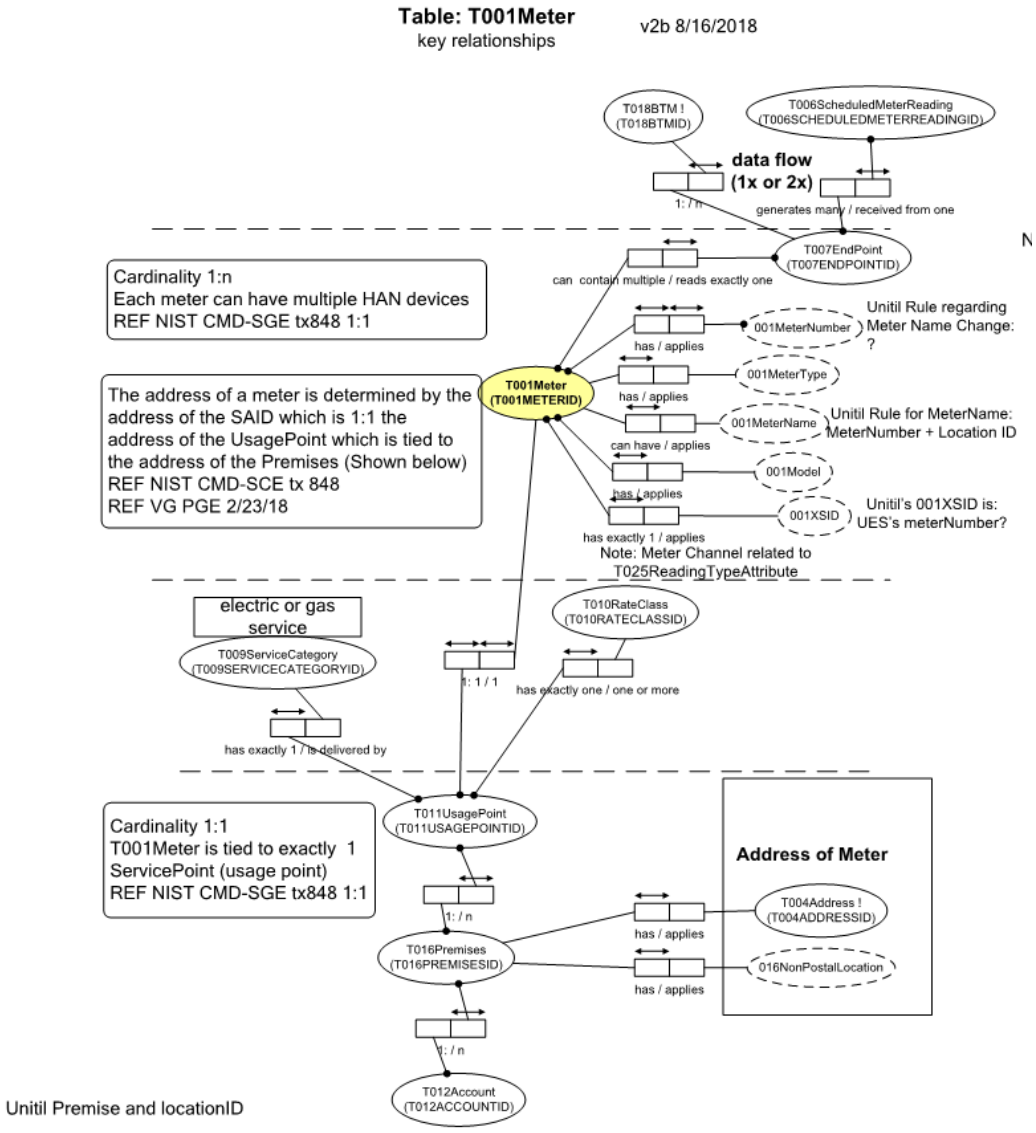


Table: T001Meter
key relationships
v2b 8/16/2018
T018BTM ! (T018BTMID)
T006ScheduledMeterReading (T006SCHEDULEDMETERREADINGID)
data flow (1x or 2x)
1: / n
generates many / received from one
T007EndPoint (T007ENDPOINTID)
can contain multiple / reads exactly one
Cardinality 1:n
Each meter can have multiple HAN devices
REF NIST CMD-SGE tx848 1:1
001MeterNumber
Unitil Rule regarding Meter Name Change: ?
has / applies
T001Meter (T001METERID)
001MeterType
has / applies
The address of a meter is determined by the address of the SAID which is 1:1 the address of the UsagePoint which is tied to the address of the Premises (Shown below)
REF NIST CMD-SCE tx 848
REF VG PGE 2/23/18
001MeterName
Unitil Rule for MeterName: MeterNumber + Location ID
can have / applies
001Model
has / applies
001XSID
Unitil's 001XSID is: UES's meterNumber?
has exactly 1 / applies
Note: Meter Channel related to T025ReadingTypeAttribute
electric or gas service
T009ServiceCategory (T009SERVICECATEGORYID)
has exactly 1 / is delivered by
1: 1 / 1
T010RateClass (T010RATECLASSID)
has exactly one / one or more
Cardinality 1:1
T001Meter is tied to exactly 1 ServicePoint (usage point)
REF NIST CMD-SGE tx848 1:1
T011UsagePoint (T011USAGEPOINTID)
1: / n
Address of Meter
T004Address ! (T004ADDRESSID)
has / applies
T016Premises (T016PREMISESID)
016NonPostalLocation
has / applies
1: / n
T012Account (T012ACCOUNTID)
Unitil Premise and locationID

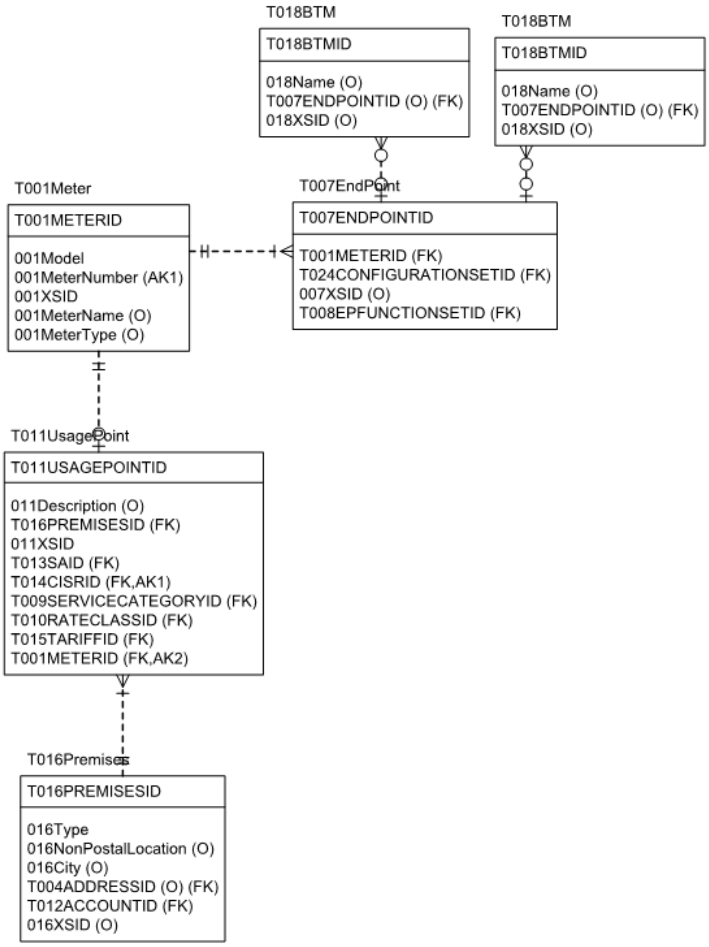
Table: T001Meter
key relationships

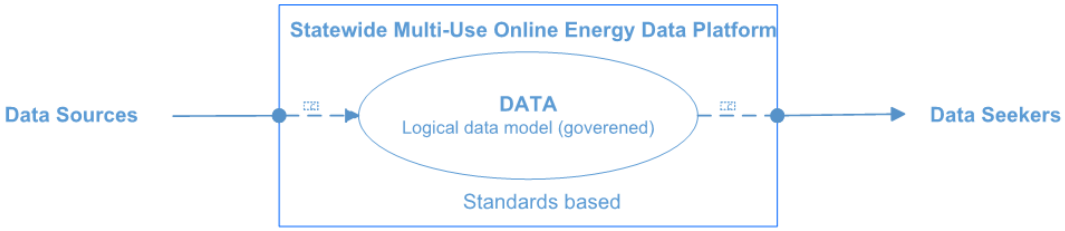
V2b4
8/17/2018

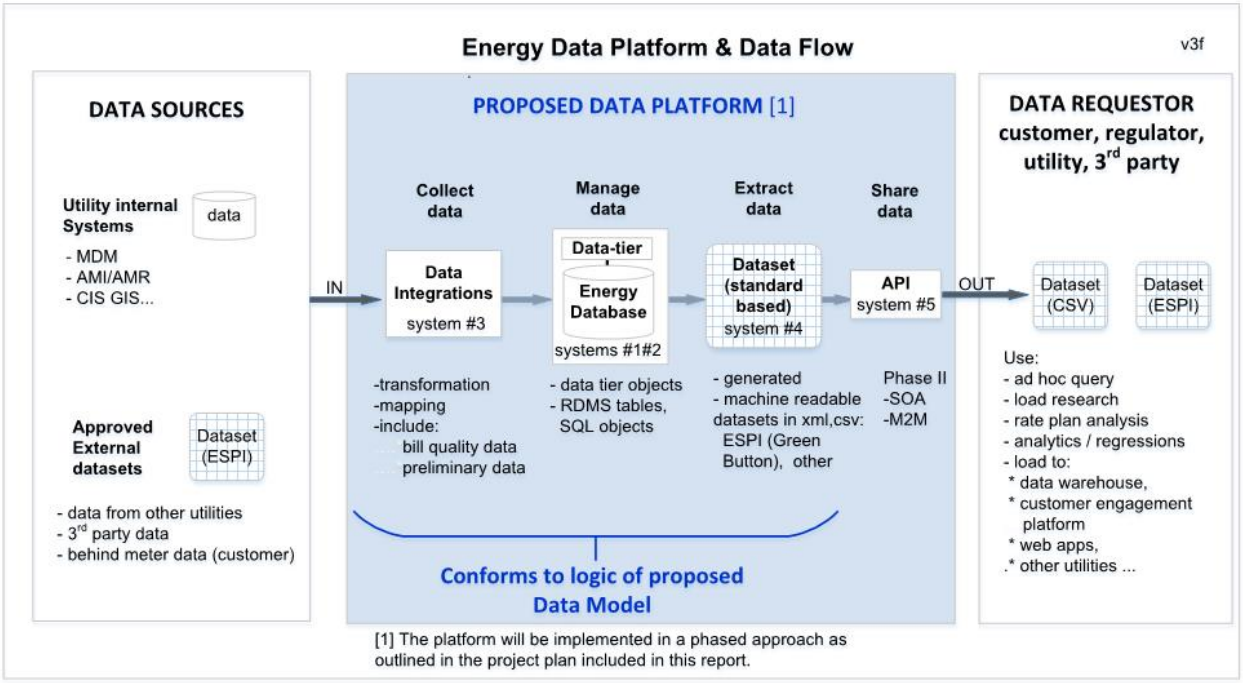
Service address

Location is “premise”
[12/19/17 email]

Sublocation is UES’s “LocationID”
(rule all meters are at a
T001Sublocation, ok?)




Statewide Multi-Use Online Energy Data Platform
Data Sources
DATA
Logical data model (goverened)
Standards based
Data Seekers


Energy Data Platform & Data Flow
v3f
DATA SOURCES
Utility internal Systems
data
- MDM
- AMI/AMR
- CIS GIS...
Approved External datasets
Dataset (ESPI)
- data from other utilities
- 3rd party data
- behind meter data (customer)
IN
PROPOSED DATA PLATFORM [1]
Collect data
Manage data
Extract data
Share data
Data Integrations
system #3
Data-tier
Energy Database
systems #1#2
Dataset (standard based)
system #4
API
system #5
-transformation
-mapping
-include:
bill quality data
preliminary data
- data tier objects
- RDMS tables, SQL objects
- generated
- machine readable datasets in xml,csv: ESPI (Green Button), other
Phase II
-SOA
-M2M
Conforms to logic of proposed Data Model
OUT
DATA REQUESTOR
customer, regulator, utility, 3rd party
Dataset (CSV)
Dataset (ESPI)
Use:
- ad hoc query
- load research
- rate plan analysis
- analytics / regressions
- load to:
* data warehouse,
* customer engagement platform
* web apps,
.* other utilities ...
[1] The platform will be implemented in a phased approach as outlined in the project plan included in this report.

James J. Brennan, Finance Director
New Hampshire Office Consumer Advocate
(technology background)

Jim is a subject matter expert in finance, technology, energy utilities, smart grid, and project management. Jim has managed and designed software, databases and business applications for large private companies, state and federal government and higher educational institutions. Jim is certified in SABSA Foundation Level 1 Enterprise Security Architecture.

Jim was First VP at Waterhouse Securities in NYC where he had direct management and budget responsibility for application development and month end data processing of the 3rd largest Wall Street brokerage statement operation.

Jim designed systems at Mathematica Policy Research in Princeton NJ. He developed a national data collection system for the US Department of Labor that analyzed training program results and generated performance metrics used by Office Management and Budget to approving program grants. The system was deployed to over 700 locations nationally and a centralized database in Washington DC.

Jim was a member the Smart Grid Interoperability Panel-Cyber Security Working Group (SGIP CSWG) which contributed to the NIST Interagency Report (NISTIR) 7628 and worked on the Advanced Meter Infrastructure (AMI) CSWG.

Jim has testified on technology, advanced meter infrastructures consumer enabling data systems, and energy utility dockets before the NHPUC and the New Hampshire legislature. He is currently Finance Director for the New Hampshire Office Consumer Advocate. Jim serves on the board of the Smart Energy Consumer Collaborative and is a member of their education and research committees whose mission is to understanding needs and wants of electric utilities customers.

Contents

SB 284 PLATFORM

MASTER USE CASE PLATFORM WITH 6 PROPERTIES

OCA Master Use Case: SB284 As A Centralized Platform

Type: FOUNDATION

Description: SB284 will be designed built and managed as a stable scalable secure platform that will support (provide) certain back end data needs of beneficial IT applications (products and services) envisioned in important energy related dockets before the NHPUC including grid modernization, community choice aggregation, and energy efficiency. SB284 design principles will include a versioned data model, a service oriended architecture and an Application Programming Interface (API). SB284 platform design will adhere to the architectural concept of a platform defined by national experts in technology and the US power grid: "A platform is a stable collection of components that provide fundamental or commonly-needed capabilities and services to a variable set of uses or applications through well-defined interoperable interfaces". In DE 19-197, the "variable set of uses" is represented by the OCA Example Use Cases 1-51,as well as use cases presented by other stakeholders including Local Government Coalition, Mission Data and Greentel. The value of the SB284 platform will be spread over many of these use cases now and in the future.

Source: OCA Master Use Case

Notes: OCA CORE Use Cases represent architectural requirements of the platform that enable OCA Example Use Cases as well as use cases of other stakeholders.. Reference attached OCA Use Case Proposals Full Set 5/20/2020 b 1

Core Platform Property 1:Granular Multi Use Data - UES Billing Data Dataset Illustration (tested)

Type: FOUNDATION

Description: The SB284 Platform shall contain and manage all required data and generate a single dataset containing all energy and energy related data required to produce a customer bill.

Source: OCA Use Case #CORE 01

Notes: Reference attached OCA Use Case Proposals Full Set 5/20/2020 b. 7

Core Platform Property 2: Time Varying Dimension- Thee Period Time of Use dataset Illustration (tested)

Type: FOUNDATION

Description: The SB284 Platform will generate a Time of Use dataset based on the TOU rate design analyzed in DE 16-574 Net Metering docket.

Source: DE 16-576

Notes: Reference attached OCA Use Case Proposals b. 12

Core Platform Property 3: Multiple Unit of Measurement UOM - Time Based Demand Study Dataset Illustration

Type: FOUNDATION

Description: The SB284 Platform will generate an energy demand dataset for a specific usage point on the electric distribution grid. The demand dataset will contain the most granular data available and reported to the platform. The demand study will be for a specific time specific.

Source: DE 16-385 DWG

Notes: Reference attached OCA Use Case Proposals b. 17

Core Platform Property 4: Multi Utility / Multi Non-Utility energy dataset - Unitil UES + Unitil Fitchburg Dataset Multi Utility Illustration(tested)

Type: FOUNDATION

Description: The SB284 Platform will generate a single dataset containing energy and non-energy data, for a specific NH geographic location or set of locations (street, city, county, state...), regardless of how many utility franchise or non-utility entities delivering products or services at that location . A multi utility data set will contain the energy and energy related data, collected by all utility and non-utiity data sources, for a statewide location.

Source: DE 16-384 DWG

Notes: Reference attached OCA Use Case Proposals Full Set

Core Platform Property 5: Multi Fuel By Location - One Location's Combined Electric and Natural Gas Usage Dataset Illustration

Type: FOUNDATION

Description: The platform will generate a single data set, for a specific granular location (land, building, or sub-portion thereof), that will contain the energy and energy related data for all commodity types consumed at the location, including but not limited to electric and natural gas.

Source: OCA Use Case CORE 05, DE 16-384 Data Working Group

Notes: Reference attached OCA Use Case Proposals Full Set 5/20/2020 b. 24. Holistic building energy profile

Core Platform Property 6A: Statewide Index of Energy and Energy Related Data

Type: FOUNDATION

Description: The platform will organize, index and manage the NH energy and energy related data that it contains according to a versioned data model. The platform will manage statewide unique permanent IDs of data entities (assets, measurements, locations etc) across the primary data categories - location,

policy, technologies, measurements. The platform will enforce referential integrity of data it manages (reference CORE 6a CRUD). Platform data management will promote and enable higher levels of data accuracy, data interoperability, as it supports data needs of external use cases identified and prioritized by stakeholders and SB294 governance.

Source: DE 16-384 DWG

Notes: Reference OCA Use Case Proposals - all

Core Platform Property 6B: Interface for External Applications to Access Back end CRUD Create Read Update Delete platform data

Type: FOUNDATION

Description:Provide secure documented CRUD (Create, Read, Update, Delete) interfaces to manage the energy and energy related data contained in SB284 platform. Standardized interfaces to SB284 data will support back end data needs and data requests of specific external systems (users) that the SB284 platform supports (based on SB284 governance)

Source: Reference UtilityAPI / Unitil API presentation.

Notes: Reference sequence diagrams "SB284 API" illustrated in OCA Use Case Proposals

Core Platform Property 6C: Platform Index maps to Unique External System ID in source system.

Type: FOUNDATION

Description:Each Indexed record (value) in the data platform shall contain the unique External System ID (singular or complex), that shall be provided (mandatory) by the original data source (the external IT system). Each record in all datasets uploaded from an external IT system to SB284 data platform shall contain the unique External System ID that uniquely maps a record in SB284 to a record in the data source's external IT system. The technical design of the required External System ID will be informed by technical discussions between SB284 project team and the data experts from the external data source team durig the integration planning process.

Source: DE 16-384 Data Working Group

Notes: Quality control

APPLICATIONS ENABLED BY SB284 MASTER PLATFORM PROPERTIES (FUTURE PHASES OF PROJECT UNPRIORITIZED)

OCA 1A: Data and Datasets that support an external All Utility All Fuels Energy Efficiency Analytics and Reporting application

Type: [Data Model use case] [Data Collection use case]

Description: The platform will generate a single dataset, with documentation, according to specifications (required fields and elements and hierarchy) of a contracted third party vendor expert. The energy efficiency dataset will include energy and energy related data on a statewide level (all utilities, all fuels).

Source: OCA Example UC #1a

Notes: Reference attached OCA Use Case Proposals Full Set 5/20/2020 b. x

OCA 2A: Data and Datasets that Contain and share the most current most accurate data including corrected data - Quality Assurance Process

Type: [Data Model use case] [Data Collection use case] [Interface/CORE6B use case]

Description: The SB284 platform and the external data source (utility and non-utility) will synchronize data exchanges in order to maximize the level of data accuracy between the two systems. Data corrections made to a data record in the source system, where that same data record has previously been uploaded to SB284 (and is now inaccurate in SB284), will be corrected in SB284 data platform via correction upload process. Corrections to data in the source system, related to operational errors, communication errors, system errors etc. will be updated to the SB284 platform based on external System ID (reference OCA CORE 6c). Data in SB284 will have same levels of accuracy as the source.

Source:

Notes: Reference OCA CORE 06c

OCA 3A: Data and Datasets that supports an external certified Green Button Platform

Type: [Data Model use case] [Data Collection use case]

Description: The SB284 platform shall maintain required data and generate energy and energy related data (dataset) required to support the operation and functionality of the external IT system - a state-of-the-art certified Green Button process. The technical specification of SB284 datasets including fields, elements, granularity, hierarchy (including privacy model PII vs anonymous datasets) will conform to the agreed specifications required by external IT system (the certified Green Button process) and its relevant third parties and SB284 governance.

Source: SB284

Notes: Reference attached OCA Use Case Proposals Full Set 5/20/2020 b 31

OCA 3B: : Provide a secure Interface for an external Green Button Platform to access Data Services in the underlying Platform Data

Type: [Interface/CORE6B use case]

Description: The SB284 platform, interfaces, and versioned data model shall support and integrate with the supported external IT system - Green Button process. Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security,

authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source: Reference attached OCA Use Case Proposals b. 31

Notes: Authentication, Security, and Consent model ;

OCA 4A: Data and Datasets that support an external Community Energy Dashboard

Type: [Data Model use case] [Data Collection use case]

Description: The SB284 platform will generate energy and energy related data (dataset) required to support the operation and functionality of the external IT system - a a community energy dashboard. The technical specification of SB284 datasets including fields, elements, granularity, hierarchy (including privacy model PII vs anonymous datasets) will conform to the agreed specifications required by external IT system (Community Energy Dashboard) and its relevant third parties and SB284 governance.

Source: 1) OCA Example UC #4; Discussion with NH municipalities energy leaders; 3) Review of VT Dashboard model (VEIC)

Notes: Reference attached OCA Use Case Proposals Full Set 5/20/2020 b 35

OCA 4B: Provide a secure Interface for an external Community Energy Dashboard to access Data Services in the underlying Platform Data

Type: [Interface/CORE6B use case]

Description: The SB284 platform, interfaces, and versioned data model shall support and integrate with the supported external IT system - a Community Energy Dashboard. Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source: 1) OCA Example UC #4; Discussion with NH municipalities energy leaders; 3) Review of VT Dashboard model (VEIC)

Notes: Reference attached OCA Use Case Proposals b 35

OCA 5A: Data and Datasets that relate and integrate Customer Data with System Data in an external Distribution Grid Tracking and Analytics Application

Type: [Data Model use case] [Data Collection use case]

Description: The platform automatically relates customer energy data and energy related data with system energy and energy related data using an index. Related data enables energy data (meter readings, load profiles, etc.) and energy related data (location, program, tariff, time, etc) to be analyzed in context of system data (circuit, capacity, assets, etc) Reference OCA CORE #06.

Source: IR 15-296 Grid Mod, NEM dockets, EE dockets, DER Platform per Deloitte NY Report

Notes: replace isolated data silo reporting

OCA 5B: : Provide a secure Interface for an external Distribution Grid Tracking Analytics Application to access Data Services in the underlying Platform Data

Type: [Interface/CORE6B use case]

Description: The SB284 platform, interfaces, and versioned data model shall support and integrate with the supported external IT system - an external Distribution Grid Analytics / Tracking Application or Platform or DER Platform. Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source: IR 15-296 Grid Mod, NEM dockets, EE dockets, DER Platform per Deloitte NY Report

Notes: replace isolated data silo reporting, Back end to DER Platform

OCA 6A: Data and Datasets that support ISO-NE Market Settlement Using Actual Meter Level Usage Data

Type: [Data Model use case] [Data Collection use case]

Description: The SB284 platform will generate energy and energy related data (dataset) required to support the operation and functionality of the external IT system - ISO NE settlement process. The technical specification of SB284 datasets including fields, elements, granularity, hierarchy (including privacy model PII vs anonymous datasets) will conform to the agreed specifications required by ISO-NE and SB284 governance.

Source: OCA discussions with ISO NE, LGC use case

Notes: market settlement using actual meter usage data

OCA 6B: Provide a secure Interface for an external ISO-NE integration (market settlement) to access Data Services in the underlying Platform Data

Type: [Interface/CORE6B use case]

Description: The SB284 platform, interfaces, and versioned data model will support and integrate with the supported external IT system - ISO-NE settlement process. Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source: OCA Interview with ISO NE

Notes: market settlement using actual meter usage data

OCA 7: Data and Datasets that support Complex Metering / Storage scenarios such as Data For Liberty Storage Pilot

Type: [Data Model use case] [Data Collection use case] [Interface/CORE6B use case]

Description: The SB284 data model will support detailed analysis of complex metering scenarios. Analytical ability to Ability to aggregate, disaggregate, metering data based on variables including configuration of meter and measurements ,unit of measurement (KW,PF,V, etc) direction (import export), meter type, read type, interval and duration, time, location, program, owner, premise, account, grid proximity (utility facing/customer facing) and on-location storage and DERs.

Source: Discussions with Liberty Storage Pilot; Discussion with DES EV Infrastructure design;

Notes: Reference OCA Use Case Proposals Full

OCA 9.1: Data and Datasets that support the combination of Customer facing data with System Facing data within a single integrated dataset

Type: [Data Model use case] [Data Collection use case] [Interface/CORE6B use case]

Description: The platform will generate a single dataset organizing customer energy and energy related data such as readings and assets (for example meters, DERs) to the relevant utility distribution network architecture (static system data)

Source: IR 15-296

Notes: Reference OCA Use Case Proposals b. 39

OCA 9.1A: Data and Datasets that Track and Utility Baseline System Data submitted by utilities in their Integrated Distribution Plans (IDP)

Type: [Data Model use case] [Data Collection use case]

Description: The platform will collect, organize, track and report (to NHPUC) the required baseline system data submitted by utilities in IR 15-296 grid mod plans. Technical data specification, including the lists of required data elements, will be informed by the work in IR 15-296 including: NH Grid Mod Working Group (RAAB, Woolf); NH Data Working Group (Littell); 2019 in-person technical session (including review of system data elements example MN E017/CI-18-253 Otter Tail Power Dist Sys Planing) conducted at the PUC . Technical data requirements including the lits or required data elements will also be informed by national regulatory experts and research including the recent paper Metrics to Measure the Effectiveness of Electric Vehicle Grid Integration RAP May 2020 David Littell, Jessica Shipley and Megan O'Reilly pg 6.

Source: IR 15-296; Metrics to Measure the Effectiveness of Electric Vehicle Grid Integration RAP May 2020

Notes: IR 15-296 Staff "Staff compiled a list of baseline system data to better inform stakeholder input and set accurate baselines regarding utility system data, suggesting such data should be available prior to IDP development

OCA 9.1B: : Provide a secure Interface to an external Baseline System Data Reporting Tool that accessed Data Services in the underlying Platform

Type: [Data Model use case] [Data Collection use case]

Description: The SB284 platform, interfaces, and versioned data model shall support and integrate with the supported external IT system - Baseline Utility System Data Reporting Application/Tool. Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source: IR 15-296; Metrics to Measure the Effectiveness of Electric Vehicle Grid Integration RAP May 2020

Notes: IR 15-296 Staff "Staff compiled a list of baseline system data to better inform stakeholder input and set accurate baselines regarding utility system data, suggesting such data should be available prior to IDP development

OCA 11A: Data and Datasets that support Whole Building Benchmarking (EPA Green Buildings)

Type: [Data Model use case] [Data Collection use case]

Description: The data platform will have the capability to collect and manage required data elements to perform whole building benchmarking including but not limited to electric and natural gas. The data requirement technical specification will be informed by EPA Energy Star data specifications.

Source: Reference EPA Portfolio Manager Green Power Technical Document

Notes:

OCA 11B: Provide a secure Interface for an external EPA Energy Star Benchmarking Platform to access data and Data Services in the underlying Platform Data

Type: [Interface/CORE6B use case]

Description: The data platform will perform automated uploads of data to an external IT system - EPA Energy Start Benchmarking platform / Portfolio Manager. SB284 will integrate the Portfolio Manager interface (webservice) reference Green Buildings with Energy / DG - Portfolio Manager. Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source: EERS 3 Year plan, Discussion with DOE Energy Star Program management

Notes:

OCA 12A: Data and Datasets that support and share Real Time Granular Data from external Real Time Data Systems

Type: [Data Model use case] [Data Collection use case]

Description: The data platform shall load, process and share real time energy data.

Source: IR 15-296

Notes: Ref 4/3/2020 OCA Use Case Proposal b 50

OCA 12B: Provide a secure Interface for an integration to external Real Time Data System to access Data Services in the underlying Platform

Type: [Interface/CORE6B use case]

Description: The SB284 platform, interfaces, and versioned data model shall support and integrate with the supported external IT system - a Real Time Data Platform. Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source: IR 15-296

Notes: Ref 4/3/2020 OCA Use Case Proposal b 50

OCA 13A: Data and Datasets that Contain and share Complex Metering Information for a 900 Rules Metering Compliance Reporting Tool .

Type: [Data Model use case] [Data Collection use case]

Description: The platform will have the capability to track and report configuration of deployed assets on the distribution grid - customer meters. Deployed assets (customer meters) shall be cross referenced with appropriate tariffs and programs in effect for the specific meter. The platform shall be capable of generating regulatory report that documents the metering capability at each premise where 900 rules apply (NEM tariff).

Source: PUC 900 Rules

Notes: Data in the report can be used to ensure compliance with specific sections of rules covering metering, for example "small customer-generators subject to the standard net metering tariff shall have a single net meter that..."; "Large customer-generators shall have a bi-directional metering systems...over intervals..."

OCA 13B: Provide a secure Interface for an external 900 Rules Compliance Tool to access Data Services in the underlying Platform

Type: [Interface/CORE6B use case]

Description: The SB284 platform, interfaces, and versioned data model shall support and integrate with the supported external IT system - 900 Rules Compliance Reporting App. Data transmission protocols,

file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source: PUC 900 Rules

Notes: For example “generator manufacturer, model name ad number”, “phases”, “power rating generation output”, “inverter manufacturer/ model” , “battery backup”.

OCA 13C: Data and Datasets that track Grid Asset ownership (including 900 Rules Application section on ownership) to support an external Distribution Grid Asset Analytics Tracking Tool

Type: [Data Model use case] [Data Collection use case]

Description: The data platform shall be capable of tracking ownership of grid assets including distributed generation & DER assets including DERs associated with 900 Rules.

Source: PUC 900 Rules, Use Case discussions.

Notes: grid assets (meters, sensors, storage, etc.) are owned.

OCA 13C2: Provide a secure Interface for an external Distribution Grid Tracking Tool to access Data Services in the underlying Platform.

Type: [Interface/CORE6B use case]

Description: The SB284 platform, interfaces, and versioned data model shall support and integrate with the supported external IT system - Distribution Grid Tracking Tool . Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source: PUC 900 Rules, Use Case discussions.

Notes: grid assets (meters, sensors, storage, etc.) are owned.

OCA 14: Single dataset containing energy and energy related data from multiple utilities - example dataset of three utilities operating in Pembrook NH

Type: [Data Model use case] [Data Collection use case]

Description: The platform will generate a single dataset containing energy and energy related data relative to Eversource, Unitil, and Liberty - all currently serving customers located in Pembrook NH . (support Community Choice Aggregation CCA Shared Services model)

Source: CCA requirement

Notes: Reference attached 4/3/2020 OCA Use Case Proposals bates 43

OCA 15: Generate circuit level granular data and dataset of deployed DERs linking DERs to circuits on Utility Host Capacity Map.

Type: [Data Model use case] [Data Collection use case]

Description: The platform shall contain required data and Report deployed DERs, by circuit as displayed on Utility Host Capacity Map. The platform shall be capable of generating a dataset optimized for reporting of DERs on a specific circuit.

Source: 1) "Information on DER that is already connected to the distribution network …or level of capacity constraints, would allow consumers to determine whether to make long term investments in color panels, batteries, demand response o other forms of DER." (Economic Regulatory Framework Review 2019 Report / Integrating DER For the Grid of the Future); 2) IR 15-296 Grid Mod docket

Notes: (enable citing analysis 3rd parties.)

OCA 16: Data and Datasets that contain data required for an external PUC Rule 14 Calculation Tool. - Host Facility Generation Report

Type: [Data Model use case] [Data Collection use case] [Interface/CORE6B use case]

Description: The data platform and data model shall be capable of tracking and processing (OCA Use Case CORE 06) information provided in Host's Annual Report. The platform shall be capable of generating a dataset providing the energy and energy related data elements required in calculations.

Source: N.H. Code Admin. R. Puc 909.10

Notes: PUC Rule 909.10: 1) - for example " the total electricity generated by the host's facility, the host's load, the load of each member used to offset the host's generation, and the combined load of all the members"; "total electricity generated by host's facility..report suggested by Eversource)

OCA 17A: Data and Datasets that support an external Demand Reduction Dashboard Regulatory Dashboard ACEEE , Regulatory Certainty

Type: [Data Model use case] [Data Collection use case]

Description: The data platform shall support the development of regulatory dashboard for regulators and public to promote transparency. "Reporting and data collection should be available to the public for accountability and transparency in the regulatory process"…. "commissions should create dashboards that are accessible, contextualized, clear and concise, comprehensive, and up-to-date" Synapse (Whited, Woolf, and Napoleon 2015). Fundamental energy data elements suggested by Synapse shall be analyzed , supported by the SB284 data model, and used for reporting.

Source: 1)Whited, Woolf, and Napoleon 2015); 2) Performance Incentive Mechanisms for Strategic Demand Reduction, American Council for an Energy-Efficient Economy

Notes: 1) Synapse "report and track key data Incentives that allow for regulatory certainty, adaptation, and transparency prove to be the most effective in producing results"; 2) OCA/PUC Engineering discussions

OCA 17B: Provide a secure Interface used by external Regulatory Reporting Dashboard to securely access SB284 Data Services

Type: [Interface/CORE6B use case]

Description: The SB284 platform, interfaces, and versioned data model will support and integrate with a supported external IT system - Regulatory Dashboard. Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source: 1)Whited, Woolf, and Napoleon 2015); 2) Performance Incentive Mechanisms for Strategic Demand Reduction, American Council for an Energy-Efficient Economy

Notes: 1) Synapse "report and track key data Incentives that allow for regulatory certainty, adaptation, and transparency prove to be the most effective in producing results"; 2) OCA/PUC Engineering discussions

OCA 18A: Data and Datasets that support an external Program Enrollment and Program Performance Payment Data Tracking Application- External Data Exchange Platform

Type: [Data Model use case] [Data Collection use case]

Description: The platform shall be capable of tracking and sharing performance payment data, from utility and from non-utility 3rd parties, over a multi-year period, for specific program such as Demand Response, (OCA UC #30, CORE 6), associated with specific locations / customers. Technical specification of the dataset to be informed by Program Manager. Dataset information shall be available, based on security and permission a communication channel between utilities and 3rd parties to share performance payment information. (Reference OCA Example #53 Transaction Tracking)

Source: DE 17-136,

Notes: DE 17-136 CENH testimony discusses performance payments.

OCA 18B: Provide a secure Interface to external Program Performance Payment Data Exchange Application that enables secure access to SB284 back end data services.

Type: [Interface/CORE6B use case]

Description: The SB284 platform, interfaces, and versioned data model shall support and integrate with the supported external IT system - Program Performance Payment Data Exchange. Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case). OCA Use Case CORE 6b

Source: IR 15-296

Notes: [CRUD INTERFACE]- DER/EE / BYOD-Battery (facilitate centralized IOU / Vendor communication channel)

OCA 19A :Data and Datasets to support external DER Registry and Tracking Application.

Type: [Data Model use case] [Data Collection use case]

Description: The data platform shall track process and organize DER deployments used for a Statewide DER Registrations Tool. The technical specification of DER data elements will be informed by a working group and also be informed by existing NH policy in 900 Rules (see OCA Example UC #13 Compliance Reporting 900 Rules)

Source: Ref OCA Example UC #3 Green Button, sequence diagram 3 Step 6a at bates 33 and bates 46

Notes:

OCA 19B: Provide a secure Interface for an external DER Registration Tool to Access SB284 Data Services as a back end secure, standardized integrated, normalized data repository

Type: [Interface/CORE6B use case]

Description: The SB284 platform, interfaces, and versioned data model shall support and integrate with the supported external IT system - DER Registry Tracking Application. Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source: IR 15-296

Notes: Ref OCA Example UC #3 Green Button, sequence diagram 3 Step 6a at bates 33

OCA 20A: Data and Datasets that support an external DES Electric Vehicle Charging Infrastructure Program Reporting Tool

Type: [Data Model use case] [Data Collection use case]

Description: The data platform shall contain all required data and have capable of tracking and reporting energy and energy related data associated with the planned Direct Current Fast Charging Infrastructure project. The technical specification of EV charging dataset will be informed by a NH DES.

Source: OCA / DES meeting, review RFP

Notes: 3rd Party energy reporting required for NH DES program administration

OCA 20B: Provide a secure Interface for an external EV Charging Infrastructure Reporting Tool that Access SB284 Backend Data Services for its data collection needs

Type: [Interface/CORE6B use case]

Description: The SB284 platform, interfaces, and versioned data model shall support and integrate with the supported external IT system - NH DES Reporting Portal for EV Charging Infrastructure Program.

Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source: OCA / DES meeting, review RFP

Notes: 3rd Party energy reporting required for NH DES program administration

OCA 21A: Data and Datasets that support an external Renewable Energy Credit REC Tracking Tool - integrated.

Type: [Data Model use case] [Data Collection use case]

Description: The data platform shall have all required data and be capability of tracking Renewable Energy Credits (REC) for reporting ad analysis. Technical design of dataset will be informed by a technical working group.

Source:

Notes: REC Tracking , transaction

OCA 21B: Provide a secure Interface for an external Renewable Energy Credit tracking app to access SB284 backend data services for its integrated statewide data collection needs.

Type: [Interface/CORE6B use case]

Description: The SB284 platform, interfaces, and versioned data model shall support and integrate with the supported external IT system - Renewable Energy Credit Tracking Application. Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source:

Notes: REC Tracking, transaction

OCA 22A: Data and Datasets that support an external Liberty Battery Pilot Data Collection Tool - pilot analytics data

Type: [Data Model use case] [Data Collection use case]

Description: The data platform shall have all required data and capability to track energy and energy related data on the Liberty Battery Storage Pilot. Technical design of dataset will be informed by Liberty, Staff and Navigant.

Source: DE 17-189 Liberty Battery Storage Pilot

Notes: Provide reporting to 3rd party vendor Navigant

OCA 22B: Provide a secure Interface for an external Storage Pilot Reporting Tool to Access SB284 Backend Data Services for back end data collection needs

Type: [Interface/CORE6B use case]

Description: The SB284 platform, interfaces, and versioned data model shall support and integrate with the supported external IT system - Liberty Battery Pilot Reporting Portal. Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source: DE 17-189 Liberty Battery Storage Pilot

Notes: Provide reporting to 3rd party vendor Navigant

OCA 23A: Data and Datasets that organize and track DER statewide by type, by location (DER Index, Storage, Generation, EV...)

Type: [Data Model use case] [Data Collection use case]

Description: The data platform and data model shall track and provide reporting on statewide DER deployments including utility and non-utility, including location, DER type, energy data, capacity. Technical design of dataset will be informed by working group.

Source: 4/3/2020 OCA Use Case Proposal bates 46

Notes:

OCA 23B: Provide a secure Interface for an external Statewide DER Tracking Tool to access SB284 backend data services for its integrated statewide data collection needs

Type: [Interface/CORE6B use case]

Description: The SB284 platform, interfaces, and versioned data model shall support and integrate with the supported external IT system - Statewide DER Tracking App. Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source: 4/3/2020 OCA Use Case Proposal bates 46

Notes:

OCA 24A/10.1: Data and Datasets that combine and integrate both utility energy data and non-utility energy data, including real time data (EKM example), required by external Data Real Time Grid Data Analytics Tool

Type: [Data Model use case] [Data Collection use case]

Description: The SB284 platform will process energy data (OCA Use Case CORE 06b) received from authorized non-utility external IT systems - for example real-time data from EKM Metering (subject to approval under SB284 governance). Datasets received from non-utility external systems will be processed it conform with SB284 versioned data model. Once processed the non-utility data becomes available for analysis and authorized data sharing. The technical specification of uploaded non-utility datasets including fields, elements, granularity, hierarchy will be analyzed and transformed to conform to 100% to the SB284 versioned data model during processing.

Source: OCA Example UC #10a

Notes: Reference attached OCA Use Case Proposals b 50

OCA 24B/10.1: Provide a secure Interface for an external Real Time Grud Data Analytics Tool to Access SB284 Data Services

Type: [Interface/CORE6B use case]

Description: The SB284 platform will receive data using approved APIs of external IT system - EKM Metering as a potential example. Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source: OCA Example UC #10a

Notes: Reference OCA Use Case Proposals b 50

OCA 25A: Track and Report All (Statewide) Energy Efficiency Program Information, subsidized and non-subsidized

Type: [Data Model use case] [Data Collection use case]

Description: The platform shall maintain necessary data and be capable of creating and sharing a data set containing master lists of program information for programs offered by all utilities and non utilities for both subsidized and non subsidized programs.

Source: EE dockets

Notes: Program Information (lighting, DR, Clean Energy Fund, etc) is linked to SB284 energy measurement

OCA 25B: Provide a secure Interface for an external Program Tracking Portal to access (use) SB284 backend data services for its integrated statewide data collection needs

Type: [Interface/CORE6B use case]

Description: Title: Provide a secure Interface for an external IT system, including systems that are sources of EE Program Information, as well as applications seeking EE data for generating tracking reports, to use SB284 Back End Data Services.

Source: EE docket

Notes: Program Information (lighting, DR, etc) is linked to SB284 energy measurement

OCA 27A: Provide data services to enable next generation HPwES data tracking processes and software- eliminate significant existing data issues. (Opinion Dynamics recommendation section 5.2)

Type: [Data Model use case] [Data Collection use case]

Description: The data platform shall have capability generate datasets (using processed standardized data and versioned data model) and receiving datasets with future external HPwES systems. Data integration goal is to re-use SB284 data and integration capabilities to reduce costs associated with duplication of data and effort in EE programs. The technical design of SB284 data sets will be informed by the report of Opinion Dynamics, HPwES data and operational experts and the SB284 project team.

Source: "PAs should upgrade data tracking systems and require more consistent data tracking procedures across all CAAs" (Home Performance with Energy Star Program Evaluation Report 2016-2017 - DRAFT)

Notes: EE benefits

OCA 27B: Provide a secure Interface for an external RHPwES IT systems to access (use) SB284 backend data services for its integrated statewide data collection needs

Type: [Interface/CORE6B use case]

Description: The SB284 platform, interfaces, and versioned data model shall support and integrate with the supported external IT system - HPeES systems. Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source: "PAs should upgrade data tracking systems and require more consistent data tracking procedures across all CAAs" (Home Performance with Energy Star Program Evaluation Report 2016-2017 - DRAFT)

Notes:

OCA 28A: Provide Centralized Repository of Grid Codes (interconnection specification agreements by endpoint) to facilitate higher levels of DER integration (Pacific Northwest National Lab)

Type: [Data Model use case] [Data Collection use case]

Description: The SB284 platform and endpoint index (OCA CORE6) , will maintain grid codes (interconnection specification agreements) in a database table format. The platform shall be capable of generating endpoint grid codes datasets, for given circuit locations, for review and updating by

authorized power system architects and engineers. Data table and dataset design will be informed by DOE, PNNL, NH Utilities, PUC and other experts tasked with making the grid more distributed.

Source: Discussion with DOE; Architectural Basis for Highly Distributed Transactive Power Grids: Frameworks, Networks, and Grid Codes (US Dept Energy, JD Taft PNNL June 2016)

Notes: DER integration

OCA 28B: Provide a secure Interface for an external Grid Codes Interconnection Specification Portal to access (use) SB284 backend data services as its repository of Grid Codes at endpoint level

Type: [Interface/CORE6B use case]

Description: The SB284 platform, interfaces, and versioned data model shall support and integrate with the supported external IT system - Engineering Application Managing Interconnection Specification Agreements. Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source: Discussion with DOE; Architectural Basis for Highly Distributed Transactive Power Grids: Frameworks, Networks, and Grid Codes (US Dept Energy, JD Taft PNNL June 2016)

Notes: DER integration

OCA 30A: Centralized Data Source to NH Saves web application (program information)

Type: [Data Model use case] [Data Collection use case]

Description: The data platform shall maintain the master list of all programs (and program information on each program) offered in NH, including the program offered under the brand NH Saves. Data sharing will occur between NH Saves website and SB284 data platform.

Source: 4/3/2020 OCA Use Case Proposal bates 62

Notes: pending

OCA 30B: Provide a secure Interface for an external NH Saves Website to access (use) SB284 backend data services for its integrated statewide data collection needs

Type: [Interface/CORE6B use case]

Description: The SB284 platform, interfaces, and versioned data model shall support and integrate with the supported external IT system - NH Saves web application. Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source: 4/3/2020 OCA Use Case Proposal bates 62

Notes:

OCA 32A: Collect process share data and datasets (see OSI WAP RFP requirement) containing multi fuel customer and system energy data from multi utilities - data used to support partial data needs an external Weatherizing Program Data Tracking Platform

Type: [Data Model use case] [Data Collection use case]

Description: The platform will limited Data Sharing (back end data services) to WAP Data Platform / 2020 RFP. (Weatherizing Program Data Tracking - Partial centralization data in OTTER / Program Tracking DB / Surveyor ("Contractor Barriers" section 4.2.5 NH Home Performance Report

Source: OCA OSI discussions

Notes: reuse SB284 data to educe duplication of data and efforts in the energy efficiency field.

external Weatherizing Program Data Tracking Platform

OCA 32B: Provide a secure Interface for an external Weatherizing Program Data Tracking Platform to access SB284 backend data services for a portion of its integrated statewide data collection needs

Description: The SB284 platform, interfaces, and versioned data model shall support and integrate with the supported external IT system - OSI WAP Tracking Application. Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source: OCA OSI discussions

Notes: reuse SB284 data to educe duplication of data and efforts in the energy efficiency field.

external Weatherizing Program Data Tracking Platform

OCA 33: Collect process share data and datasets containing Clean Energy Fund usage information- transparency

Type: [Data Model use case] [Data Collection use case]

Description: The platform shall be capable of tracking Clean Energy Funds relative to technologies and programs envisioned including storage, Microgrids, EV Charging. Produce metrics.

Source: CDFA NH Clean Energy Fund Proposals

Notes: CDFA 9/6/2018 Proposal excerpt: "Strategies: Expand our data tracking to inform effective policy changes. Data collection should be taylored...report projects results in overall units of energy saved"

OCA 34: Conform to architectural concepts in NIST Privacy Framework v1-data life cycle-privacy

Type: [Data Model use case] [Data Collection use case]

Description: The platform will conform, be informed by, NIST Privacy Framework v1 - data life cycle.

Source: NIST Privacy Framework

Notes: pending

OCA 35: Support Green Button /OpenESPI privacy model separation of PII privacy

Type: [Data Model use case] [Data Collection use case]

Description: The Data Platform and data model shall support the Green Button /OpenESPI privacy model separation of PII dataset

Source:

Notes:

OCA 35: Provide multiple varieties of interfaces that allow an external application to use SB284 as either its full or partial back end data system.

Type: [Interface/CORE6B use case]

Description: The platform shall provide multiple varieties of technical interfaces, API architectures, Authentication models, protocols, CRUD access, and file types needed by the external software application in order to utilities SB284 underlying data according to an agreed service level agreement. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source: SB284 platform model

Notes: Multi-use platform model; enable numerous external data intensive platforms, dashboards, reporting tools,

OCA 36A: Perform Complex Data Aggregations

Type: [Data Model use case] [Data Collection use case]

Description: The versioned platform data model shall be capable of aggregating the granular energy and energy related data that has been processed and indexed into the platform. The data platform shall aggregate selected records using agreed complex selection criteria. Selection criteria for data aggregation includes, but is not limited to: geographic location, grid location, municipality, class, program enrollments , size, service type delivered to premise (fuel), energy provider, distribution utility(s) serving the location area / municipality, tariff, metering technology. Selected data will be transformed to a dataset, small and large, and delivered to the authorized external system. The technical specification of the dataset (list and hierarchy of the actual energy and energy related data

fields contained in the dataset) being shared shall be informed by technical working groups and shall conform to all applicable laws and policies including privacy.

Source:

Notes:

36. OCA 36B: Provide a secure Interface for an external Data Aggregation Portal to access (use) SB284 backend data services such as aggregation datasets

Type: [Interface/CORE6B use case]

Description: The SB284 platform, interfaces, and versioned data model shall support and integrate with the supported external IT system - an authorized Aggregation Platform. Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source:

Notes:

OCA 40A: Collect process share data and datasets containing Program Data & Enrollments - data used to support an external regulatory tool Statewide Programs and Program Customer Enrollments Portal relevant to educating, monitoring and regulating energy programs (subsidized and non subsidized) in New Hampshire

Type: [Data Model use case] [Data Collection use case]

Description: The platform shall generate a master report of all programs offered in NH, all enrollments in each program, program sponsor (example: utility offering, government, etc) for all programs including utility programs (subsidized energy efficiency, weatherize, NHSaves, etc.) and non-utility programs (3rd party Demand Response, etc) that are offered in NH .

Source:

Notes: “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, location, or premise

external; Statewide Programs and Program Customer Enrollments Portal; Regulatory Analytics Portal

OCA 40B: Provide a secure Interface for an external Statewide Programs and Program Customer Enrollments Portal (regulatory app) to access SB284 backend data services for its integrated statewide data collection needs

Type: [Interface/CORE6B use case]

Description: The SB284 platform, interfaces, and versioned data model shall support and integrate with the supported external IT system - a Program Analytic Reporting App. Data transmission protocols, file

formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source:

Notes: program evaluation tool

external; Statewide Programs and Program Customer Enrollments Portal; Regulatory Analytics Portal

OCA 41A: Collect process share data and datasets containing non utility grid generation infrastructure, for example ownership, capacity, location, circuit of Nashau Hydro Dam, - data used to support an external Non-Utility Asset Data Entry Portal

Type: [Data Model use case] [Data Collection use case]

Description: The platform shall collect process and share energy and energy related data associated with non utility assets including generation assets. For example, the platform shall be able to track production at a city or town owned hydropower dam, capacity, operator, production, RECs.

Source: NH Business Review The CCA Energy Supply Option (example City Nashua bid owned hydro generation)

Notes:

external Non-Utility Asset Data Entry Portal

OCA 41B: Provide a secure Interface for an external Non-Utility Asset Data Entry Portal to access (use) SB284 backend data services for its integrated statewide data collection needs

Type: [Interface/CORE6B use case]

Description: The SB284 platform, interfaces, and versioned data model shall support and integrate with the supported external IT system - a Non-Utility Asset Data Entry Portal. Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source: NH Business Review The CCA Energy Supply Option (example City Nashua bid owned hydro generation)

Notes:

OCA 42: Leverage AMI data - collect, process, integrate with other data, share multiple granular information data points and units of measurement generated by an Advanced Meter and Advanced Metering Infrastructure

Description: The data platform shall be capable of receiving, processing, indexing and sharing the multiple new types of data generated by advanced meters and their supporting communication infrastructures.

Type: [Data Model use case] [Data Collection use case]

Source: IR 15-296

Notes: future proof, AMI granular data enables many future external applications and processes improvements.

external Applications XYZ (applications fueled by granular robust AMI data)

OCA 43A: Collect process share data and datasets containing energy and energy related data from multi utilities - data used to support an external Consolidate Third Party Billing Application

Type: [Data Model use case] [Data Collection use case]

Description:The platform shall maintain necessary data and be capable of creating ad sharing a data set containing the data elements required by an external Billing Application.

Source: IR 15-296, RSA 53E

Notes: Reference 4/3/2020 OCA Use Case Proposal b. 7

external Consolidate Third Party Billing Application

OCA 43B: Provide a secure Interface for an external Third Party Billing Application to access SB284 backend data services for its integrated statewide data collection needs

Type: [Interface/CORE6B use case]

Description: The SB284 platform, interfaces, and versioned data model shall support and integrate with the supported external IT system - a Third Party Billing Application. Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source: IR 15-296, RSA 53E

Notes: Reference 4/3/2020 OCA Use Case Proposal b. 7

OCA 44A: Collect process share data and datasets containing residential generation metrics (by program, location, time) and related data to support an external regulatory tool -

Residential Renewable Electric Generation Incentive Program Payment Tracking & Compliance Tool (IR 15-302)

Type: [Data Model use case] [Data Collection use case]

Description: Track Program Incentive payments from programs including Residential Renewable Electric Generation Incentive Program. Technical specification of data to be informed by program manager.

Source: IR 15-302

Notes: automation of regulatory compliance

external Residential Renewable Electric Generation Incentive Program Payment Tracking & Compliance Tool

OCA 44B: Provide a secure Interface for an external Residential Renewable Electric Generation Incentive Program Payment Tracking & Compliance Tool to access SB284 backend data services for its integrated statewide data collection needs

Type: [Interface/CORE6B use case]

Description: The SB284 platform, interfaces, and versioned data model shall support and integrate with the supported external IT system - the Residential Renewable Electric Generation Incentive Program. Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source: IR 15-302

Notes: automation of regulatory compliance

external Residential Renewable Electric Generation Incentive Program Payment Tracking & Compliance Tool

OCA 45A: Perform Data anonymization and generate anonymized datasets from granular energy data contained in the platform

Type: [Data Model use case] [Data Collection use case]

Description: The data platform shall be capable of generating anonymized datasets using granular energy and energy related data contained in the platform. The technical specifications, algorithms, patterns and technologies used will be based on technical working groups. Privacy requirements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source: PUCO Power Forward requirement

Notes:

OCA UC 46A: Collect process share data and datasets (see Concord CEEC requirement) containing multi fuel customer and system energy data from multi utilities - data used to support an external Community Energy Research Portal relevant to community based Greenhouse Gas Research

Type: [Data Model use case] [Data Collection use case]

Description: The platform shall collect process and share data on a specific municipality, for specific time period (annual) needed to perform GHG analysis. Technical data specifications twill be informed by local community experts and may include : 1) Electrical usage totals (kwH), demand (kW), and amount billed ($) broken down by Residential,Commercial, Industrial, Municipal Government; 2) the amount of Default Energy Supply vs. the amount of purchasing electricity from a "competitive 3rd party supplier; 3) List of the top 20 C&I consumers and the amount of KwH consumed; 4) energy mix consumed in past two years (% natural gas, nuclear, landfill gas, oil, solar, wind, etc....); total therms consumed in the community (current and previous years, broken down by sectors.

Source: OCA meeting with Concord Energy and Environment Advisory Committee

Notes:

external Community Energy Research Portal

OCA 46B: Provide a secure Interface for an external Community Energy Research Portal, used by Concord CEEC, to Access SB284 Data Services as a back end secure, standardized integrated, normalized data repository

Type: [Interface/CORE6B use case]

Description: The SB284 platform, interfaces, and versioned data model shall support and integrate with the supported external IT system - a Community Energy Research Portal that provides research datasets to Towns and Cities in NH. Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source: OCA meeting with Concord Energy and Environment Advisory Committee

Notes:

external Community Energy Research Portal

OCA 47: Collect process share data and datasets containing granular time based related customer and system energy data to support an external Regulatory Data Analytics Reporting Tool for docket IR 20-004 to analyze proposed TOU EV rate designs.

Description: The data platform shall collect, process and report data used in analysis of EV tariffs underway in IR 20-004. The platform will provide granular datasets relating statewide energy and energy

related data associate with potential tariffs, programs and initiatives to promote price signals to the emerging EV market.

Type: [Data Model use case] [Data Collection use case]

Source: IR 20-004 EV Tariff, IR 15-296, OCA PBR use cases.

Notes:

external: Regulatory Data Analytics Reporting Tool for docket IR 20-004

OCA 48: Collect process share data and datasets containing a variety of performance metrics, tied to programs and utility, to support an external Performance Metrics Tracking Reporting Tool

Type: [Data Model use case] [Data Collection use case]

Description: The data platform shall support data collection and reporting of useful date metrics used in analysis of performance based rate making. Technical data specification to be informed working group and published research /papers of national PBR and data experts, some already familiar with NH grid modernization dockets - Tim Woolf (Performance Based Regulation in High DER future(Woolf)-LBNL Report); David Littell (Metrics to Measure the Effectiveness of Electric Vehicle Grid Integration RAP May 2020)

Source: IR 15-296, Performance Based Regulation in High DER future(Woolf)-LBNL Report; Metrics to Measure the Effectiveness of Electric Vehicle Grid Integration Littell- RAP May 2020)

Notes:

external Performance Metrics Tracking Reporting Tool

OCA 49: Collect process share data and datasets containing customer energy and energy related data by distribution circuit to support an external Distribution Grid Analytics Reporting Tool

Type: [Data Model use case] [Data Collection use case]

Description: The SB284 Platform will generate a single dataset of energy and non energy data occurring on a specific utility circuit or group of utility circuits during a specific time period. The data set can contain data t analyze granular energy and load profiles.

Source: IR 15-296

Notes:

Distribution Grid Analytics Reporting Tool

OCA 50A:Collect Data and Generate Datasets that support external application tracking Distributed Generation

Title: Generate Distributed Generation Analytics Dataset - Total Energy Generated and Exported by Grid Asset Type, Circuit, Time,Class,Program.

Type: [Data Model use case] [Data Collection use case]

Description: The platform shall maintain necessary data and be capable of creating and sharing a data set used for analyzing and reporting total energy generated and exported to grid by complex criteria including but not limited to Grid Asset Type, Circuit, Time,Class,Program.

Source: IR 15-296

Notes:

OCA 50B: Provide a secure Interface for an external Distributed Generation Reporting Application to access SB284 backend data services for its integrated statewide data collection needs

Title: Provide a secure Interface for an external third party DG Reporting Application to Use SB284 Data Services

Type: [UC Type3: Interface/CORE6B]

Description: The SB284 platform, interfaces, and versioned data model shall support and integrate with the supported external IT system - a Third Party Distributed Generation Reporting Application. Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Source: IR 15-296

Notes: May be part on SB284 Reporting Portal

OCA 51: All measurement data from snesor readings shall include a Measurement Data Quality Indicator.

Title OCA UC 51: Measurement Data Quality indicator

Description: The Data Platform shall contain a quality metric for all measurements processed (and shared). Data quality shall contain an indication of data quality that is supplied (mandatory) by the data source that is uploading the measurement(s) to SB284 data platform. The technical design of the data platform's data quality metrc will be informed by OpenESPI standard, and by data experts.

Type: [Data Model use case] [Data Collection use case]

Source: OpenESPI model

Notes: data quality, transparency

OCA 53A: Collect Data and Generate Datasets that support market transaction tracking application including location, premise, time, amount, program.

Title OCA UC 53a: Track Market Transaction [DATA]

Description: The Data Platform shall have capability to track Market Transaction - utility and non-utility associated with Programs (including incentive programs, see OCA #44) and grid assets. Technical specification of data requirements to be informed by transaction project team and SB284 project team

Type: [Data Model use case] [Data Collection use case]

Source: Net meter docket; 900 Rules; DE 15-301; City Lebanon/ discussion.

Notes:

OCA 53B: Provide a secure Interface for an external Transaction Tracking Tool to Access SB284 Data Services as a back end secure, standardized integrated, normalized data repository

Title OCA UC 53b: Track Market Transaction [INTEGRATION]

Description: The SB284 platform, interfaces, and versioned data model shall support and integrate with the supported external IT system - Market Transaction Tracking Applications. Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Type: [Interface/CORE6B use case]

Source: Net meter docket; 900 Rules; DE 15-301; City Lebanon/LIINES discussion.

Notes:

OCA 54A: Data and Datasets that contain value of a grid asset or transaction (DER, Premise, contract, etc) to support external Asset Value Tracking Tool

Title OCA UC 54a: Track value of grid assets and transactions [DATA]

Description: The Data Platform shall contain necessary data and have the capability to track the value of grid assets and market transactions relative to programs, grid assets and premises. Assets include any grid asset, such as a DER or smart grid infrastructure. Transactions include existing scenarios such as performance payments, as well as advanced scenarios such as contracts and transactive programs. Technical specification of data requirements to be informed by transaction working group and SB284 project team.

Type: [Data Model use case] [Data Collection use case]

Source: Net meter docket, 900 Rules, City Lebanon discussion.

Notes:

OCA 54B: Provide a secure Interface for an external Value Tracking Application to access SB284 backend data services for a portion of its integrated statewide data collection needs

Title: Provide a secure Interface to an external software tool that tracks value of grid assets using SB284 for its back end data services.

Description: The SB284 platform, interfaces, and versioned data model shall support and integrate with the supported external IT application - Asset Value Tracking tool . Data transmission protocols, file formats, and standards will be mutually agreed to by SB284 governance and external IT systems. Security, authentication, consent and other integrations elements will be informed by NH Data Access Framework policy (including cyber security) and Data Privacy Framework policies (reference OCA Master Use Case).

Type: [Interface/CORE6B use case]

Source: Net meter docket, 900 Rules, City Lebanon/ discussion.

Notes: for example Market Transaction Applications, Rebate Programs, Performance Payment Applications.