ADVANCED ENERGY ECONOMY
Transforming Policy. Expanding Markets.

July 23, 2021

Submitted Via E-Mail

New York State Energy Research and Development Authority
17 Columbia Circle
Albany, NY 12203

Dear IEDR Team at NYSERDA,

Advanced Energy Economy (AEE)[1] and Advanced Energy Management Alliance (AEMA)[2] commend the DPS and NYSERDA for their visionary thinking and ongoing efforts in unlocking data for decarbonization and transforming NY's energy use.

The Integrated Energy Data Resource (IEDR) has the potential to create unrealized value from relationships between data sets and to leverage new insights from data to achieve more impact at a lower cost from publicly-funded programs. It can also catalyze privately-funded market-based activity that can independently drive progress toward state clean energy and customer empowerment goals.

In evaluating use cases, we found it difficult to individually identify and connect the value of specific datasets to particular end uses. Most data sets have a variety of uses which can multiply when connected to other data sets. Because of this, we have attempted to provide use cases as broad categories with common data needs that have a large number of related end uses. By focusing on data sets with a high level of cross-cutting applicability, the stage 1 functionalities of the IEDR can enable a large and meaningful number of end uses without being overly prescriptive.

Our broad use cases are briefly described below:

Market Development – This use case provides data and outreach opportunities to qualified users of the IEDR to help identify potential customers that could benefit the most from their services. The

[1] AEE is a national business association representing leading companies in the advanced energy industry. AEE supports a broad portfolio of technologies, products, and services that enhance U.S. competitiveness and economic growth through an efficient, high-performing energy system that is clean, secure, and affordable.

[2] Advanced Energy Management Alliance ("AEMA") is a trade association under Section 501(c)(6) of the federal tax code whose members include national distributed energy resource companies and advanced energy management service and technology providers, including demand response ("DR") providers, as well as some of the nation's largest demand response and distributed energy resources. AEMA members support the beneficial incorporation of distributed energy resources ("DERs") into wholesale markets for purposes of achieving electricity cost savings for consumers, contributing to system reliability, and ensuring balanced price formation. This filing represents the collective consensus of AEMA as an organization, although it does not necessarily represent the individual positions of the full diversity of AEMA member companies.

qualified companies would be allowed to search for load profiles of anonymous individual customers that meet certain criteria such as building types, geographical areas, rate classes, and service characteristics. If a company identifies a customer usage profile that would likely be improved by the company's service, the company can request contact with the customer through the IEDR, and the customer could respond at their discretion. For example, the IEDR could help demand response (DR) and energy storage companies identify customers with peaky usage that could benefit from demand shaving technologies, or assist energy efficiency companies with identifying customers with inefficient HVAC systems relative to their building size. The IEDR could notify customers of the potential to save on their energy bills and provide them with contact information of qualified service providers. The Market Development use case can also create averaged load profiles for an entire subset of customers (based on building type or service class, for example). This average load profile can help companies better tune their products to meet the needs of specific types of customers.

Distribution Services – The IEDR distributes the data necessary for companies to provide services associated with distribution-level programs and tariffs to existing customers and to help companies establish service for prospective customers that have already been identified. This use case provides customer energy use data necessary for load and bill analysis and provides system data relevant to utility programs (such as non-wires alternatives [NWAs] and demand response programs targeting locational value). This use case enables participation in utility programs or other types of utility/customer cost reduction opportunities.

Wholesale Services – The IEDR distributes data necessary to participate in NYISO programs and other wholesale transactions. This usage data may be similar to the data required for the Distribution Services use case, but with higher detail and lower latency. For all programs, the NYISO requires hourly billing grade data to be submitted within 12 hours. In most cases, non-utility metering must be installed to provide data with this low level of latency. However, if the IEDR can provide this data and eliminate the need for additional metering and communications equipment capable of providing revenue-grade meter data as well as provide telemetry for aggregations, the cost to provide these services can be reduced substantially for DER aggregators to comply with NYISO operating and settlement procedures.

We have applied a few assumptions to the use cases below.

- Though some use cases may require the same data at different level of detail, we have only listed the most detailed level of data. While users can take more detailed data and develop less detailed averages, greater levels of detail cannot always be accurately estimated when less granularity is provided.
- We recognize that not all data sets and functionalities listed in the use cases will be practical to implement in phase 1. However, phase 1 should be developed with an understanding of additional capabilities that can be added later as they become available. Missing data or capabilities should not necessarily prevent a use case from being prioritized, as partial capabilities can still be highly valuable.

We also recommend prioritizing the Market Development use case as it will provide new functionalities that are not possible today. Customer acquisition is currently a time-consuming and expensive process, and if it can be made more efficient, the soft costs of energy-related products and services can be substantially reduced. The Market Development use case may also be able to reach customers that might not be accessible through existing market channels. The Distribution Services and Wholesale Services use cases are also very important, but most of the functionalities described therein can currently be replicated with additional data acquisition and integration costs and through installing duplicative metering and IT systems. Addressing these use cases will provide significant benefits in reducing the soft costs of conducting business in New York, making energy related services more affordable to a greater number of New Yorkers, and increasing the roll of private investment in helping New York meet its ambitious environmental and clean energy goals.

We have provided the use cases as appendices to this letter as some answers were longer than the space provided in the original form. We appreciate the opportunity to provide this input to the ongoing development if the IEDR and look forward to working with DPS and NYSERDA as this process continues.

Sincerely,

Daniel Waggoner
Director, Advanced Energy Economy

IEDR Market Development Use Case

This use case provides data and outreach opportunities to qualified users to help identify potential customers that could benefit the most from their services. The qualified companies would be allowed to search for load profiles of anonymous individual customers that meet certain criteria such as building types, geographical areas, rate classes, and service characteristics. If a company identifies a customer usage profile that would likely be improved by the company's service, the company can request contact with the customer through the IEDR, and the customer could respond at their discretion. For example, the IEDR could help DR and energy storage companies identify customers with peaky usage that could benefit from demand shaving technologies or assist energy efficiency companies with identifying customers with inefficient HVAC systems relative to their building size. The IEDR could notify customers of the potential to save on their energy bills and provide them with contact information of qualified service providers. This use case can also create averaged load profiles for an entire subset of customers (based on building type or service class, for example). This average load profile can help companies better tune their products to meet the needs of specific types of customers.

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Peter Dotson-Westphalen, CPower (AEMA NY/NE Committee Chair),
Peter.d.westphalen@cpowerenergymanagement.com

2) Use Case Category

Select and enter one of the use case categories listed at the end of this form.

- DER Development and Use
- Transportation Electrification
- Building Electrification
- Energy Efficiency (EE)

3) Use Case Sub-Category

Select and enter one of the use case sub-categories listed at the end of this form.

- identifying, evaluating, and/or selecting potential DER locations;
- identifying, evaluating, and/or engaging potential DER customers;
- preparing and/or optimizing DER development plans;
- preparing and/or optimizing DER operating plans;
- designing, implementing, and/or operating DER aggregations;

4) What Question(s) Does the Stakeholder Seek to Answer with This Use Case?

Enter the questions that this IEDR use case could answer with information that would be useful to the Stakeholder.

- Which utility customers could benefit from additional products and services?
- Which utility customers have load profiles that match specific parameters?
- What is the average usage profile for customers…
    - In a rate class
    - In a geographical area
    - In a type of building
    - With a particular type of DER
    - With an EV
    - Business type
    - A combination of the above
- Which utility customers have abnormal usage for their building type?
- Which customers are likely to already have DER or EE measures?
- Which customers are likely open to adopting DER or EE?
- Which utility customers located in a capacity-constrained area could provide load reductions to the system?
- What utility customers are actively seeking solutions and have opted to make their load profiles available to qualified service providers?
- Which customers are located in areas of lower than average reliability?

5) What Information Should the Use Case Produce for the Stakeholder?

Describe the type(s) of useful information that the use case should produce.

- Anonymous customer load profiles that match specific parameters (load factor, building, consumption, peak, general location)
- Average usage/load profiles for specific types of customers or service parameters
- Load profiles with contact information for customers who have opted-in to sharing their usage data and solicit offers from qualified service providers
- Locational SAIDI and SAIFI data

(a) How Will the Stakeholder Use the Information Produced by This Use Case?

Explain how the Stakeholder will use each type of information produced.

- If a qualified service provider identifies an anonymous load profile that could be improved by a particular technology or service, the service provider can request that the IEDR contact the

customer or relay information to a customer. The identity of the customer will not be revealed until the customer responds affirmatively to the IEDR or to the service provider.
- Average load profiles for specific types of customers can help service providers develop solutions for customers in different situations and with different needs.
- Identifying customers in lower reliability areas (or relaying offers from qualified service providers to them) can help identify customers in the greatest need of backup or other onsite energy sources.

(b) What are the Minimum Necessary Attributes for Each Type of Information Produced?
For each type of information produced, specify the minimum necessary information attributes (i.e. precision, accuracy, granularity, etc.).

- Average or Anonymous customer hourly load profiles for a weekday and weekend in each month.
- Average or Anonymous customer hourly load profiles during the day when the customer's peak demand occurs
- Average or Anonymous customer hourly load profile during the day when the system peak occurs

6) How Should the IEDR User Interface Present the Information Produced by the Use Case?
Identify one or more useful ways to present the output information to the user (i.e. list, table, graph, bar chart, pie chart, map, ... , etc.). For example, a bar chart that shows the number of electric customers on each of several rates within a zip code.

CSV, XML, JSON and visual graph of load profiles, map of reliability data.

7) What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?
Identify the one or more types of data - from utilities and/or other sources - that the IEDR will need to analyze to produce useful information. See Appendix B of the Staff IEDR Whitepaper for a preliminary list of data types that could be collected and analyzed by the IEDR.

- Hourly customer usage data
- Identification of customers by service class, location, building type, DER, and/or EV adoption
- Reliability events with granular location data.

(a) What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?
For each type of data analyzed, specify the minimum necessary data attributes (i.e. precision, accuracy, granularity, age, ... , etc.).

- Hourly load profiles for 24 hour periods identified in 5 (b)
- Number of customers contained in an average if an averaged load profile is provided for a subset of customers

8) What Data Relationships Does the IEDR Need to Analyze for This Use Case?

Identify the one or more data relationships, if any, that must exist in the IEDR to enable the analyses needed for this use case. For example, the user may want to identify EV registrations and electric utility customer accounts that share the same street address.

- Hourly customer usage associated with customers with specific attributes, such as service class, location, building type, DER, EV adoption
- Location of customer connection to system and areas of locational system need

9) What Data Analysis Function(s) Does the IEDR Need for This Use Case?

Identify the one or more analytic functions that the IEDR must apply to each type of data used in this use case. For example, the use case may require the determination of averages, maximums, minimums, durations, and values greater/lesser/equal/between variables set by the user.

- Ability to search usage data for patterns, such as peaky usage and low load factor
- Ability to create averages of usage patterns for all customers that match certain search criteria
- Ability to identify abnormal usage patterns for customer types or building types

(a) What are the Minimum Necessary User Input Variables Needed to Enable a Useful Analysis?

For each analytic function, specify the one or more input variables that the user must provide (if any) to enable the desired analysis. For each type of input variable needed, specify the type(s) of condition to be applied in the analysis (i.e., greater than, equal to, less than, between, not between, etc.).

- Types of customer load profiles to be searched (service class, location, building type, type of DER employed, with an EV, business type)
- Matching criteria for load profiles (load factor greater than or less than x, total consumption greater or less than x, peak demand greater or less than x, coincident peak demand greater or less than x, ratio of off-peak consumption to peak consumption greater or less than x)

10) How Often Does the Stakeholder Expect to Employ This Use Case?

For example: sub-daily; daily; weekly; monthly; quarterly; semi-annually; annually ...

Monthly

11) How Does This Use Case Benefit the Stakeholder?

Describe how this use case would benefit its Stakeholder(s) and explain how the use case would enable those benefits. Benefits described and explained could include reduced cost, reduced time, greater revenue, reduced risk, increased understanding, ... , etc.

Customer acquisition costs are a high cost of doing business for service providers. The IEDR could substantially lower those acquisition costs by identifying potential customers to qualified service providers while preserving a customer's anonymity. As no service provider would have exclusive use of

the IEDR, those savings would be passed on to customers as service providers work to maintain competitive pricing.

12) Why Should This Use Case Be Prioritized From the Perspective of i) the Industry and ii) the Citizens of New York State?

Lowering the cost of customer acquisition for qualified service providers will lower the prices that companies can offer to customers. This improves customer benefits and allows more customers to participate, which in turn drives scale that can lead to further cost reductions. Good consumer protection and transparent marketing practices can be required before access to the IEDR is provided to service providers. Access to the IEDR can function as an incentive for good business practices.

Distribution Services Use Case

The IEDR distributes the data necessary for companies to provide services associated with distribution level programs and tariffs to existing customers and to help companies establish service for prospective customers that have already been identified. This use case provides customer energy use data necessary for load and bill analysis and also provides system data relevant to utility programs (such as NWAs and DR programs targeting locational value). This use case enables participation in utility programs or other types of utility/customer cost reduction opportunities.

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2) Use Case Category

Select and enter one of the use case categories listed at the end of this form.

- DER Development and Use
- Transportation Electrification
- Building Electrification
- Energy Efficiency (EE)

3) Use Case Sub-Category

Select and enter one of the use case sub-categories listed at the end of this form.

- preparing and/or optimizing DER development plans;
- preparing and/or optimizing DER operating plans;
- designing, implementing, and/or operating DER aggregations;
- monitoring and evaluating the deployment and use of DERs;

4) What Question(s) Does the Stakeholder Seek to Answer with This Use Case?

Enter the questions that this IEDR use case could answer with information that would be useful to the Stakeholder.

- What is the usage/generation profile of a specific customer?
- What are the customer's rates, charges, and bills?
- What is the performance of a particular measure?
- What services/technologies would provide the most benefit to a prospective customer?

- What are the utility service characteristics at the location?
- Can a customer help fulfill a utility need?
- Does a customer need additional reliability/resiliency at a location?
- Are there underperforming appliances at a particular location?
- Is the customer's location eligible for specific programs or higher incentive levels?
- Is a customer's usage abnormal given the specifications for the premises?
- How is the customer's adoption of technology or participation in a program performing?
- Following implementation/participation beginning, are there additional measures/services that can be offered to the customer to further enhance benefits?

5) What Information Should the Use Case Produce for the Stakeholder?

Describe the type(s) of useful information that the use case should produce.

- Interval (hourly, 15-min, 5-min, depending on utility's meter data collection capability and practice or the metering equipment's capability) kWh usage, with raw data published for each interval as soon as the utility can make it available, and billing-quality data (that has undergone the utility's Validating, Editing, and Estimation [VEE} process) available within 24 hours, including ability to toggle between levels of granularity for each account's data (i.e. roll up 5- or 15-min data to hourly). Sub-hourly data maintained for 1 year, hourly data maintained for 2 years.
- Customer bills with 2 years of history
- Applicable customer details and meter details for both for electric, gas and steam as specified in Appendix B of DPS Staff's Report on the IEDR
- Installed DER Details as specified in Appendix B of DPS Staff's Report on the IEDR
- Historical peak demand
- Monthly peak demand
- ICAP Tag
- Usage during specific time periods specified in utility rates (TOU periods, peak demand periods, locational peak demand periods, DR calls)
- Characteristics of customer's circuit/feeder (voltage, phase, capacity, hosting capacity)
- Time of peak demand on circuit for prior years
- Localized SAIDI and SAIFI data for a customer's circuit
- Type and size of dwelling/ building
- Applicable interconnection agreement information from host utility, including any specific limits to operation
- Installed Electric Vehicle Charger Details as specified in Appendix B of DPS Staff's Report on the IEDR

(a) How Will the Stakeholder Use the Information Produced by This Use Case?

Explain how the Stakeholder will use each type of information produced.

Measurement of customer demand/usage reductions and/or DER generation to determine:

- Performance of measures
- Fulfillment of contractual obligations
- Calculating compensation to/from customer
- Savings estimates/bill impacts
- Opportunities for operational improvements and/or further optimization of measures
- Verification of service provider's metering and data
- Participation in utility programs
- Need for additional reliability

(b) What are the Minimum Necessary Attributes for Each Type of Information Produced?

For each type of information produced, specify the minimum necessary information attributes (i.e. precision, accuracy, granularity, etc.).

- Interval (hourly, 15-min, 5-min, depending on utility capability and practice and metering equipment capability) kWh usage, with raw data published for each interval as soon as the utility can make it available, and billing quality data (that has undergone the VEE process) within 24 hours, including ability to toggle between levels of granularity for each account's data (i.e. roll up 5- or 15-min data to hourly). Sub-hourly data maintained for 1 year, hourly data maintained for 2 years.
- Customer bills with 2 years of history
- Applicable customer details and meter details for both for electric, gas and steam as specified in Appendix B of DPS Staff's Report on the IEDR
- Historical peak demand (max historical demand relevant for contract demand charges)
- Monthly peak demand
- ICAP Tag
- Usage during specific time periods specified in utility rates (TOU periods, peak demand periods, locational peak demand periods, DR calls)
- Characteristics of customer's circuit/feeder (voltage, phase, capacity, hosting capacity, historical/forecasted load data)
- Time of peak demand on circuit for prior years
- Localized SAIDI and SAIFI data for a customer's circuit
- Type and size of dwelling/ building
- Applicable DER interconnection agreement information from host utility, including any specific limits to operation
- Installed Electric Vehicle Charger Details as specified in Appendix B of DPS Staff's Report on the IEDR

6) How Should the IEDR User Interface Present the Information Produced by the Use Case?

Identify one or more useful ways to present the output information to the user (i.e. list, table, graph, bar chart, pie chart, map, ... , etc.). For example, a bar chart that shows the number of electric customers on each of several rates within a zip code.

Raw data in XML, CSV, JSON via API
Usage data in compliance with Green Button Connect
Customer utility electric and gas account, meter equipment information noted in responses to 5/5(b) should be presented in a table format, capable of being exported manually via CSV or through automated export via XML/API

7) What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?

Identify the one or more types of data - from utilities and/or other sources - that the IEDR will need to analyze to produce useful information. See Appendix B of the Staff IEDR Whitepaper for a preliminary list of data types that could be collected and analyzed by the IEDR.

- Customer usage data
- Utility billing data
- Utility rates, TOU, peak periods, DR calls
- Customer location, connection point
- Utility circuit locations
- Reliability event information for specific circuits
- Existing building data

(a) What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?

For each type of data analyzed, specify the minimum necessary data attributes (i.e. precision, accuracy, granularity, age, ... , etc.).

See answers to 5(b)

8) What Data Relationships Does the IEDR Need to Analyze for This Use Case?

Identify the one or more data relationships, if any, that must exist in the IEDR to enable the analyses needed for this use case. For example, the user may want to identify EV registrations and electric utility customer accounts that share the same street address.

- Usage/generation during particular rate period (TOU, peak, DR calls, etc.)
- Matching customer location, connection with utility circuit
- Identifying locational rates and programs available at customer's location (e.g., LSRV area, NWA)
- Calculating circuit level SAIDI and SAIFI with granular reliability event information
- Matching customer address with information on dwelling/premises (such as tax assessments)

9) What Data Analysis Function(s) Does the IEDR Need for This Use Case?

Identify the one or more analytic functions that the IEDR must apply to each type of data used in this use case. For example, the use case may require the determination of averages, maximums, minimums, durations, and values greater/lesser/equal/between variables set by the user.

The primary focus of this use case is making all data for a specific customer available in one place rather than providing analysis of data.

(a) What are the Minimum Necessary User Input Variables Needed to Enable a Useful Analysis?

For each analytic function, specify the one or more input variables that the user must provide (if any) to enable the desired analysis. For each type of input variable needed, specify the type(s) of condition to be applied in the analysis (i.e., greater than, equal to, less than, between, not between, etc.).

Customer lookup by account number, name, address. The IEDR would only display detailed data for customers that have already provided authorization to the service provider.

10) How Often Does the Stakeholder Expect to Employ This Use Case?

For example: sub-daily; daily; weekly; monthly; quarterly; semi-annually; annually ...

Usage data may be accessed sub-daily.
All other data may be accessed quarterly, less frequently if static, or when an update occurs.

11) How Does This Use Case Benefit the Stakeholder?

Describe how this use case would benefit its Stakeholder(s) and explain how the use case would enable those benefits. Benefits described and explained could include reduced cost, reduced time, greater revenue, reduced risk, increased understanding, ... , etc.

This use case allows a company to offer DER and/or services to customers and fulfill basic business functions with reduced cost. As the IEDR will be available to other companies as well, it is unlikely to provide a competitive edge to any particular company and instead will lower the costs of offering energy related services in general to customers in New York.

12) Why Should This Use Case Be Prioritized From the Perspective of i) the Industry and ii) the Citizens of New York State?

While most of these data sets can be collected separately from different sources, co-locating the data necessary to offer all potential services to a particular customer will reduce the cost of serving customers and improve the quality of services offered to customers. This can increase adoption of carbon reducing and money saving services, better leverage DER for system benefit, and help New York reach its decarbonization goals at reduced cost.

IEDR Wholesale Services

The IEDR distributes data necessary to participate in NYISO programs and other wholesale transactions. This usage data may be similar to the data required for the Distribution Services use case, but with higher detail and lower latency. For all programs, the NYISO requires hourly billing grade data to be submitted within 12 hours. In most cases, non-utility metering must be installed to provide data with this low level of latency. However, if the IEDR can provide this data and eliminate the need for additional metering and communications equipment capable of providing revenue-grade meter data as well as provide telemetry for aggregations, the cost to provide these services can be reduced substantially for DER aggregators to comply with NYISO operating and settlement procedures.

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Peter.d.westphalen@cpowerenergymanagement.com

2) Use Case Category

Select and enter one of the use case categories listed at the end of this form.

- DER Development and Use
- Electric Utility Function

3) Use Case Sub-Category

Select and enter one of the use case sub-categories listed at the end of this form.

- Preparing and/or optimizing DER operating plans
- Designing, implementing, and/or operating DER aggregations
- Monitoring and evaluating the deployment and use of DERs
- system operations;
- market enablement;
- market operations;
- metering

4) What Question(s) Does the Stakeholder Seek to Answer with This Use Case?

Enter the questions that this IEDR use case could answer with information that would be useful to the Stakeholder.

- What is the customer information required to complete a facility's registration with NYISO to enable wholesale market participation?
- What is the prior day hourly settlement-grade interval usage of a particular customer, which the service provider must report in aggregate to NYISO for participation in wholesale programs?
- What is the performance of the service provider's aggregation that participates in NYISO markets?
- Can the IEDR serve as real-time clearinghouse for operational data (6-sec telemetry for aggregations participating in NYISO markets), supplied by a third party's metering equipment and software, and provide a single point from which this data may be accessed by NYISO and/or utilities?

5) What Information Should the Use Case Produce for the Stakeholder?

Describe the type(s) of useful information that the use case should produce.

Substation Details (particularly NYISO Load Zone, Sub-Zone, Transmission Owner, and Transmission Node), Electric Service Point Details (including voltage levels), Electric Customer Details (including rate type), Electric Meter Details (including information not specified in Appendix B of DPS Staff's Report required for NYISO Meter Service Entity Meter Inventory process, including calibration testing information and dates of last test, PT/CT equipment installed), and Installed DER Details as specified in Appendix B of DPS Staff's Report

Billing quality hourly interval kWh usage data (in Hour Beginning format) with raw data published for each interval as soon as the utility can make it available, and billing-quality data (that has undergone the utility's VEE process) available less than 12 hours after the end of the prior day, with historical data provided for 1 year. Interval data should be in table form, with an ability to export/download to csv. Billing data should be in both PDF and exportable table formats.

*NYISO's DER Participation Model (DER PM), Behind-the-Meter Net Generator Participation Model (BTM-NG), and Energy Storage Resource Participation Model (ESR PM) require near real time 6-second telemetry data (not settlement quality data provided for next day reporting), but it is not expected that the IEDR would be able to provide this level of detail and low latency, at least in Phase 1, but could be considered for future development. However, where utility metering capable of reading instantaneous demand and that information can be made available to service providers through the IEDR, that should be considered.

Digitized Bulk Power Market Details as specified in Appendix B of DPS Staff's Report

(a) How Will the Stakeholder Use the Information Produced by This Use Case?

Explain how the Stakeholder will use each type of information produced.

The service provider will use this data to facilitate registration with the NYISO for participating in existing and planned wholesale market participation models, as well as updating this information (ex.

Transmission Node applicable to a customer's location) on an as needed basis (NYISO intends to update this information annually)

The service provider will use the billing quality data to comply with NYISO settlement requirements and avoid the need to install duplicative private metering to supply the data.

*If possible, future enablement of data provision through the IEDR to support transfer of telemetry data (not settlement data) necessary to participate in NYISO's market and provide a single point of access for both NYISO and utilities to obtain real-time operational information for aggregations,

The service provider will obtain interval data for each account registered with NYISO as part of an aggregation for submission by the service provider to the NYISO to comply with settlement data submission requirements. The NYISO will use the data to operate its DER programs and markets. The IEDR can make the data available to other relevant stakeholders, such as TOs and distribution utilities as necessary.

Distribution Utility review of DERs seeking to participate in NYISO's DER participation model as part of an aggregation will take place at the time of initial registration by an aggregator, and again as needed when there are changes to an aggregation (potentially monthly). This process will utilize data expected to be available in Phase 1, and the IEDR could function as a single point through which utilities can communicate any potential reliability/safety risks to the distribution system by an aggregation participating in NYISO's market, and also serve as a method by which intra-day notices are disseminated to aggregators of distribution system issues impacting a DER aggregation's wholesale market schedule and delivery. As much of this process is not yet defined, this may be considered for Phase 2.

(b) What are the Minimum Necessary Attributes for Each Type of Information Produced?

For each type of information produced, specify the minimum necessary information attributes (i.e. precision, accuracy, granularity, etc.).

See answer to question 5

6) How Should the IEDR User Interface Present the Information Produced by the Use Case?

Identify one or more useful ways to present the output information to the user (i.e. list, table, graph, bar chart, pie chart, map, ... , etc.). For example, a bar chart that shows the number of electric customers on each of several rates within a zip code.

Raw data in XML, CSV, JSON via API
Usage data in compliance with Green Button Connect
Ability to view customer accounts mapped by NYISO transmission node
Access to customer bills in PDF form as well as in table format (with ability to export for multiple customer accounts)

7) What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?

Identify the one or more types of data - from utilities and/or other sources - that the IEDR will need to analyze to produce useful information. See Appendix B of the Staff IEDR Whitepaper for a preliminary list of data types that could be collected and analyzed by the IEDR.

It would be beneficial to identify any tariffs or services provided at the retail level that may conflict with NYISO wholesale markets and would preclude participation in an aggregation that provides specific wholesale market services. This could potentially be addressed as part of Phase 2 after stakeholders define potential conflicts.

(a) What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?

For each type of data analyzed, specify the minimum necessary data attributes (i.e. precision, accuracy, granularity, age, ... , etc.).

Accurate billing quality hourly interval data (kWh usage) provided less than 12 hours after the end of the prior day, with historical data provided for 1 year

8) What Data Relationships Does the IEDR Need to Analyze for This Use Case?

Identify the one or more data relationships, if any, that must exist in the IEDR to enable the analyses needed for this use case. For example, the user may want to identify EV registrations and electric utility customer accounts that share the same street address.

- Matching customers with customer usage data
- Matching aggregations with individual participant data
- Matching customers with Transmission Nodes

9) What Data Analysis Function(s) Does the IEDR Need for This Use Case?

Identify the one or more analytic functions that the IEDR must apply to each type of data used in this use case. For example, the use case may require the determination of averages, maximums, minimums, durations, and values greater/lesser/equal/between variables set by the user.

No analysis is required

(a) What are the Minimum Necessary User Input Variables Needed to Enable a Useful Analysis?

For each analytic function, specify the one or more input variables that the user must provide (if any) to enable the desired analysis. For each type of input variable needed, specify the type(s) of condition to be applied in the analysis (i.e., greater than, equal to, less than, between, not between, etc.).

Search for customer information by name, address, account number, or other unique identifier. Customer usage data would only be returned in the search if the service provider is authorized to receive it.

Search for aggregations, participants within aggregations, and interval data for an entire aggregation and individual participants. This would require information from NYISO (aggregation ID/PTID) to be visible/searchable in the IEDR.

10) How Often Does the Stakeholder Expect to Employ This Use Case?

For example: sub-daily; daily; weekly; monthly; quarterly; semi-annually; annually ...

Daily, before noon every day to collect interval data for the prior day.

11) How Does This Use Case Benefit the Stakeholder?

Describe how this use case would benefit its Stakeholder(s) and explain how the use case would enable those benefits. Benefits described and explained could include reduced cost, reduced time, greater revenue, reduced risk, increased understanding, ... , etc.

Utility AMI metering is technically capable of replacing the need for duplicative metering installed by service providers. By reducing the latency of billing quality interval data, the IEDR can reduce the cost of wholesale market participation and grow the number of participants in aggregations providing services to wholesale markets.

The IEDR can also serve as a clearinghouse for aggregation data for authorized parties, such as TOs and distribution utilities. The network operators can access aggregation data to determine the impact of aggregation on their networks, assist with planning, or seek opportunities for additional resources that can support their networks.

If telemetry data could flow through the IEDR from aggregators to NYISO/utilities (and NYISO telemetered basepoint signals for dispatch instruction) this could eliminate the need for an aggregator to build systems to send/receive telemetry data with NYISO (via direct ICCP or SD/WAN with NYISO and/or each utility in which an aggregation is formed and represented by that aggregator), further reducing cost barriers for aggregators to provide services across the state.

12) Why Should This Use Case Be Prioritized From the Perspective of i) the Industry and ii) the Citizens of New York State?

Cost reductions associated with wholesale participation are likely to flow to customers rather than providers since multiple service providers will have access to the services of the IEDR and none will wield it as a competitive advantage. TOs and distribution utilities will likely benefit from access to aggregation level data that they might not otherwise have access to, and may be able to work with aggregators to better support their networks. And businesses and customers generally are likely to benefit from easier participation in wholesale markets and programs, increasing value from DERs and lowering customer costs.

Cover Sheet

Contributor: Ampion, PBC

Contact: Phil Gurule
Head of Platform Development
phgurule@ampion.net

Goals:

- Provide immediate and long term utility bill savings to as many customers as possible within the state of NY.
- Accelerate significant amounts of CDG capacity development in the state of NY.
- Provide CDG benefits to those that are currently not receiving it in New York.
- Establish a precedent and “platform” model for large, scalable CDG programs, including Opt-out, CDG-Only aggregations.
- Increase grid resiliency and reduce emissions through the expansion of CDG capacity.
- Establish comprehensive cross-utility data standards to support expansion of CDG initiatives in New York.

Use Case: New York CDG Data Support

Contributor: Ampion, PBC

Contact: Phil Gurule
Head of Platform Development
phgurule@ampion.net

Use Case Category:

DER Development and Use

Use Case Sub-Category:

Designing and implementing Community Distributed Generation (CDG) solutions

What Question(s) Does the Stakeholder Seek to Answer with This Use Case?

- Does the prospective subscriber qualify to participate in a CDG program?
- How much savings can be realized by the utility bill customer by participating in a CDG program?
- What is the annual spend of the utility bill customer with a breakdown between distribution and supply?
- What are the basic customer characteristics? (e.g. account number, rate class, load profile, engaged in third-party retail supply, average annual demand, multi-housing dwelling, consumption history, billing history)
- How is a subscribed utility customer performing? (e.g. total amount billed, consumption used, CDG credits applied in dollars and kWh, detailed bank activity, read and bill dates)

What Information Should the Use Case Produce for the Stakeholder?

- Customer and Utility Account Characteristics (Includes Consumption History and Billing History)
- Recurring Consumption and Billing Activity Coincident with Bill Cycle
- Recurring Utility Account CDG Activity Coincident with Bill Cycle

A. <u>How Will the Stakeholder Use the Information Produced by This Use Case?</u>

Ampion will request Account Characteristics, Consumption History and Billing History to properly determine subscriber qualification and properly assign and allocate a customer to a CDG site. Furthermore, Ampion can use this information to provide customer-specific environmental benefits and savings resulting from CDG participation. This is event-driven activity occurring numerous times throughout a given day driven from consumer inquiry and sales.

Ampion requires ongoing access to current consumption and billing values as well as CDG-specific utility account activity for established subscribers. This activity is

coincident with a given utility account's meter read and billing cycles as well as the meter read and billing cycles of the CDG sites. This data allows Ampion to 1) Review and maintain site allocations in order to maximize savings and CDG benefits for subscriber, 2) audit account-level CDG activity to ensure proper CDG program management, 3) properly bill the subscriber for CDG-related products, and 4) maintain subscriber's insight into benefits and savings CDG participation.

B. What are the Minimum Necessary Attributes for Each Type of Information Produced?
See Appendix A.

How Should the IEDR User Interface Present the Information Produced by the Use Case?

The IEDR is encouraged to provide a modern, secure, scalable, standardized API-based interface. A standardized API-based solution enables and promotes business activity which allows CDG programs to scale and thrive. Near real-time access to the full lifecycle of utility account-level information is imperative to meet consumer demand for CDG in New York.

Historically, New York utilities have integrated with retail energy suppliers via EDI. EDI has been made available to CDG participants during the early stages of the CDG program rollout in New York. EDI has proven to be inferior and insufficient to support CDG program activity. EDI provides only a subset of information required to support CDG subscribers. Account-level subscriber activity is often provided via spreadsheets and requires a cumbersome manual process to extract valuable information to support CDG operations. The current processes available are error prone and simply not scalable.

What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?

A. What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?
See Appendix A. The preliminary list of data proposed in Appendix B of the Staff IEDR Whitepaper contains a subset of data being proposed in this use case. There is overlap in "Electric Service Point Details" and "Electric Customer Details". The current "DER"-related data items do not appear to contemplate recorded generation activity. The IEDR is encouraged to consider Ampion's proposed list as it identifies key data elements required to properly serve New York CDG consumers.

What Data Relationships Does the IEDR Need to Analyze for This Use Case?

Ampion seeks point in time access to Electric Customer Details and Electric Service Point Details inclusive of CDG-related activity.

What Data Analysis Function(s) Does the IEDR Need for This Use Case?

A. What are the Minimum Necessary User Input Variables Needed to Enable a Useful Analysis?
There are no obvious data analysis functions sought at this time. It is Ampion's preference to receive unmanipulated data.

How Often Does the Stakeholder Expect to Employ This Use Case?

Sub-daily. CDG operations require ongoing access to consumer data to support the full lifecycle of a New York consumer.

Ampion will request Account Characteristics, Consumption History and Billing History to determine subscriber qualification and properly assign and allocate a customer to a CDG site. This is event-driven activity occurring numerous times throughout a given day driven from consumer inquiry and sales.

Ampion requires ongoing access to current consumption and billing values as well as CDG-specific utility account activity. This activity is coincident with a given utility account's meter read and billing cycles as well as the meter read and billing cycles of the CDG sites.

How Does This Use Case Benefit the Stakeholder?

Ampion is committed to CDG growth to support consumer demand in New York. The proposed use case is meant to serve as a preliminary proposal outlining data and level of access required to properly support CDG programs in New York. Ampion is actively operating in New York under far less than ideal data support conditions. The current information exchange will not scale and is an impediment to CDG growth New York. Establishing an industry-appropriate data integration solution ultimately benefits the consumer and Ampion's ability to serve them.

Why Should This Use Case Be Prioritized From the Perspective of i) the Industry and ii) the Citizens of New York State?

Consumers in New York demand access to renewable energy. In order to meet consumer demand, it is imperative that a well-established and robust data integration mechanism exists between CDG participants and New York utilities. To Ampion's knowledge, there has never been a collective group assembled to review data integration requirements to properly support CDG in New York. The state's statutory requirements are aggressive and not within sight at this point, in large part due to the challenge and uncertainty of obtaining qualified demand. Every megawatt of capacity developed in New York State represents a $1MM to $2MM investment in clean, safe and inexpensive local generation. Numerous studies have pointed to the significant economic development benefits of these portfolios. Scale accelerates development.

Appendix A

Recurring Consumption and Billing Activity

Frequency: On Demand (sub-daily for prospects); Coincident with Bill Cycle for established subscribers (approx. once per month)

Field	Definition	Unit or Data Type
Utility	Utility Name	Alphanumeric
Utility Account Number	Utility Name	Numeric
Parent Utility Account Number	Used when a Utility Customer has multiple utility accounts.	Numeric
Name on the Bill	Utility Customer Name	Alphanumeric
Service Address	Utility Account Service Address	Alphanumeric
Rate Class	Utility Assigned Rate Class	Alphanumeric
Read Cycle	Read cycle identifier for given utility account	Alphanumeric
Dual BIll	Used when account is on retail third party supply and third party bills separately for supply charges	Boolean
Has Third Party Retail Supplier	Indicates if utility account is signed up with third party retail supplier	Boolean
Meter Number(s)	Meter numbers associated with a given utility account.	Alphanumeric
Master Meter/Multi-Dwelling Housing	Indicates if utility account is a multi-dwelling unit	Boolean
Load Zone	NYISO load zone identifier	Alphanumeric
Onsite Cogeneration (Y/N)	Indicates if utility account has onsite cogeneration	Boolean
Onsite Net-Metering Credits (kWh)	Net Metering Credits due to onsite cogeneration	Numeric
Onsite Cogen meter reads (kWh)	Net metering consumption due to onsite cogeneration	Numeric
Meter Start Date	Meter reading start date for given bill cycle	mm-dd-yyyy
Meter End Date	Meter reading end date for given bill cycle	mm-dd-yyyy
Billing Date	Utility bill date	mm-dd-yyyy
Consumption Measurement	Consumption amount for given meter read (kWh, kW, or kVar)	Numeric
Measurement Unit	Measurement unit for given meter read	kW kWh kVar
Time of Use	Identifies whether meter read is on peak, off peak, intermediate, or all hours.	Peak Off Peak Intermediate All Hours
Fixed Customer Charge	Utility bill fixed charges	USD
Supply Charges	Supply charges (kWh) for given meter read	USD
Supply Demand Charges	Supply charges (kW) for given meter read	USD

Delivery Charges	Delivery charges (kWh) for given meter read	USD
Delivery Demand Charges	Delivery charges (kW) for given meter read	USD
Total Charges	Total charges on a given utility bill	USD
Late Payments/Balance Forward	Charges outstanding on a given utility bill	USD

Recurring Utility Account CDG Activity

Frequency: Coincident with Bill Cycle (approx. once per month)

Field	Definition	Unit or Data Type
Site	The name of the site	Alphanumeric/symbols
Generation Period Starting	The starting date for the host production period	mm-dd-yyyy
Generation Period Ending	The ending date for the host production period	mm-dd-yyyy
Site Total Generation	The total energy generated by the site during the production period	kWh
Account Number	Utility account number associated with the subscriber account	Alphanumeric/symbols
Allocation	Allocation percentage associated with the subscriber account	%
Allocated kWh	Total energy allocated to the subscriber account	kWh
Allocated Credits	Total bill credits allocated to the subscriber account	USD
Applied kWh	Total energy applied to the subscriber utility bill	kWh
Applied Credits	Total bill credits applied to the subscriber utility bill	USD
Ending Bank Balance	Total bill credits stored in the subscriber bank after the application of new bill credits	kWh or USD
Starting Bank Balance	Total bill credits stored in the subscriber bank before the application of new bill credits	kWh or USD
Bank Contribution	Total bill credits contributed to the subscriber bank after the application of new bill credits	kWh or USD
Bank Withdrawal	Total bill credits withdrawn from the subscriber bank after the application of new bill credits	kWh or USD
Subscriber Read Starting	The starting read date on the subscriber utility bill with the applied credits	mm-dd-yyyy
Subscriber Read Ending	The ending read date on the subscriber utility bill with the applied credits	mm-dd-yyyy
Subscriber Billed Usage	Total energy usage on the subscriber utility bill with the applied credits	kWh
Subscriber Billed Amount	Total dollar amount on the subscriber utility bill prior to the credits being applied	USD
Name on Bill	The name on the subscriber utility account	Alphanumeric/symbols
Rate Class	The rate class on the subscriber utility account	Alphanumeric/symbols
Read Cycle	The read cycle on the subscriber utility account	Alphanumeric/symbols
Credit Post Date	The date when the bill credits were posted to the subscriber utility account	mm-dd-yyyy

Integrated Energy Data Resource (IEDR) Stakeholder Use Case Survey Template

Comments Due: July 23, 2021 to iedr@nyserda.ny.gov

Backgroud and Overview:

The Integrated Energy Data Resource (IEDR) concept has developed through several years of prior work that ultimately led to the New York Public Service Commission's IEDR Order[1] on February 11, 2021. As the resulting IEDR program begins, NYSERDA asks stakeholders to help by identifying, characterizing, and prioritizing a preliminary set of potential IEDR use cases.

The IEDR is intended to eventually support many use cases, but development will begin with an initial set of five to ten priority use cases. These first use cases need to have practical value, urgency, and reliability that a novel data platform can deliver. At the outset, the descriptions of the initial IEDR use cases may be high-level, but specifications will become much more detailed as development proceeds. Also, to achieve a successful launch of the IEDR, we will consider how the initial set of IEDR use cases functions as a portfolio.

To aid our investigation of potential IEDR use cases, NYSERDA is asking stakeholders to use the form provided below to profile use cases that will be most valuable to them. To arrive at consistent profiles of potential use cases, stakeholders, together with the Program Manager and later with the participation of the Solution Architect, will subsequently discuss overlaps, similarities, and differences across their submissions.

Individuals and organizations comprising an industry sector and/or including multiple industry sectors are strongly encouraged to collaborate in the preparation of use case profiles.

The stakeholders' use case profiles will serve as a starting point for specifying and prioritizing IEDR use cases. As the IEDR program progresses, stakeholders may be asked to provide additional details. As potential use cases become better understood, stakeholders should expect their specifications to evolve through peer review.

In preparing these initial profiles, stakeholders should keep in mind that in its Order, the Commission stated that the IEDR is intended to enable use cases that materially improve and/or accelerate investment, operational, or regulatory decisions related to DERs, energy efficiency, environmental justice, or electrification strategies for transportation and buildings thereby facilitating one or more of New York State's REV and CLCPA objectives to accelerate New York's progress toward the climate and equity goals set for the state in the CLCPA and related legislation Orders issued by the Commission. IEDR use cases and their individual goals must be clearly aligned with these statewide commitments.

Instructions for Submitting Comments and Profiles:

Each submission of comments is to include:

- A cover sheet that contains
  - the name and contact information for each of the individual(s) or organization(s) on whose behalf the comments are submitted
  - what are your most immediate needs that the IEDR should address as soon as possible
  - what criteria should be used to prioritize initial use cases
  - if desired, a suggested definition of use case to be used for the IEDR
- A separate use case profile, consisting of responses to the topics below, should be completed for each potential use case presented by a stakeholder(s).
- Each profile should contain:

[1] See New York State Case 20-M-0082 – Strategic Use of Energy Related Data, (Order Instituting Proceeding) (March 19, 2020); and Case 16-M-0411, Summary Report: Distributed Energy Resource Market Enablement Data Needs (filed in the public comments section on January 6, 2020); and Recommendation to Implement an Integrated Energy Data Resource, Case 20-M-0082: Proceeding on Motion of the Commission Regarding Strategic Use of Energy Related Data, a New York Department of Public Service Staff Whitepaper (May 20, 2020).

- a name/description of the use case being profiled
- a response to each topic beginning with an indication of the topic being addressed, up to one page of narrative, and up to one additional page of diagrams, charts, tables, maps, and references (e.g., sources of key claims or evidence). Please specify dates, times, metrics, and quantities when they are essential.

Use Case Profile Form (using fillable form below is optional) :

1) Contributor Name & Contact Information

Enter the name(s), organization(s), and contact information for the contributor(s) of this profile form.

Dom Lempereur
Chief of Engineering at BlocPower
dom@blocpower.io

2) Use Case Category

Select and enter one of the use case categories listed at the end of this form.

Building electrification

3) Use Case Sub-Category

Select and enter one of the use case sub-categories listed at the end of this form.

Preparing and/or optimizing plans for developing building electrification solutions.

4) What Question(s) Does the Stakeholder Seek to Answer with This Use Case?

Enter the questions that this IEDR use case could answer with information that would be useful to the Stakeholder.

- What type of electrification technology(ies) should a building owner pursue on a given building?
- What is the minimum data set needed for establishing, with relative confidence, a budget for electrifying an existing building without extensive engineering work?

5) What Information Should the Use Case Produce for the Stakeholder?

Describe the type(s) of useful information that the use case should produce.

- All fuel types used in a building.
- Utility consumption for all fuel types and per account (monthly and 15-minute interval data).
- Current electric capacity per building as well as maximum available capacities (e.g. electric service available at building's point of connection).

(a) How Will the Stakeholder Use the Information Produced by This Use Case?

Explain how the Stakeholder will use each type of information produced.

Information produced will help to upgrade our existing electrification assessment platform, enabling better targeting of buildings that are candidates for electrification. It will also help in producing an initial scope of work, and in computing budgetary figures without having to collect site data.

(b) What are the Minimum Necessary Attributes for Each Type of Information Produced?

For each type of information produced, specify the minimum necessary information attributes (i.e. precision, accuracy, granularity, etc.).

Accuracy, and most up-to-date building information are the most important attributes. Information at a city block level or at a utility transformer level is not sufficient. Neither is monthly consumption data from utility bills as these are sufficiently accurate.

6) How Should the IEDR User Interface Present the Information Produced by the Use Case?

Identify one or more useful ways to present the output information to the user (i.e. list, table, graph, bar chart, pie chart, map, ... , etc.). For example, a bar chart that shows the number of electric customers on each of several rates within a zip code.

Raw data capture through an API would be sufficient since our existing platform already generates outputs graphs and other visualizations.

7) What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?

Identify the one or more types of data - from utilities and/or other sources - that the IEDR will need to analyze to produce useful information. See Appendix B of the Staff IEDR Whitepaper for a preliminary list of data types that could be collected and analyzed by the IEDR.

- Local utility transformer capacity, electric distribution type. Utilities often require retrofit project information in order to provide information on electric wires capacities that supply a building. This data should be available at anytime upon building owner's request so that building electrification can be assessed efficiently.
- All meter consumption data.

(a) What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?

For each type of data analyzed, specify the minimum necessary data attributes (i.e. precision, accuracy, granularity, age, ... , etc.).

- Accuracy and precision (15-min interval)
- Planned dates for local distribution upgrade (e.g., local utility transformer replacement)

8) What Data Relationships Does the IEDR Need to Analyze for This Use Case?

Identify the one or more data relationships, if any, that must exist in the IEDR to enable the analyses needed for this use case. For example, the user may want to identify EV registrations and electric utility customer accounts that share the same street address.

Recent requests to utilities for service upgrades, or actual projects such as on-site solar generation should be helpful for the use case. This could be for the building being assessed or any buildings connected to the same utility transformer.

9) What Data Analysis Function(s) Does the IEDR Need for This Use Case?

Identify the one or more analytic functions that the IEDR must apply to each type of data used in this use case. For example, the use case may require the determination of averages, maximums, minimums, durations, and values greater/lesser/equal/between variables set by the user.

Use case shall require maximum electric peak values per season (winter vs. summer) as well as duration of such peak values.

(a) What are the Minimum Necessary User Input Variables Needed to Enable a Useful Analysis?

For each analytic function, specify the one or more input variables that the user must provide (if any) to enable the desired analysis. For each type of input variable needed, specify the type(s) of condition to be applied in the analysis (i.e., greater than, equal to, less than, between, not between, etc.).

N/A

10) How Often Does the Stakeholder Expect to Employ This Use Case?

For example: sub-daily; daily; weekly; monthly; quarterly; semi-annually; annually ...

On a daily basis.

11) How Does This Use Case Benefit the Stakeholder?

Describe how this use case would benefit its Stakeholder(s) and explain how the use case would enable those benefits. Benefits described and explained could include reduced cost, reduced time, greater revenue, reduced risk, increased understanding, ... , etc.

We currently assess buildings for electrification with data scrapped off Open Data Source (public data) that need to be verified on-site. Accuracy and data on the most-current building conditions would help assess building electrification projects using AI to develop preliminary scope of work and budget with better accuracy without engaging expensive engineering resources.
Access to current utility data and analytic tools that can project consumption post-electrification will help building owners' confidence in electrification projects. Overall customer acquisition and project development costs can therefore be reduced.

12) Why Should This Use Case Be Prioritized From the Perspective of i) the Industry and ii) the Citizens of New York State?

Electrical service upgrades, both at the building service point and at the building load centers are for the most part complex to evaluate in terms of need and costs without engineering expertise. Prior to engaging a building owner in an electrification project, acquiring electric capacity data in the early stage of project development would instill confidence in all parties involved in a project. Project costs can be estimated with greater accuracy and more quickly than with today's methodology.

***The IEDR use case profiles submitted will be shared, and should contain no proprietary information.**

The profiles are regarded as preliminary working papers, and may be revised based on subsequent analysis and discussion. Advocates submitting profiles of similar use cases will work together with the IEDR development teams to come to a consensus. For consistency in development, the IEDR team may elect to format use case submissions into a stanbdardized format such as UML or BPMN.

Use Case Categories:

Enter one of the following use case categories in Part 2 of the survey form.

- DER Development and Use
- Transportation Electrification
- Building Electrification
- Energy Efficiency (EE)
- Electric Utility Function
- Gas Utility Function
- Local Government Function
- State Government Function
- Other (please describe)

Use Case Sub-Categories:

Enter one of the following use case sub-categories in Part 3 of the survey form.

- For DER Development and Use:
  - identifying, evaluating, and/or selecting potential DER locations;
  - identifying, evaluating, and/or engaging potential DER customers;
  - preparing and/or optimizing DER development plans;
  - preparing and/or optimizing DER operating plans;
  - designing, implementing, and/or operating DER aggregations;
  - monitoring and evaluating the deployment and use of DERs;
  - designing and implementing Community Distributed Generation (CDG) solutions; or,
  - other (please describe)

- For Transportation Electrification:
  - identifying, evaluating, and/or engaging existing EV owners/operators;
  - identifying, evaluating, and/or engaging potential EV owners/operators;
  - monitoring and/or evaluating EV acquisitions and uses;
  - identifying, evaluating, and/or selecting potential locations for EV charging facilities;
  - preparing and/or optimizing plans for developing EV charging facilities;
  - preparing and/or optimizing plans for operating EV charging facilities;
  - monitoring and/or evaluating the deployment and use of EV charging facilities
  - other (please describe)

- For Building Electrification:
  - identifying, evaluating, and/or engaging energy consumers and energy managers in existing buildings;
  - identifying, evaluating, and/or engaging energy consumers and energy managers in planned buildings;
  - monitoring and/or evaluating acquisitions and uses of building electrification solutions;
  - building energy benchmarking;
  - identifying, evaluating, and/or selecting opportunities for building electrification;
  - preparing and/or optimizing plans for developing building electrification solutions;
  - preparing and/or optimizing plans for operating building electrification solutions;
  - monitoring and/or evaluating the deployment and performance of building electrification solutions
  - other (please describe)

- For Energy Efficiency (EE):
  - identifying, evaluating, and/or engaging customers with existing EE solutions;
  - identifying, evaluating, and/or engaging potential EE customers;
  - monitoring and/or evaluating EE acquisitions and uses;
  - building energy benchmarking;
  - identifying, evaluating, and/or selecting EE opportunities;
  - preparing and/or optimizing plans for deploying EE solutions;
  - monitoring and/or evaluating the deployment and use of EE solutions;
  - designing and implementing Community Choice Aggregation (CCA) solutions
  - other (please describe)

- For Electric Utility Functions:
  - system planning;
  - DER interconnection;
  - system operations;
  - market enablement;
  - market operations;
  - customer programs and services;
  - regulatory/statutory compliance;
  - other (please describe)

- For Gas Utility Functions:
  - system planning;
  - system operations;
  - market enablement;
  - market operations;
  - customer programs and services;
  - regulatory/statutory compliance;
  - other (please describe)

- For Local Government Functions:
  - building energy benchmarking;
  - Community Choice Aggregation;
  - Community Distributed Generation;
  - facility siting and permitting;
  - environmental justice initiatives;
  - economic development;
  - planning and zoning;
  - other (please describe)

- For State Government Functions:
  - energy-related R&D;
  - regulatory research and planning;
  - regulatory oversight;
  - building energy benchmarking;
  - facility siting and permitting;
  - environmental justice initiatives;
  - economic development;
  - other (please describe)

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July 23, 2021

VIA E-MAIL

New York State Energy Research
and Development Authority
Integrated Energy Data
Resource Team
17 Columbia Circle
Albany, New York 12203

RE: Comments of the City of New York on the Integrated Energy Data Resource

To Whom It May Concern:

The City of New York ("City") submits these comments in response to the Integrated Energy Data Resource ("IEDR") Invitation to Stakeholders to Provide Comments Addressing the Identification and Prioritization of Use Cases issued by the New York State Energy Research and Development Authority ("NYSERDA").

Introduction

The City appreciates the opportunity to provide these comments on the creation and prioritization of the IEDR use cases. The IEDR is an important step toward removing barriers to energy data access, which has been a priority for the City for many years. The ability to access relevant and quality energy data is vital to the achievement of the State and City's concomitant public policy goals, as set forth in the Climate Leadership and Community Protection Act ("CLCPA") and *OneNYC*.[1] Indeed, the City has been at the forefront of leveraging energy data to achieve public policy goals for several years. For example, the City has several local laws that are driven by access to energy data, including:

- Local Law ("LL") 22 of 2008, wherein the City must prepare an annual greenhouse gas emissions inventory to measure changes in citywide and City government emissions;
- LLs 84 and 87 of 2009 and 133 of 2016, which require the City to collect data regarding energy and water usage benchmarking for the largest buildings in the City; and

[1] L. 2019, ch. 106; *OneNYC 2050: A Livable Climate* (issued April 2019), available at http://1w3f31pzvdm485dou3dppkcq.wpengine.netdna-cdn.com/wp-content/uploads/2019/05/OneNYC-2050-A-Livable-Climate.pdf ("OneNYC").

- LL 97 of 2019, which requires robust reductions in carbon emissions by large buildings, as confirmed through submission of energy usage data.

As such, the City strongly supports efforts to remove barriers to accessing energy data. The identification and creation of priority use cases for the IEDR is a critical first step in this endeavor.

The City also offers that, in addition to identifying and creating use cases for the IEDR, NYSERDA must also prioritize data quality. As an example, the processes currently implemented by utilities to provide direct data uploads for New York City's energy benchmarking program suffer from quality control issues. While these current methods are an improvement from the original practice of individual building owners transcribing bill data, they need consistent periodic review to ensure data quality. To be most useful, the data populating the IEDR should be, among other things, accurate, complete (*i.e.* no data points in a set missing), reliable, relevant, and up-to-date. Without requirements to ensure minimum data quality standards are met, the IEDR runs the risk of providing data that does not actually help to achieve its intended purpose(s). As such, the City implores NYSERDA to work with stakeholders to institute data quality standards for the use cases as it advances the IEDR.

Required Information

Name and contact information for each of the individual(s) or organization(s) on whose behalf the comments are submitted.

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What are your most immediate needs that the IEDR should address as soon as possible?

Access to data for small buildings (*i.e.* buildings under 25,000 square feet) is the highest priority for the City at this time. The benchmarking data that the City collects regarding large buildings has allowed the City to develop effective climate and energy policies that not only provide examples for other cities, but will also advance the City and State's climate goals. However, the City has limited building level insight with respect to its building stock that is under

25,000 square feet. Small buildings represent approximately 40% of the built floor area of New York City building stock (and a significant proportion of the State's overall building stock), and therefore this is a significant data gap. In order to meet climate goals in the most efficient and expeditious manner, data from these buildings are needed. Specifically, the City would be most interested in access to the hourly, daily, and monthly consumption of small buildings with respect to electricity, natural gas, and steam. This would allow the City to perform benchmarking in a similar manner for small buildings as it does with large buildings.

What criteria should be used to prioritize initial use cases?

As discussed above, the City and State have enacted a suite of aggressive objectives to mitigate the impacts of climate change. Achieving these objectives should be at the forefront of all policy decisions made by the State going forward, including those policies relating to data access. As such, the City recommends that those use cases that will have the largest impact on the ability of the State and City to achieve their climate goals in the near term should be prioritized. For example, decarbonizing the building sector is of critical importance to achieving the goals of the CLCPA and *OneNYC* as the building sector is one of the highest emitting sectors. Also, building infrastructure is often comprised of long-lived assets, increasing the urgency of addressing emissions from this sector. To achieve carbon neutral buildings, consumption data for buildings of all sizes must be readily available to assist in benchmarking and help target energy efficiency upgrade efforts.

In addition, it is important that NYSERDA prioritize use cases that will best contribute to a just and equitable transition toward carbon neutrality, including a 100% clean grid. Communities of color and low income communities have historically been disproportionately impacted by climate change and the use of fossil fuels. Any use cases that can help to ensure that these communities are not left behind in the transition to a greener energy system should be considered a top priority.

Finally, NYSERDA should prioritize those initial use cases that will provide a foundation for developing effective future use cases. It is likely that as the IEDR develops, use cases will become more complex and nuanced. When creating the initial use cases, NYSERDA should be mindful of potential future uses cases and consider what groundwork needs to be laid to best support these future uses of the IEDR. The initial use cases should be prioritized accordingly.

Suggested definition of use case to be used for the IEDR

The City recommends the following definition of use case: "A set of data points that can be used together in conjunction with other quantitative and qualitative data to meet a defined objective or answer a specific question."

Conclusion

The City applauds NYSERDA for its efforts with respect to the IEDR and looks forward to working with NYSERDA and other stakeholders on its further development.

Respectfully,

Devlyn C. Tedesco

Devlyn C. Tedesco

City of New York IEDR Use Cases

July 23, 2021

Use Case Profile Form # 1 - Small Building Data to Develop Building Typologies, Targeted Retrofit Strategies, and Decarbonization Programs and Policies

1) Contributor Name & Contact Information

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2) Use Case Category

Local Government Function

3) Use Case Sub-Category

Other - regulatory research and policy planning

4) What Question(s) Does the Stakeholder Seek to Answer with This Use Case?

a. How do buildings under 25,000 ft^2 ("small buildings") of different use types, age, size, location, and other qualities consume energy and contribute greenhouse gas emissions across New York City and New York State?
b. What representative small building typologies can best inform the development of standardized decarbonization retrofit approaches?
c. What are the biggest challenges and opportunities that small buildings may face based upon their existing conditions and what policies and programs will drive small building retrofits most effectively and efficiently?

d. What small buildings will benefit most from engagement with programs like the New York City ("NYC") Accelerator, which provides direct assistance to building owners considering efficiency and electrification retrofits?

5) What Information Should the Use Case Produce for the Stakeholder?

a. Describe the type(s) of useful information that the use case should produce.
   i. Whole building energy consumption data (electricity, natural gas, district steam, etc.) on an hourly, daily, and monthly basis for small buildings.
   ii. Current distributed energy resource ("DER") deployment by building.

b. How Will the Stakeholder Use the Information Produced by This Use Case?
   i. The City of New York ("City") will use this data to define representative small building typologies, decarbonization retrofit pathways for each, and consider policies, programs, and advocacy to facilitate these pathways.
   ii. The City will combine energy consumption and DER data provided by the IEDR with building details (age, location, use type, etc.) from NYC's Property Land Use Tax Output (PLUTO) data and other data sets. It will then find commonalities across attributes to define representative building typologies that characterize the roughly 1 million small buildings in the five boroughs. The City will then develop retrofit pathways for these typologies to better understand the options and costs for decarbonization and improving building health. This model of analysis is based on the work that the City has already done for buildings over 50,000 ft^2, in which it leveraged the energy benchmarking data available for roughly 30,000 of the largest buildings in NYC. This method is described in the One City Built to Last Technical Working Group Report: Transforming New York City Buildings for a Low-Carbon Future (https://www1.nyc.gov/assets/sustainability/downloads/pdf/publications/TWGreport_042120 16.pdf)
   iii. This use case will also inform targeting for the City's Accelerator program, which provides free, personalized guidance to make cost-saving, energy-efficiency upgrades and reduce carbon emissions in buildings in NYC. (https://www1.nyc.gov/site/nycaccelerator/index.page). Energy consumption data will also be considered along with air quality health impact data and other data sets to aid affordable housing buildings.
   iv. This use case could also support New York State's goal of a statewide energy benchmarking program. Access to consumption data is a foundational element for all the 30+ city and state level building benchmarking programs in the United States.

c. What are the Minimum Necessary Attributes for Each Type of Information Produced?
   i. Monthly whole building level energy consumption by energy type (electricity, natural gas, steam, etc.)
   ii. Monthly building level peak demand
   iii. DER type and nameplate capacity

6) How Should the IEDR User Interface Present the Information Produced by the Use Case?

a. Tabular data available for download, showing:
   i. Consumption in various time frames (hourly, daily, weekly, monthly, seasonal, annual) by property type and granular spatial level (i.e. census tract, block, lot, etc.).

ii. Peak electricity, gas, and steam demand in various time frames (hourly, daily, weekly, monthly, seasonal, annual) by property type and granular spatial level (i.e. census tract, block, lot, etc.).

7) What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?

a. Electric Service Point Details
    i. Average load
    ii. Average peak
b. Electric Customer Details
    i. Monthly billed energy
    ii. Monthly billed demand
    iii. Monthly billed service charge
    iv. Account start data
    v. Account end date
c. Electric Meter Details
    i. Date installed
    ii. Date removed
d. Gas Service Point Details
    i. Average demand
    ii. Average demand peak
e. Gas Customer Details
    i. Monthly billed energy
    ii. Monthly billed demand
f. Gas Meter Details
    i. Date installed
    ii. Date removed
g. Steam Service Point Details
    i. Average demand
    ii. Average demand peak
h. Steam Customer Details
    i. Monthly billed demand
    ii. Monthly billed energy
i. Steam Meter Details
    i. Date installed
    ii. Date removed
j. Installed DER Details
    i. DER type
    ii. DER nameplate rating
    iii. Historical power interval data
    iv. Date installed
    v. Date removed
k. Existing Building Details
    i. GIS coordinates
    ii. Building type
    iii. Building size
    iv. Zoning classification

8) What Data Relationships Does the IEDR Need to Analyze for This Use Case?

a. Building utility accounts and any installed DERs associated with them must be related to municipal tax lot numbers, for example NYC's Borough, Block, and Lot number (BBL). This includes buildings that have several utility accounts within a given building or tax lot number (for example, apartment buildings that are not submetered).

9) What Data Analysis Function(s) Does the IEDR Need for This Use Case?

The IEDR does not need to perform significant analysis in this use case. However, where the data does not meet the privacy thresholds that the Public Service Commission determines are applicable to the particular use case, it may need to aggregate account-level data into whole building aggregated data. Moreover, the use case should allow users to select data on the following attributes.

a. Desired time frame
    i. start date
    ii. end date
    iii. interval size
b. Desired building
    i. Tax lot number (BBL in NYC)
    ii. address
c. Energy type
    i. Electric
    ii. Gas
    iii. Steam
d. Energy consumption or peak demand
e. Installed DERs

10) How Often Does the Stakeholder Expect to Employ This Use Case?

a. The use of whole building consumption data defining small building typologies would be executed in the near term and would involve detailed analysis of the data over several months. During this period, the use case data would need to be accessed on a regular basis. Once typologies are developed, they could be recalibrated as needed, for example every three or four years.
b. The use of whole building consumption data to inform targeting for the City's Accelerator program could be performed monthly or quarterly. At a minimum, this program targeting analysis would be performed annually.
c. The use of whole building consumption data to facilitate additional policy and program development that would be ongoing.

11) How Does This Use Case Benefit the Stakeholder?

a. The City views this use case as foundational for policy and program development to reduce greenhouse gas ("GHG") emissions and improve environmental justice for the city's roughly 1 million small buildings. This building segment represents over 40% of the built floor area in NYC and 30% of citywide GHG emissions. Due to lack of data, these buildings are currently not well understood, and therefore, more challenging to target efficiently from a policy and program design perspective. As stated above, a similar data collection approach implemented by the City for roughly 30,000 of the largest properties has been a fundamental driver of NYC's landmark green

building and climate policies, including Local Law 97. Given that consumption data is already being collected and stored, this is arguably a relatively easy but critical step to developing a more targeted policy and programmatic approach to decarbonizing small buildings in NYC and across the State.

b. The NYC Accelerator program provides advisory services to buildings larger than 5,000 ft^2. This includes over 400,000 properties for which the City has no energy consumption data. This use case would allow the Accelerator program to target its services much more effectively and ensure that the public funding behind this program benefits a wider range of buildings. Critically, it also would help the program to seek to maximize impact in terms of GHG emissions reductions and improvement in environmental justice outcomes, both of which are goals stated by the City and the State's Climate Leadership and Community Protection Act ("CLCPA").

12) Why Should This Use Case Be Prioritized From the Perspective of i) the Industry and ii) the Citizens of New York State?

a. Emissions from buildings make up 56% of fuel combustion emissions in New York State.[1] 66% of NYC's citywide GHG emissions come from buildings, with roughly half coming from buildings below 25,000 ft^2.[2] It will be very difficult for the City and State to reach their GHG reduction goals without making deep emissions reductions in small buildings. Both the City and the State need to better understand how buildings consume energy in order to develop policies and programs to meet their GHG emissions targets and to ensure that currently allocated program funding is directed effectively. This use case will provide critical data to inform that understanding and will help meet the requirements of the CLCPA and the City's emissions goals.

b. This use case could also benefit energy efficiency providers by enabling them to provide more targeted offerings and services to building owners based on the typologies produced by this use case. As more targeted retrofit strategies emerge, residential and commercial tenants would also benefit from better building performance including improvements in cost, comfort, and air quality.

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1 NYSERDA, *New York State GHG Inventory 1990-2016* (issued July 2019) at S-6, available here: https://www.nyserda.ny.gov/About/Publications/EA-Reports-and-Studies/Greenhouse-Gas-Inventory.

2 New York City, *Inventory of New York City Greenhouse Gas Emissions*, available here: https://nyc-ghg-inventory.cusp.nyu.edu/.

Use Case Profile Form # 2 - Electricity Emissions Coefficient to Improve GHG Accounting, Building Performance Standards, and Carbon Management Strategies

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2) Use Case Category

a. Local Government Function

3) Use Case Sub-Category

a. Other - regulatory research and policy planning

4) What Question(s) Does the Stakeholder Seek to Answer with This Use Case?

a. What is the historic carbon intensity (t CO_2e/MWh) of the electric grid serving discrete regions/municipalities across the state at various time intervals on a marginal and average basis? (Described in further detail in response to 5(b), below)
b. What is the projected carbon intensity (t CO_2e/MWh) of the electric grid serving discrete regions/municipalities across the state at various time intervals on a marginal and average basis?
c. In what locations and at what times of day do energy reducing strategies have the greatest emission reduction benefits? What policies and programs can best target these strategies?

5) What Information Should the Use Case Produce for the Stakeholder?

a. How Will the Stakeholder Use the Information Produced by This Use Case?
    i. The City will use the electric GHG coefficient data to inform compliance with its Building Performance Standard (Local Law 97).
    ii. It will also use this value to quantify GHG emissions more precisely in its citywide and municipal GHG inventory reports. As the inventory is the foundation of the City's climate action planning, greater temporal granularity would also allow the City to design policies,

programs, and investment strategies that consider seasonal or intraday fluctuations in carbon intensity of the grid.

iii. The City would also use marginal emissions factor data to weigh investments in specific energy efficiency, DER, electrification, and renewable energy projects.

b. What are the Minimum Necessary Attributes for Each Type of Information Produced?

i. Real-time and historic average emissions factor - the average carbon intensity of the electric mix serving each zone in the state (include local generation and imported power) defined in terms of t CO_2e/MWh. This factor should be made available in real time by hour. A weighted average should be available for each day, month, season, and year for electricity serving each New York State Independent System Operator, Inc. ("NYISO") zone. The IEDR should include a reference map or list indicating which zone each municipality is in.

ii. Projected average emissions factor - the projected average carbon intensity of the electric mix serving each zone in the state (include local generation and imported power) defined in terms of t CO_2e/MWh. An annual average and seasonal factor should be projected for each year through 2040 based on the interconnection queue and/or generation and system planning studies performed by NYISO and NYSERDA.

iii. Real-time and historic marginal emissions factor - the marginal carbon intensity of the electric mix serving each zone in the state (include local generation and imported power) defined in terms of t CO_2e/MWh. This factor should be made available in real time by hour. An average should be available for each day, month, season, and year for electricity serving each NYISO Zone. The use case should include a reference map or list indicating which zone each municipality is in.

iv. Projected marginal emissions factor - the projected marginal carbon intensity of the electric mix serving each zone in the state (include local generation and imported power) defined in terms of t CO_2e/MWh. A marginal factor should be projected hourly on a day-ahead basis. Projections on how the marginal factor will fluctuate across seasons and in peak and off-peak periods should be made available through 2040 based on the interconnection queue and/or generation and system planning studies performed by the NYISO and NYSERDA.

6) How Should the IEDR User Interface Present the Information Produced by the Use Case?

a. Historic

i. Tabular data showing average CO_2e intensity of the electricity serving each municipality in the state on an hourly, daily, monthly, and annual basis

ii. Tabular data showing marginal CO_2e intensity of the electricity serving each municipality in the state on an hourly basis

iii. Bar charts for both average and marginal historic data showing CO_2e intensity over time frames that can be defined dynamically

b. Projection

i. Monthly, and annual projections of average CO_2e intensity of the electricity serving each municipality in the state through 2040

ii. Day-ahead hourly projections of average CO_2e intensity of the electricity serving each municipality in the state on an hourly basis

iii. Charts indicating projected seasonal marginal emissions factors

iv. Charts indicating projected marginal emissions for daily peak and off-peak periods.

v. Bar charts for both average and marginal projections showing CO_2e intensity in time frames that can be defined dynamically at various levels of time granularity.

7) What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?

a. Average factors
    i. Average real-time
        1. Power plant emissions and generation data
        2. Expected power flows
    ii. Average daily, seasonal, and annual
        1. Averages of computed real-time factors in various time intervals
    iii. Projected Average
        1. Modeled expectations of generation, capacity, and power flows through 2040
b. Marginal factors
    i. Real time
        1. Emissions associated with the last dispatched unit running to meet load in any given zone or region.
    ii. Projected
        1. Based on modeled expectations of the last dispatched unit running to meet load in any given zone or region.

8) What Data Relationships Does the IEDR Need to Analyze for This Use Case?

a. Power generation units, their fuel type, and their generation amounts and emissions rates must be related to their location (possibly NYISO Zone).
b. Power flows between regions and zones

9) What Data Analysis Function(s) Does the IEDR Need for This Use Case?

a. Municipality/population center served
b. Average or marginal emissions coefficient (t CO^2e/MWh)
c. Time frame (hourly, daily, monthly, etc.)
d. Projected or real-time/historic

10) How Often Does the Stakeholder Expect to Employ This Use Case?

a. Annual for GHG accounting and the City's building performance standard (LL97)
b. Real-time for compliance with the City's building performance standard (LL97)
c. Multiple times throughout each year: real-time and projections will be used for ad-hoc analysis policy research and assessing specific investments
d. Other stakeholders will benefit from this use case on an ongoing basis for GHG accounting and reporting

11) How Does This Use Case Benefit the Stakeholder?

a. Electrification of transportation, heating, and hot water is a critical path for New York State to meet the requirements of the CLCPA and for the City to meet its climate goals. Climate planning, policy, and programs all fundamentally rely on a clear understanding of carbon intensity. This use case would provide that understanding. The City will use the annual coefficient data to inform compliance with its Building Performance Standard (Local Law 97), which is expected to cut citywide emissions

10% by 2030. This use case will also help the City quantify GHG emissions more precisely in its citywide and municipal GHG inventory reports. As the inventory is the foundation of our climate action planning, data with increased temporal granularity would also allow the City to design policies, programs, and investment strategies that consider seasonal and intraday fluctuations in carbon intensity of the grid. Finally, the City would use marginal factor data to evaluate the benefits and costs of investments in specific energy efficiency, DER, electrification, and renewable energy projects.

12) Why Should This Use Case Be Prioritized From the Perspective of i) the Industry and ii) the Citizens of New York State?

a. A reliable understanding of the carbon intensity of electricity is key to the success of the City's Building Performance Standard (Local Law 97). This law is expected to drive a large amount of energy efficiency and electrification in the city's largest buildings. This use case should be prioritized to ensure that Local Law 97 has a robust foundation and that it can contribute to the State reaching the goals of the CLCPA. This will give the roughly 30,000 large properties impacted by Local Law 97 improved certainty and help drive targeted investment sooner.
b. The carbon intensity of the local energy supply is a critical tool in the City and State's climate action planning. Providing accurate and up to date emissions coefficients and projections of carbon intensity will enable municipalities throughout the state to perform more effective climate action planning and to assess investments in technologies to decarbonize their buildings and transportation sectors. This will deliver better policy outcomes for citizens across the state.
c. Greater public transparency of current and projected carbon intensity of local energy grids is important to inform residents across New York State about the climate impacts of energy use and the benefits of reducing energy consumption.
d. Increased demand side flexibility will be an integral part of the transition to a clean grid. The information provided in this use case will support industry innovation among demand-side service providers, by making it possible for them to offer dynamic demand management solutions that are responsive to time-based grid emissions signals.

Use Case Profile Form # 3 - Customer Cost Data to Improve Targeting for NYC Accelerator

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2) Use Case Category

a. Local Government Function

3) Use Case Sub-Category

a. Environmental Justice Initiatives

4) What Question(s) Does the Stakeholder Seek to Answer with This Use Case?

a. Where is energy cost burden highest within NYC and the State?
b. How does energy affordability vary across geographies and building types?

5) What Information Should the Use Case Produce for the Stakeholder?

The City's energy cost burden assessment found that there are approximately half a million low income families who are energy burdened (i.e. expend more than 6% of household income on utility costs) in NYC. (https://www1.nyc.gov/assets/sustainability/downloads/pdf/publications/EnergyCost.pdf)

This assessment was limited from the perspective of geography and building type because it relied on sampling data. As a result, this assessment cannot be used to develop targeted interventions around building types and geographies.

a. <u>How Will the Stakeholder Use the Information Produced by This Use Case?</u>
    i. The NYC Accelerator is a free energy assistance program run by the City. One of the Accelerator's main goals is to provide small building owners with financial and technical

assistance to drive energy and decarbonization retrofits. Information procured by this use case, in tandem with energy consumption and public health data, will be used to target building owners and residents most in need of assistance reducing energy cost burden through planning and completing energy efficiency projects.

b. What are the Minimum Necessary Attributes for Each Type of Information Produced?
    i. Building and/or utility account level energy consumption and cost data
        1. Total monthly/annual energy bill cost
        2. Monthly consumption meter read
        3. Rate classification for each record

6) How Should the IEDR User Interface Present the Information Produced by the Use Case?

a. Tabular data available for download showing building level
    i. Total monthly bill for electricity and natural gas
        1. Total cost of consumption for electricity and natural gas
            a. Monthly, annually
        2. Total cost of electricity and natural gas supply charges
            a. Monthly, annually
        3. Total cost of electricity and natural gas distribution charges
            a. Monthly, annually
        4. Consumption meter read
            a. Monthly, annually
        5. Rate classification for each record
b. Geospatial map
    i. Total monthly bill for electricity and natural gas
        1. Total cost of consumption for electricity and natural gas
            a. Monthly, annually
        2. Total cost of electricity and natural gas supply and distribution charges
            a. Monthly, annually
        3. Consumption meter read
            a. Monthly, annually
        4. Rate classification for each record

7) What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?

a. Electric Customer Details
    i. Monthly billed energy
    ii. Monthly billed demand
    iii. Monthly billed service charge
b. Gas Customer Details
    i. Monthly billed energy
    ii. Monthly billed demand
    iii. Monthly billed service charge

8) What Data Relationships Does the IEDR Need to Analyze for This Use Case?

a. Building utility accounts must be related to municipal tax lot numbers, for example NYC's Borough, Block, and Lot number (BBL). This includes buildings that have several utility accounts within a given building or tax lot number (for example, apartment buildings that are not submetered).

9) What Data Analysis Function(s) Does the IEDR Need for This Use Case?

a. Energy type
b. Time frame
c. Building and/or accounts

10) How Often Does the Stakeholder Expect to Employ This Use Case?

a. The NYC Accelerator will employ this use case at least semi-annually to target buildings for participation in the Accelerator. The use case will also inform implementation strategies at those buildings.
b. The NYC Accelerator will use data produced by this use case at least annually to improve and evaluate service offerings.
c. The City will use this use case on an annual basis to maintain a clear picture of energy affordability issues in NYC.

11) How Does This Use Case Benefit the Stakeholder?

a. The NYC Accelerator is a free energy assistance program run by the City. One of the Accelerator's main goals is to provide small building owners with financial and technical assistance to drive energy and decarbonization retrofits. This program will use energy cost data in tandem with energy consumption data to target building owners most in need and assist them in planning and completing energy efficiency projects. This data will also inform design of our programs to ensure we are assisting building owners and utility customers most in need.
b. The City will also use this information to assess energy affordability broadly and inform policy interventions to alleviate energy burden.

12) Why Should This Use Case Be Prioritized From the Perspective of i) the Industry and ii) the Citizens of New York State?

a. Energy costs disproportionately burden low-income households. A more granular understanding of cost data will allow the City to help building owners and utility customers most in need make energy efficiency upgrades that reduce utility costs, identify bill assistance opportunities, and connect those customers with useful policies and programs. Being able to monitor these costs on an ongoing basis will help the City and State achieve our goals of environmental justice and equity.

b. As the State, the City, and other municipalities develop programs to better support energy cost burdened residents, this will help grow the market for energy efficiency solutions. A more detailed understanding of the barriers facing cost burdened customers may also help the energy efficiency and DER providers develop innovative approaches to reaching this underserved population.

IEDR USE CASE TEMPLATE SUBMISSION "STATE OF DER DASHBOARD"

Submitted date, 20 June 2021

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Representing

- Members and NYSEIA leadership
- Industry Members and NYS Interconnection Technical Working Group leadership, including estimated 50 active participants representing 1000+ employees
- Industry Members and NYS Interconnection Policy Working Group leadership, including estimated 50 active participants representing 1000+ employees
- Industry Members and PSEGLI Interconnection Working Group leadership
- Many other non-profit organizations, a list of which can be provided as required or requested
- Justin Belle of LIPA has also voiced support for this initiative, including the need to clean up existing queue/connected data.
- The list can and will grow rapidly.

What are your most immediate needs that the IEDR should address as soon as possible

PREFACE: SIMPLY STATED, THIS DASHBOARD SHALL SERVE AS THE OFFICIAL NYS CONNECTED DER REFERENCE FOR THE ENTIRE POPULATION OF NYS, FOREMOST SHOWING WHETHER THE DER INDUSTRY CAN CONTINUE TO OPERATE AND FOR HOW LONG. ADDITIONALLY THIS SHALL BE AN OFFICIAL REPRESENTATION OF WHETHER WE ARE HITTING THE BENCHMARKS OUTLINED IN THE CLCPA. PRESENTLY THIS CLEAR AND CONCISE INFORMATION IS NOT PROPERLY COLLATED, REVIEWED, NOR EXIST ANYWHERE.

Forward: All information in this submission is drawn and also represented in the industry position whitepaper. Below is the first section.

Industry Position Summary

1. It is becoming increasingly challenging to connect DER to the grid, which will only increase at an increasing rate, evidenced by many things, including "closed" substations in various regions.
2. The DER industry is concerned that we are going to effectively run out of hosting capacity far sooner than any meaningful upgrades can be made via CLCPA processes, putting thousands of jobs and hundreds of companies at risk.
3. Baseline metrics are essential to understanding basic state of affairs and making informed decisions. Presently no NYS regional/global benchmarks are available.
4. Presently there is no ability to assess the rate of change or trending over time. Using rates and trending we can create a timeline and estimates for when we expect major issues to arise, and can respond accordingly.
5. We therefore request a joint industry & utility effort to produce a "State of DER Dashboard" as soon as possible. Industry requests data collection start of Q4, 1 October 2021, published on 1 November 2021.
6. The dashboard will provide critical data to inform all stakeholders of key areas of concern, trends, rates of change, and indications whether current or planned efforts are having any objective positive benefits.
7. This information is essential for influencing how and where to focus our collective efforts as interconnection challenges become more and more frequent.

What criteria should be used to prioritize initial use cases

With this dashboard we can know how long until we run out of hosting capacity, putting all of our jobs and all of the efforts by NYSERDA, industry, activists, etc, at risk. There is nothing more important in our opinion than this dashboard going live as soon as possible.

If desired, a suggested definition of use case to be used for the IEDR

As already titled in the whitepaper:
"State of DER Dashboard" Initiative

FORM QUESTION RESPONSES

1) Contributor Name & Contact Information

Enter the name(s), organization(s), and contact information for the contributor(s) of this profile form.

Please see cover page information.

2) Use Case Category

Select and enter one of the use case categories listed at the end of this form.

We understand that the request is that we select one category, but the information on this dashboard is cross cutting, and does not necessarily fit into any single category.

We believe that all of the following use case categories are most applicable to the "version 1" dashboard being suggested in the whitepaper. Below see the tie into each item:

- For DER Development and Use
- For Transportation Electrification
- For Building Electrification
- For Energy Efficiency (EE)
- For Electric Utility Functions
- For Local Government Functions
- For State Government Functions

3) Use Case Sub-Category

Select and enter one of the use case sub-categories listed at the end of this form.

- For DER Development and Use
    - Other example use case: The DER dashboard provides an estimate of how much longer until there is no more hosting capacity in a particular utility region.
    - Other example use case: If a utility has a high quantity of substations "closed to DER", then this is informative of serious concerns and heightened focus on that utility.
    - (many others)
- For Transportation Electrification
    - (the general numerical information provides a guide for what transportation electrification activities or development is most applicable in that region)
- For Building Electrification
    - (the general numerical information provides a guide for what building electrification activities or development is most applicable in that region)
- For Energy Efficiency (EE)
    - (the general numerical information provides a guide for what building electrification activities or development is most applicable in that region)
- For Electric Utility Functions
    - EVERY SUB CATEGORY USE CASE is informed by this general numerical information. This provides the general barometer to inform investment and how urgent that investment should be.
- For Local Government Functions

    - Please see yellow highlighted preface section above.
    - EVERY SUB CATEGORY USE CASE is directly or indirectly informed by this general numerical information. This provides the general barometer to inform how difficult it is to perform any grid connected DER activities.
- For State Government Functions
    - Please see yellow highlighted preface section above.
    - EVERY SUB CATEGORY USE CASE is directly or indirectly informed by this general numerical information. This provides the general barometer to inform how difficult it is to perform any grid connected DER activities.

4) What Question(s) Does the Stakeholder Seek to Answer with This Use Case?

Enter the questions that this IEDR use case could answer with information that would be useful to the Stakeholder.

1. How much DER is currently connected to the grid?
2. What is the rate of change of DER being connected to the grid?
3. What types of DER are being connected to the grid?
4. How much more DER can be connected to the current state of the grid?
5. Are investments being made to the grid keeping up with new DER connections to the grid? Or in other words, are the upgrades increasing hosting capacity?
6. What regions are most strained and cannot accept any more DER?
7. Are any regions "shut down" from connecting any more DER and why?
8. etc.

5) What Information Should the Use Case Produce for the Stakeholder?

Describe the type(s) of useful information that the use case should produce.

See exact request and formatting of information outlined in the whitepaper in these two sections:
Sample Website, "State of DER Dashboard" Metrics & Output
Benchmark Metrics List -- Definitions, Notes & Analysis of Each

(a) How Will the Stakeholder Use the Information Produced by This Use Case?

Explain how the Stakeholder will use each type of information produced.

Please see previous statements throughout this document.

(b) What are the Minimum Necessary Attributes for Each Type of Information Produced?

For each type of information produced, specify the minimum necessary information attributes (i.e. precision, accuracy, granularity, etc.).

Please see exact information requested, as already outlined in the two headings linked and highlighted above. The exact calculator methodology would be specified once key excerpts from the whitepaper are converted into an official procedural document.

6) How Should the IEDR User Interface Present the Information Produced by the Use Case?

Identify one or more useful ways to present the output information to the user (i.e. list, table, graph, bar chart, pie chart, map, … , etc.). For example, a bar chart that shows the number of electric customers on each of several rates within a zip code.

Please see exact information requested, as already outlined in the two headings linked and highlighted above. The exact calculator methodology would be specified once key excerpts from the whitepaper are converted into an official procedural document.

7) What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?

Identify the one or more types of data - from utilities and/or other sources - that the IEDR will need to analyze to produce useful information. See Appendix B of the Staff IEDR Whitepaper for a preliminary list of data types that could be collected and analyzed by the IEDR.

A hypothetical quarterly update process is outlined in this section of the whitepaper:
Hypothetical Quarterly Update Process
The IEDR could act as the aggregator/webmaster. The exact location of hosting this website is up for discussion and could also be hosted on the JU or DPS website. Industry has been trying to hold a meeting with leadership including NYSERDA, DPS, LIPA, & Industry to discuss this exact topic.

(a) What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?

For each type of data analyzed, specify the minimum necessary data attributes (i.e. precision, accuracy, granularity, age, … , etc.).

Please see exact information requested, as already outlined in the two headings linked and highlighted above. The exact calculator methodology would be specified once key excerpts from the whitepaper are converted into an official procedural document.

8) What Data Relationships Does the IEDR Need to Analyze for This Use Case?

Identify the one or more data relationships, if any, that must exist in the IEDR to enable the analyses needed for this use case. For example, the user may want to identify EV registrations and electric utility customer accounts that share the same street address.

The IEDR would namely act as the aggregator/webmaster as outlined in this section of the whitepaper:
Hypothetical Quarterly Update Process

9) What Data Analysis Function(s) Does the IEDR Need for This Use Case?

Identify the one or more analytic functions that the IEDR must apply to each type of data used in this use case. For example, the use case may require the determination of averages, maximums, minimums, durations, and values greater/lesser/equal/between variables set by the user.

Please see exact information requested, as already outlined in the two headings linked and highlighted above. The exact calculator methodology would be specified once key excerpts from the whitepaper are converted into an official procedural document.

(a) What are the Minimum Necessary User Input Variables Needed to Enable a Useful Analysis?

For each analytic function, specify the one or more input variables that the user must provide (if any) to enable the desired analysis. For each type of input variable needed, specify the type(s) of condition to be applied in the analysis (i.e., greater than, equal to, less than, between, not between, etc.).

Please see exact information requested, as already outlined in the two headings linked and highlighted above. The exact calculator methodology would be specified once key excerpts from the whitepaper are converted into an official procedural document.

10) How Often Does the Stakeholder Expect to Employ This Use Case?

For example: sub-daily; daily; weekly; monthly; quarterly; semi-annually; annually ...

It is expected that, once this dashboard is known, it will be accessed daily by perhaps hundreds of people daily, especially after a quarterly update.

11) How Does This Use Case Benefit the Stakeholder?

Describe how this use case would benefit its Stakeholder(s) and explain how the use case would enable those benefits. Benefits described and explained could include reduced cost, reduced time, greater revenue, reduced risk, increased understanding, ... , etc.

Please see previous responses.

12) Why Should This Use Case Be Prioritized From the Perspective of i) the Industry and ii) the Citizens of New York State?

Please see previous responses.

IEDR Use Cases

To: NYSERDA IEDR Team, iedr@nyserda.ny.gov,
July 2021

Cover Letter

Dear IEDR Team,

Please find below high level comments and documents as our initial input to the IEDR Use Case input gathering effort. This information is meant to be complementary to the comments submitted by Mission:data, whose membership includes several Flux Tailor clients.

The most immediate needs that the IEDR should address as soon as possible:

Access to Energy Data:

1. Automated access to bill images and bill metadata - develop a specification for a standard for New York utilities and implement in existing ConEd/National Grid APIs in preparation for creating a common gateway to this data via IEDR,
2. An authoritative, regularly refreshed set of property data(including parcel and building data) for New York State, with building identifiers and building types used consistently across the state that can be referenced from energy data at the property to ensure a complete set of data.
3. Representative 8760 time series with hourly load profiles by climate zone, customer class and customer usage profile(ex.: with or without electric baseboard heating or ground/air source heat pumps) that can be used as baseload where using real data is not available or feasible.
4. Representative 8760 time series with hourly solar PV load shapes by climate zone.
5. Structured data with unbundled charges and 24hr x summer/winter weekday/weekend&holiday rate period schedule, plus tariff rules, for example which days are considered holidays, what if any baseline allowances or other thresholds for "tariff blocks" exist, and for a given customer and tariff, what if any tariff alternatives exist.
6. Easier customer onboarding workflow:
    a. Means of accessing raw customer data authorized and requested by property/building identifier

b. Means of accessing customer data via asynchronous, delegated access — allowing for "Nth" party data access scenarios, see Flux Tailor & Mission:data's white paper "3rd Parties and Beyond: Promoting Innovation by Energy Data Sharing with Nth Parties." and below excerpt diagram.

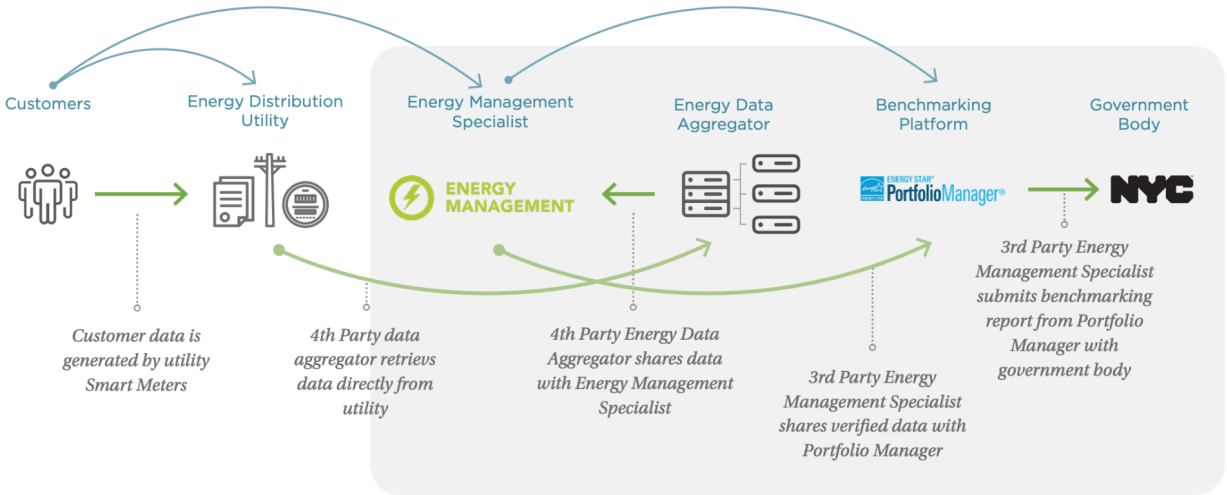
Energy Data Standards Work:

1. **Access to machine readable utility bill data** — see included Green Button Bills Initiative concept paper submitted to NYSERDA in August 2020.
2. **Integration with e-invoicing and faster payments** — allowing for innovative invoicing and faster payments by multiple market participants, enabling split distribution and supply billing and payment, on bill financing, etc.. Flux Tailor is involved in the Business Payments Coalition (BPC)'s Semantics Working Group and has initiated collaboration between the BPC and the OpenADE (Green Button) Task Force.
3. **Machine readable tariff data** — several initiatives (ex.: URDB) have tried to address this but there's no industry-supported standard. Commercial databases exist, but their fees are prohibitive to smaller companies.
4. Machine readable supply contract data & link from customer, accounts, sites, and meters to applicable supply cost — to date no industry accepted standard exists. Currently analysts have to collect this data manually by scanning their client's contracts and supplier bills and mapping to
5. Machine readable GHG emission data to be used for benchmarking

Criteria Used to Prioritize Initial Use Cases

The most important criteria is whether the use case reduces or eliminates currently existing barriers. For example, making links to bill images available through Green Button Connect APIs would allow the utilities to eliminate web scraping, which is currently the predominant way in which energy service providers gather bill data. Highest priority use cases for IEDR to support are those that can be realized by updating current utility and state data systems in the next 6 months, prior to the IEDR portal being completed. This includes for example updates to the ConEd GBC implementation that would make it standards compliant and inclusive of the customer.xsd schema. Another important criteria is whether any data standards updates or other significant technical work will be needed prior to implementation. The standards work should be initiated, but the use case can not yet be prioritized for implementation. This is the case with for example machine readable tariff data.

FIGURE 5. *Energy Management Specialist, Data Aggregator, and EnergyStar benchmarking for commercial or multifamily buildings*



A suggested definition of use case to be used for the IEDR

Energy data access scenarios can be grouped into use cases by the common type of data being requested. The use cases can then be "sliced" into sets of features that support these scenarios. For more on this "Agile" approach to using use cases along with AGile development, see Ivar Jacobson's (free) ebook: https://www.ivarjacobson.com/sites/default/files/field_iji_file/article/use-case_2_0_jan11.pdf

Additional Considerations

The use case template mentions "Advocates submitting profiles of similar use cases will work together with the IEDR development teams to come to a consensus. " I want to keep contributing to this process, but doing so without funding would not be good for Flux Tailor. For your records: It took six hours in total to outline and write up these comments, and many more to compose the diagrams and other materials included. We have already spent hundreds of unbilled hours on comments writing and meeting attendance through the REV and IEDR process.

The input gathered during this stakeholder engagement process should not be seen as representative of the needs of those using energy data. Smaller organizations may not be aware that this is happening and will not be able to dedicate time to participating and will likely be underrepresented. This is important as use cases should be prioritized in such a way that 40% of energy program benefits can go to LMI households. Efforts should be made to reach out to especially nonprofits and MWBEs active in the energy industry to gather their input in a way that either doesn't demand much of their time or compensates them for their efforts, for example via a targeted web survey.

Similarly, a lack of representation of BPOC and women in the IEDR team at NYSERDA and Program Manager will affect the perspective from which decisions are made, for example with regards to the process of use case prioritization for phase I. So far, there has been a lack of true opportunity for MWBEs in the process. For example, there were only eight work days in between when the notice for the teaming facilitation list was sent out and the deadline for IEDR PM submission. Eight work days is not enough for establishing new teaming agreements and jointly drafting and submitting a proposal. We have pointed out this issue and in general the disadvantaged position of small MWBE's several times since we joined the 20-M-0082 docket and the IEDR stakeholder engagement effort and hope NYSERDA and IEDR Program Manager staff can be dedicated to addressing this issue.

Mechanisms can be developed to involve and support MWBEs throughout the design and development of IEDR, for example by helping them apply for existing funding mechanisms for technical support such as the Flexible Energy Technical (RFQL 3685) contractor pool that could potentially be leveraged by NYSERDA and the IEDR PM. Being registered in such a contractor pool also means that work on IEDR could lead to other work with NYSERDA and its vendors and partners.

Kind Regards,

Klaar De Schepper

Use Cases

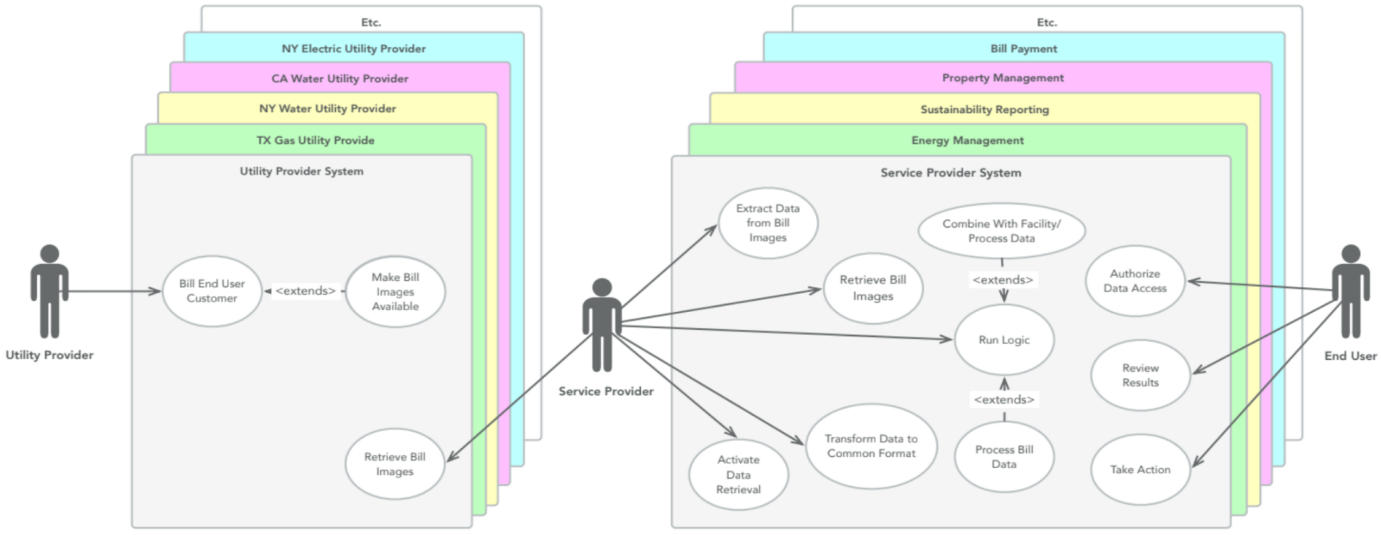
Use Case 1: Access to Billing Data

Flux Tailor works with clients accessing bill data by extraction from bill images in two predominant ways:

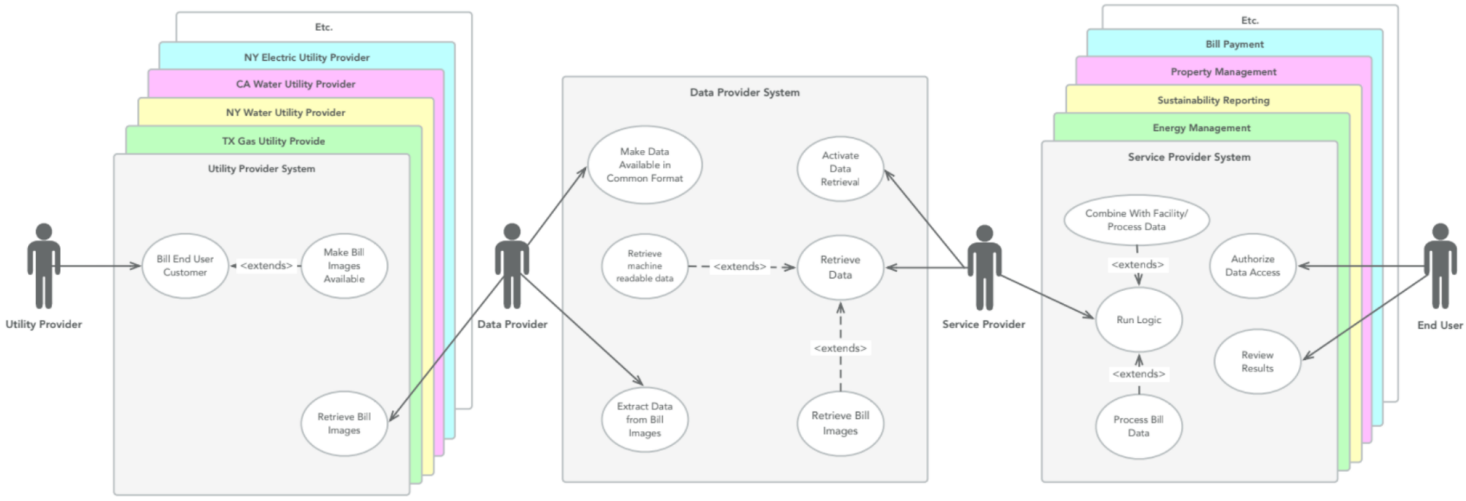
1. Service providers such as energy management or bill payment companies accessing bill data directly from utility companies. This is prevalent when data needs to be retrieved from a small number of utilities.
2. Data- as- a -service companies that serve service providers and clients that often have portfolios that extend across a large number of utility providers.

Below diagrams illustrate these two instances of the "Access to Billing Data" use case.

Use Case Diagram: Utility Bill Image Retrieval by Service Provider



Use Case Diagram: Utility Bill Image Retrieval via Data Provider



Use Case Slice 1A: Access to Bill Images via API

The below addresses some of the current pain points experienced by for example LMI Housing Organizations utility bill payment and energy management that can be resolved by making bill images and bill data available via a standard API.

4. Questions to be Answered	• What properties have the greatest opportunity for improvement? • Are retrofits performing as expected? • Have we paid the Pay-for-performance contractor correctly? • How much would we save if we switch to a different rate? • What's the community solar credit that should be applied/was it applied correctly? • Have our bills been paid? • How much is due and when? • Have there been any late charges or disconnection notices? • How much could we save from XYZ retrofit?
5. Information Produced by The Use Case	• Highest priority: An image of the bill PDF (currently accessed from Utility web portals via web scraping or manually) and limited metadata. • For later, once we've developed a standard for it: Structured bill data with all 100% information elements from customer bills.
5. a) Use of Information Produced by This Use Case	Bill payment, energy management, alternative credit scoring, community solar development and operation.
5 b) Minimum Necessary Attributes:	1. Link to bill image plus limited set of metadata points: Date of issuance, amount due and due date, account and meter identifiers, service period start/end dates 2. Later: All information on the bill: Customer, usage, cost, transaction, resource mix, etc.
6. User Interface	In addition to an API with documentation and ability to obtain API keys and perform tests, a user interface should be developed for those who do not have the ability to integrate with an API and prefer to export data as files. It should be possible to grant access starting from the service provider's web page, or from the IEDR interface. It should be easy to grant access to "nth party" data acquisition and processing service providers, for example to integrate into energy management or Accounts Payable software.
7. Data Elements Needed	Bill, Customer, Account, Meter, Tariff, Usage, Cost, Transaction data
7. a) Minimum Necessary Data Elements Attributes	Less than 2 hours latency from bill issuance by the utility Ongoing access with >95% uptime (as bill payment depends on this) 1. The complete set of elements and attributes should be developed with a diverse set of stakeholders. A draft of an MVP set: a. GBC UsageSummary representing bill b. Service period start and duration for the UsagePoint c. Reference to the bill image applicable d. Unique Invoice id e. bill issuance date f. amount due, due date g. date on which the next bill is expected

	h. an indication of whether this bill replaces any preceding bill, and if so a reference to the invoice ID of the bill that this bill replaces. 2. Complete set of data representing usage, charges, and transaction data, with 100% accurate, machine readable representation of all elements from customer bills.
5. b) Minimum Necessary Information Attributes	Less than 2 hours latency from bill issuance by the utility Ongoing access with >95% uptime (as bill payment depends on this)
8. Data Relationships Needed	It should be possible to request all bills associated with a property, so this means a relationship must exist between a unique property id, the service points associated with it, the service addresses and meters at those service points, the accounts on which those meters are billed, and the bill images for those bills.
9. Analysis Functions	No analysis cases needed, just raw data
9. a) User Input Variables Needed	No analysis cases needed, just raw data
10. Data Access Frequency	The time from data request to response should be <60 seconds for 1 year of bill data for a given account. Bill data status for a given account may be accessed only once or multiple times a day for multiple years. The latter is the case where bill data is used for M&V, bill payment, and ongoing energy management and benchmarking.
11. Use Case Benefit	● Save money on energy manager and data provider fees for acquiring and processing bill data ● Get bills paid in time, no late fees ● Verify savings ● Discover opportunities (procurement, EE, DER solutions) ● Better overview
12. Why is this Use Case a Priority?	Current access to bill data is problematic as the only way to access bill image PDFs is through a customer online account, which brings risks.
9. b) Customer Consent Process (Added Optional Question)	An energy manager obtains authorization from customers at contract signing to share data access with a data provider to access data.Ideally, access can be granted electronically for a list of properties at the time of energy manager and data services contract signing, with no additional action required on behalf of the customer after that for the data services provider to access data for those properties at a later point within the authorized timeframe.
9. c) Current Process Pain Points (Added Optional Question)	Currently, separate actions are required for each customer account at the time of the authorization request. Ideally, customer consent can be granted both in advance and at the moment of the request, and it should be possible to grant access via mobile phone.

Green Button Bills Initiative

Included with these comments is a concept paper Flux Tailor submitted to NYSERDA PON 4359 for the "Green Button Bills Initiative" in collaboration with two bill data provider companies. The goal of this initiative is to establish a standard specification for references to bill images and structured billing data. Those reviewing saw the significant value of implementing this to the energy industry but didn't approve the market test proposal because they wanted a guarantee that the utilities would implement the specification. Work is underway at the OpenADE Task Force to make the needed changes to the Green Button Standard, but additional funding for development and testing would need to be dedicated to the project to allow for the necessary requirements gathering, schema and API update work, testing, documentation, and other technical work to take place. Flux Tailor is open to teaming arrangements and funding options to further this work either as part of the IEDR process or as a separate effort.

Use Case Slice 2a: Access to Property and Building Data with Hourly Estimated Energy Consumption and Cost

This use case slice is based on our experience working with utilities, software developers, and government agencies to perform modeling and build market engagement tools. As the needed data points described aren't readily available, analysts and data engineers currently spend a significant amount of time repeating the redundant exercise of:

1. Gathering data inputs:
    - Massaging property parcel and building data sets, ex.:
        - estimating gross square feet and available outdoor area on a parcel by polygon area and estimated building height
        - mapping property classes to a simplified list of categories that can be mapped to energy usage models
    - Extracting tariff data from tariff PDFs
2. Building models for baseload vs. energy solution comparison:
    - Consumption: Defining energy models for estimated energy consumption and energy solution load shape
    - Cost: building a tariff calculation model that can be tied to models for grid support solutions such as battery or Volt/VAR regulation dispatch
3. Maintaining data inputs as they change over time: By the time a model is up and running, there is a great likelihood that some or all of the inputs have changed. Since data inputs currently need to undergo manual processing, this means either using the work knowing that the results will be inaccurate or repeating expensive data processing and validation work. If data were to be available via regularly refreshed, pre-processed, standardized file exports and API, the cost of maintaining systems will decrease significantly.

Some examples of feasibility calculator and high level analysis projects that Flux Tailor has completed that are instances of this use case slice:

- An EV Rate Comparison tool for PG&E calculator built with ZappyRide: ev.pge.com/rates — Flux Tailor provided tariff data modeling, bill calculation, data input specifications, technical documentation, usage data specification, quality assurance, and user acceptance testing for the project.

- A ground source heat pump feasibility screening tool funded by NYSERDA, currently just for Westchester County: geopossibilities.ny.gov. — Flux Tailor provided a user study, property data processing, technical documentation, and QA testing for the project.
- Flux Tailor provides data acquisition, processing, information architecture, and collaborative modeling services for "internal" feasibility analyses for clients, for example:
    - **A study of the impact of potential reductions in tenant electricity consumption on LL97 penalties**, for an organization interested in promoting real time energy metering solutions.
    - **A feasibility analysis for Aquifer Thermal Energy Storage in the Northeast U.S.** — as part of Flux Tailor's liaison officer work for the Consulate General of the Netherlands, see dutch-ates.com
    - **Portfolio aggregation of a VPP solution according to different dispatch and TOU rate scenarios and portfolio composition**, for a Community Choice Aggregator

4. Questions to be Answered	• What properties have the greatest feasibility/what is my specific project's ROI for a clean energy transition project such as solar PV or EV charging? • How much could be saved by switching to a different rate? • How much could we save from XYZ retrofit/implementation of clean energy systems in new construction? • What is the overall impact of potential changes in expected consumption based on known impact of implemented measures?
5. Information Produced by The Use Case	A ballpark estimate of potential savings from switching to/implementing an energy measure for a specific project or portfolio of projects.
5. a) Use of Information Produced by This Use Case	The information gathered provides the first step in customer engagement, and allows aggregators to model the potential value of portfolios of projects.
5 b) Minimum Necessary Attributes:	• Customer class/Property class and category • Tariff ID • Climate Zone • User Type • Energy Solution Type
6. User Interface	It should be possible to access data files via a user interface, and also to connect directly to data via an API. This data should be made available publicly so it's available to both commercial and nonprofit academic entities, and others, and should not require ESE registration.
7. Data Elements Needed	• Representative 8760 time series with hourly load profiles by climate zone, customer class, property type, and customer usage profile(ex.: apartment vs. single family home, pre-war vs. post-war, with or without electric baseboard heating or ground/air source heat pumps, etc.) that can be used as baseload where using real data is not available or feasible. • Representative 8760 time series with hourly solar PV load shapes by climate

	zone. • Structured tariff data with unbundled distribution and supply charges, including the (expected) effective date of the tariff. • Structured data for remuneration values of generation and grid support by individual projects or portfolios of projects Also helpful would be: • For each utility, the proportion of customers/meters per tariff class for a given county in their territory
7. a) Minimum Necessary Data Elements Attributes	• Baseload and energy solution load shape data is dated by year and refreshed annually. • The methodology used to create the representative load profiles is documented and there is high quality support for questions about the data sets. • Tariff data is made available in structured format as soon as it's proposed to the Public Service Commission by a utility • Ongoing access with >99% uptime (this should be achievable as data sets are static)
5. b) Minimum Necessary Information Attributes	• Baseload and energy solution load shape data is dated by year and refreshed annually. • The methodology used to create the representative load profiles is documented and there is high quality support for questions about the data sets. • Tariff data is made available in structured format as soon as it's proposed to the Public Service Commission by a utility • Ongoing access with >99% uptime (this should be achievable as data sets are static)
8. Data Relationships Needed	• For each building structure, the parcel(s) it is on, and the property data it is associated with • For each property class (in parcel data) a mapping to a "simplified" list of property categories that can be mapped to for example default consumption values per square foot • For each structure, a unique id (current best is the SWIS & SBL or SWIS & PRINT KEY unique identifier for each parcel, but those do not correlate 1 to 1 to buildings. See buildingid.pnnl.gov • For each tariff class, the other tariff class options available
9. Analysis Functions	Generate representative baseload and energy solution profiles using existing modeling tools and best practice methods such as outlier detection and K-means clustering analysis. Here a list of academic references as background:

	• Lavin, A. & Klabjan, D., 2015. Clustering Time-Series Energy Data from Smart Meters, Available at: https://arxiv.org/pdf/1603.07602.pdf • Luo, X. et al., 2017. Electric load shape benchmarking for small- and medium-sized commercial buildings. Applied Energy. Building Technology and Urban Systems Division, Lawrence Berkeley National Laboratory. Available at: https://escholarship.org/content/qt6sk7f50z/qt6sk7f50z.pdf • Mutanen, A. et al., 2011. Customer Classification and Load Profiling Method for Distribution Systems. IEEE Transactions on Power Delivery, 26(3), pp.1755–1763. Available at: http://ieeexplore.ieee.org/document/5771144. • Kim, Y.-I. et al., 2012. Repeated Clustering to Improve the Discrimination of Typical Daily Load Profile. Journal of Electrical Engineering & Technology, 7(3), pp.281–287. Available at: http://dx.doi.org/10.5370/JEET.2012.7.3.281 • Richard, M.-A. et al., Daily load profiles clustering: a powerful tool for demand side management in medium-sized industries, Available at:https://aceee.org/files/proceedings/2017/data/polopoly_fs/1.3687878.1501159057!/fileserver/file/790265/filename/0036_0053_000073.pdf • Tureczek, A., Nielsen, P.S. & Madsen, H., 2018. Electricity consumption clustering using smart meter data. Energies, 11(4), pp.1–18. Available at: https://www.mdpi.com/1996-1073/11/4/859/htm
9. a) User Input Variables Needed	• Customer type mix for a project/property (residential/commercial/industrial) • Existing Tariff class(es) at the property • Income range (for discounted rate eligibility) • Property Type • Fuel type • Heating System Type • Cooling System Type • Energy solution applicable • Year Built • Envelope upgrade y/n • Annual/Seasonal Occupancy % • (list is not exhaustive)
10. Data Access Frequency	Interactive analysis visualization and feasibility calculator tools will be made available on public websites and may be accessed anywhere from once a year to hundreds or up to hundreds of thousands of times a day.
11. Use Case Benefit	Save money on consultant and data engineer fees for acquiring and processing property, energy consumption, and cost+remuneration data Discover opportunities (procurement, EE, DER solutions) First step towards gaining insight for customer

12. Why is this Use Case a Priority?	Current access to this data is problematic, relatively little effort to standardize the data would bring enormous value and decrease a significant barrier to market engagement.
9. b) Customer Consent Process (Added Optional Question)	No customer consent process is necessary, data should be made publicly available.
9. c) Current Process Pain Points (Added Optional Question)	See the redundant steps taken by each analyst in the introduction of this use case slice.

List of Materials Included

File Name	Description
UseCaseCategoriesApplicable_FluxTailor_2021-07-23.pdf	Matrix indicating the categories and subcategories applicable to the use case slices included — picking just one for each use case slice wouldn't be accurate.
ThirdPartiesAndBeyond_FluxTailorMissionData.pdf	White paper written in collaboration with Mission:data and support from Amperon, describing use cases for "Nth" party energy data sharing, current obstacles towards achieving them, and recommended solutions such as "Cascading Authorization"
GreenButtonBillsInitiative_PON 4359_ConceptPaper_2020-08-21	Concept paper submitted to NYSERDA PON 4359 together with Urjanet and UtilityAPI.

Use Case (Sub)Categories and Use Cases

LEGEND = Required/Useful
= Not Required/Useful/Applicable

FLUX tailor

Use Case Categories and Subcategories	Use Case Slice 1a: Access to Bill Images Via Standard API	Use Case Slice 2a: Access to Property and Building Data with Estimated Energy Consumption and Cost
For DER Development and Use:		
o identifying, evaluating, and/or selecting potential DER locations;		
o identifying, evaluating, and/or engaging potential DER customers;		
o preparing and/or optimizing DER development plans;		
o preparing and/or optimizing DER operating plans;		
o designing, implementing, and/or operating DER aggregations;		
o monitoring and evaluating the deployment and use of DERs;		
o designing and implementing Community Distributed Generation (CDG) solutions; or,		
o other : Bill Payment		
• For Transportation Electrification:		
o identifying, evaluating, and/or engaging existing EV owners/operators;		
o identifying, evaluating, and/or engaging potential EV owners/operators;		
o monitoring and/or evaluating EV acquisitions and uses;		
o identifying, evaluating, and/or selecting potential locations for EV charging facilities;		
o preparing and/or optimizing plans for developing EV charging facilities;		
o preparing and/or optimizing plans for operating EV charging facilities;		
o monitoring and/or evaluating the deployment and use of EV charging facilities		
o other (please describe)		
• For Building Electrification:		
o identifying, evaluating, and/or engaging energy consumers and energy managers in existing buildings;		
o identifying, evaluating, and/or engaging energy consumers and energy managers in planned buildings;		
o monitoring and/or evaluating acquisitions and uses of building electrification solutions;		
o building energy benchmarking;		
o identifying, evaluating, and/or selecting opportunities for building electrification;		
o preparing and/or optimizing plans for developing building electrification solutions;		
o preparing and/or optimizing plans for operating building electrification solutions;		
o monitoring and/or evaluating the deployment and performance of building electrification solutions		
o other (please describe)		
• For Energy Efficiency (EE):		
o identifying, evaluating, and/or engaging customers with existing EE solutions;		
o identifying, evaluating, and/or engaging potential EE customers;		
o monitoring and/or evaluating EE acquisitions and uses;		
o building energy benchmarking;		
o identifying, evaluating, and/or selecting EE opportunities;		
o preparing and/or optimizing plans for deploying EE solutions;		

o monitoring and/or evaluating the deployment and use of EE solutions;		
o designing and implementing Community Choice Aggregation (CCA) solutions		
o Bill Payment		
o Procurement		
• For Electric Utility Functions:		
o system planning;		
o DER interconnection;		
o system operations;		
o market enablement;		
o market operations;		
o customer programs and services;		
o regulatory/statutory compliance;		
o other (please describe)		
• For Gas Utility Functions:		
o system planning;		
o system operations;		
o market enablement;		
o market operations;		
o customer programs and services;		
o regulatory/statutory compliance;		
o other (please describe)		
• For Local Government Functions:		
o building energy benchmarking;		
o Community Choice Aggregation;		
o Community Distributed Generation;		
o facility siting and permitting;		
o environmental justice initiatives;		
o economic development;		
o planning and zoning;		
o Bill Payment		
o Procurement		
• For State Government Functions:		
o energy-related R&D;		
o regulatory research and planning;		
o regulatory oversight;		
o building energy benchmarking;		
o facility siting and permitting;		
o environmental justice initiatives;		
o economic development;		
o Bill Payment		
o Procurement		

Integrated Energy Data Resource (IEDR)
Stakeholder Use Case Survey Template

Comments Due: July 23, 2021 to iedr@nyserda.ny.gov

Cover Sheet

Contact Information

The Joint Utilities of New York ("Joint Utilities"), defined by the companies listed in the table below, collectively submit these comments regarding the high priority IEDR Use Cases from the utility as a user perspective.

Organization Name	Contact	Email Address
Central Hudson Gas & Electric Corporation	Paul Colbert	pcolbert@cenhud.com
Con Edison Orange & Rockland	Damian Sciano	scianod@coned.com
National Grid[1]	Preston Large	preston.large@nationalgrid.com
Avangrid (NYSEG, RG&E)	Robert Manning	robert.manning@uinet.com
National Fuel Gas Distribution Corporation	Jeff Same	SameJ@natfuel.com

IEDR Immediate Needs

The IEDR immediate needs should be driven by the needs of developers looking to deploy distributed renewable energy and storage projects, transportation electrification, energy efficiency (EE), and heat electrification. The Joint Utilities understand that developers want to overlap their solutions with existing and planned electric capacity needs.

While the Joint Utilities recommend that the IEDR priority use cases should focus on the needs of developers or other stakeholders, we have identified five IEDR Use Cases that could support utility functions.[2] The utility IEDR Use Cases are listed below based on priority level (from highest priority to lowest priority). The prioritization criteria are described in the following section.

IEDR Utility Use Cases

- Use Case 1: Programs to Support Disadvantaged Communities (DACs)
- Use Case 2: Electric Vehicle Supply Equipment (EVSE) Siting – DACs and Low-to Moderate-Income (LMI) Customers
- Use Case 3: Reliability Benchmarking
- Use Case 4: Electric Vehicle (EV) Fleets

[1] National Grid as used herein is Niagara Mohawk Power Corporation d/b/a National Grid, KeySpan Gas East Corporation d/b/a National Grid, and The Brooklyn Union Gas Company d/b/a National Grid NY.

[2] National Fuel Gas Distribution Corporation supports the identification and prioritization of the use cases herein that apply to natural gas, and it does not oppose the comments herein that are related to use cases that do not apply to natural gas.

- Use Case 5: EVSE Siting – Strategic Location Suitability

Prioritization Criteria

The Joint Utilities propose that use cases that most directly advance the Climate Leadership Community Protection Act (CLCPA) goals should be prioritized. Accordingly, the Joint Utilities developed the following categories of use cases based upon the degree to which the criterion advanced CLCPA goals.

1. Contributions to CLCPA goals – Use Cases that more directly advance CLCPA goals should be prioritized.
2. Benefits to DACs – Use Cases providing direct and immediate beneficial impacts for disadvantaged communities should be prioritized.
3. Improvement/maintenance to grid safety and reliability – Use Cases contributing to improvement or maintenance of grid safety and reliability should be prioritized.
4. Market and customer choice enablement – Use Cases enabling clean energy technology deployment and customer choice should be prioritized.
5. Current availability of data and ease of access for stakeholders – Use Cases that would enable simple, streamlined access to data items that are currently difficult for stakeholders to access should be prioritized.

Use Case Profiles

Use Case 1: Programs to Support Disadvantaged Communities (DACs)

Definition/Description

The Joint Utilities seek data that will support targeted DACs programs that will have a meaningful impact on those communities and advance the goals of the CLCPA. The Joint Utilities are currently using the NYSERDA Disadvantaged Communities interim definition and maps, the New York State Department of Environmental Conservation Geospatial Information System (NYS-DEC GIS), and other tools for program design purposes, but could benefit from integrating the information provided by the DAC Use Case within the IEDR with rolling enhancements.

1. **Contributor Name & Contact Information.**
   Joint Utilities of New York – Patricia D'Costa – patricia.dcosta@icf.com (consultant)

2. **Use Case Category:** Utility Functions

3. **Use Case Sub-Category:** Regulatory/Statutory Compliance

4. **What Question(s) Does the Stakeholder Seek to Answer with This Use Case?**

   - Where are DACs located within each utility jurisdiction?
   - Are programs that are qualified to provide benefits to DACs and that have a spatial component seeing projects deployed in DACs?
   - What are the boundaries of DACs in a form readily translated to accessible information?

5. **What Information Should the Use Case Produce for the Stakeholder?**
   The use case should provide a visualization of the DAC zones being contemplated under the various utility related program implementation orders such as EVSE and EE. The information should also provide the underlying data used to define these zones.

   a. **How Will the Stakeholder Use the Information Produced by This Use Case?**
   The information will support implementation of programs as they relate to Energy Justice/LMI targets/budgets. DAC information will also allow utilities to better market and target program offerings within these communities, measure DAC participation in programs, and use the underlying information to perform additional analyses.

   b. **What are the Minimum Necessary Attributes for Each Type of Information Produced?**

5. Information Type Produced	5a. How will the stakeholder use the information produced by this use case?	5b. What are the minimum necessary attributes for each type of information produced?
Area median income	Information on average household income and number of households below the federal poverty level can give utilities insights into the makeup of DAC areas.	Census tract, zip code level, refreshed annually[3]
Minority population	Information on percentage of households that identify as members of minority groups can give utilities an illustrative look at racial participation in program offerings.	Census tract, zip code level, refreshed annually
Community health	Information on asthma rates and other air quality influenced health conditions that could indicate a need for programs to help reduce air pollution.	Census tract, zip code level, refreshed every 5 years
Environmental conditions	Information on air quality and contributing factors to air quality to help utilities determine where programs could create a meaningful and positive impact for a community's environment.	Census tract, zip code level, refreshed every 5 years

6. **How Should the IEDR User Interface Present the Information Produced by the Use Case?**
   The information should be presented in an interactive map format so that the utilities can identify visually where DACs are located. The information should also be downloadable in Excel or CSV format so that the utilities can easily download and conduct analysis on the data.[4]

7. **What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?**
   The data types listed below are not exhaustive of all necessary data elements and will need to be refined as CLCPA DAC criteria are established. The IEDR should include all CLCPA data bases used for determining DACs and make the indicators used for such determination available.

   a. **What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?**

[3] Census tract and zip code level data must meet the data aggregation standards

[4] IEDR should integrate census-based shapefiles: Note there are various forms of census data. There's the decennial census data which can be useful, but other federal census data is also available. The American Community Survey data and American Household data are updated on an ongoing basis and are more useful for program targeting. The ACS data is especially useful.

Information Type Produced	7. What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?	7a. What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?
Area median income	Average household income	Zip code level granularity, refreshed annually, most recent census tract data.
	Number of households below the federal poverty level	Zip code level granularity, refreshed annually, most recent census tract data.
Minority Population	Number of customers that identify as members of minority groups	Zip code level granularity, refreshed annually, most recent census tract data.
Community health	Asthma rates	Zip code level, refreshed every 5 years, most recent census tract data.
	Average hospitalizations due to lung-related conditions	Zip code level, refreshed every 5 years, most recent census tract data.
Environmental conditions	Air quality metrics	Zip code level, refreshed annually
	Data on contributing factors to air quality	Zip code level, refreshed annually
	Data on heating fuel type	Building level, refreshed annually

8. **What Data Relationships Does the IEDR Need to Analyze for This Use Case?**
   The DAC Use Case information will need to have the following data relationships:

   - All outlined data types within the DAC Use Case will need to be associated via Census Block Group level
   - Information on available utility programs
   - Information on heating fuel source

   All data elements will need to be related by location so that DAC Use Case data, customer account data, and available utility programs can be merged to identify customers in DACs and the programs they are eligible for.

9. **What Data Analysis Function(s) Does the IEDR Need for This Use Case?**
   Program design and mapping visualization tools.

   a. **What are the Minimum Necessary User Input Variables Needed to Enable a Useful Analysis?**
      Spatial data for defined DACs.

10. **How Often Does the Stakeholder Expect to Employ This Use Case?**
    Data will be pulled by utilities as needed and will be referenced on an ongoing basis as programs are implemented or designed.

11. **How Does This Use Case Benefit the Stakeholder?**
    With access to both the determined locations of DACs and the underlying indicators used to determine those locations, the utilities will be able to tailor programs to the characteristics of individual DACs. This information will help the Joint Utilities accomplish two goals:
    1) Enhance the design and implementation of programs in DACs;
    2) Gain insight into specific environmental and health needs of individual DACs that could be positively impacted or met by new utility programs.

12. **Why Should This Use Case Be Prioritized From the Perspective of i) the Industry and ii) the Citizens of New York State?**
    The industry can use the data gathered from program administrators to evaluate where DAC-benefit qualifying programs should be deployed, increasing the benefits that accrue to those communities.

    The DAC Use Case should be prioritized from the perspective of New York State citizens because this information will support the development of effective utility-sponsored programs and projects that better serve DACs.

Use Case 2: EVSE Siting – Low-to Moderate-Income (LMI) and DAC Customers

Definition/Description

The IEDR can provide value to a utility if the data on disadvantaged communities is coupled with existing data produced through the "EVSE Siting – Strategic Location Suitability" Use Case, as well as existing EVSE load serving capacity maps (released December 2020), to identify ideal locations to deploy both public and private EVSE. Although existing resources help identify DACs and LMI customers, the Joint Utilities recommend that the information should be sourced through the IEDR and updated continuously.

1. **Contributor Name & Contact Information.**
   Joint Utilities of New York – Patricia D'Costa – patricia.dcosta@icf.com (consultant)

2. **Use Case Category:** Utility Functions

3. **Use Case Sub-Category:** Market Enablement

4. **What Question(s) Does the Stakeholder Seek to Answer with This Use Case?**
   - Where would it be most useful to place EVSE equipment to meet DAC and LMI program goals?
     - Where are DACs located and which programs are appropiate for those areas?

- Where are LMI households located and which programs should targeted to those communities?

5. **What Information Should the Use Case Produce for the Stakeholder?**

   a. **How Will the Stakeholder Use the Information Produced by This Use Case?**
   This information will be used to target and site needed EVSE in the LMI and DAC areas.

   b. **What are the Minimum Necessary Attributes for Each Type of Information Produced?**

5. Information Type Produced	5a. How will the stakeholder use the information produced by this use case?	5b. What are the minimum necessary attributes for each type of information produced?
DAC Areas	Information on designated DACs can give utilities an illustrative look at which areas are likely to qualify for DAC programs and program carve-outs.	Zip code level, refreshed annually, mappable data/shape files preferred
EV Presence	Information on EV ownership, types, and location	Zip code level, refreshed every 5 years
EVSE Information	Information on existing and planned EVSE location, capacity, and utilization	Zip code level, refreshed every 5 years

6. **How Should the IEDR User Interface Present the Information Produced by the Use Case?**
   The information should be presented in a tabular and spatial format. This format will enable utilities to identify preferred or suitable locations within DACs or LMI areas. The information should also be downloadable in Excel or CSV format to further facilitate data analysis.

7. **What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?**

   a. **What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?**

Information Type Produced	7. What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?	7a. What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?
DAC Areas	See Use Case 1: Programs to Support DACs.	
ICE Registration	VIN	Vehicle level granularity, refreshed annually
	Registration start date	Vehicle level granularity, refreshed annually

	State registration street address	Vehicle level granularity, refreshed annually
	Vehicle information: Type, Manufacturer, Model, Model year	Vehicle level granularity, refreshed annually
	Vehicle fuel information: Fuel type (leaded, unleaded, diesel, etc.)	Vehicle level granularity, refreshed annually
	Milage information: Miles per gallon and estimated range.	Vehicle level granularity, refreshed annually
EV Registration	VIN	Vehicle level granularity, refreshed annually
	Registration start date	Vehicle level granularity, refreshed annually
	State registration street address	Vehicle level granularity, refreshed annually
	Vehicle information: EV type, EV manufacturer, EV model, EV model year	Vehicle level granularity, refreshed annually
	Vehicle charging information: Compatible charger type(s), maximum EV charging power (W), EV battery capacity (kWh)	Vehicle level granularity, refreshed annually
	Milage information: Efficiency (miles per kWh), estimated annual miles	Vehicle level granularity, refreshed annually
Installed EVSE Equipment	Identification information: Charger ID, service point ID, utility ID, owner ID, operator ID	Charger level granularity, refreshed monthly
	Location information: Location category, street address, GIS coordinates	Site level granularity, refreshed monthly
	Installation timeframe: Date installed, date removed (if applicable)	Charger level granularity, refreshed monthly
	Number of charger ports	Site level granularity, refreshed monthly
	Charger access category	Site level granularity, refreshed monthly
	Charger technology information: Charger class level	Charger level granularity, refreshed monthly

8. **What Data Relationships Does the IEDR Need to Analyze for This Use Case?**
   The "EVSE Siting – LMI Customers" Use Case information will need to have the following data relationships:

   - All outlined data types within the "EVSE Siting – LMI Customers" Use Case will need to be associated via zip code.
   - EVSE load serving capacity data
   - "EVSE Siting – Strategic Locations Suitability" Use Case information
   - Customer account information
   - EV Make-Ready Program (MRP) Approved Contractor information

All data elements should be associated with location by full address and geographic coordinates. If full address information is not possible, data should include zip code so that each data element can be compared to identify priority locations for EVSE siting.

Addresses should be in the same format as utility customer account data so that ideal locations can be associated with customer account information. This will allow utilities to easily identify contact information for customers with potential host sites. Utilities can also use address and service territory information from the list of EV MRP Approved Contractors to perform outreach to contractors performing work in DACs.

9. **What Data Analysis Function(s) Does the IEDR Need for This Use Case?**
   To be identified as the data sets are developed.

   a. **What are the Minimum Necessary User Input Variables Needed to Enable a Useful Analysis?**
      N/A

10. **How Often Does the Stakeholder Expect to Employ This Use Case?**
    The utilities will employ this Use Case both operationally as needed and annually for planning purposes.

11. **How Does This Use Case Benefit the Stakeholder?**

    a. Driving towards CLCPA goals: The "EVSE Siting – LMI and DAC Customers" Use Case empowers the utilities with information to advance the deployment of EVSE equipment which will help encourage Zero-Emissions Vehicles adoption in DACs across New York State. This will help advance CLCPA emissions and DAC goals.

    b. Meeting EV MRP Order requirements: The Use Case will also help the utilities meet requirements outlined in NYPSC's Order Establishing Electric Vehicle Infrastructure Make-Ready Program and Other Programs, where the Joint Utilities were directed to identify strategic locations for EVSE deployment so they can perform targeted education and outreach to potential site hosts and developers in those areas. The MRP also provides higher incentive levels for EVSE equipment within or near DACs. The "EV Siting – LMI and DAC Customers" Use Case will provide utilities with information that will help them identify communities eligible for higher incentive levels through the program.

12. **Why Should This Use Case Be Prioritized From the Perspective of i) the Industry and ii) the Citizens of New York State?**
    The information provided by the "EVSE Siting – LMI and DAC Customers" Use Case will provide information on areas eligible for higher incentive levels through the EV MRP, allowing EVSE developers to expand their business accordingly. This targeted deployment of EVSE equipment will help NYS LMI and DAC customers by increasing accessibility of EVSE equipment and improving air quality through reduced emissions compared to gasoline-powered vehicles.

Use Case 3: Reliability Benchmarking

Definition/Description

The Joint Utilities could benefit from easier access to reliability data from utilities across New York State for benchmarking analysis in a streamlined way. The IEDR can facilitate the sharing of reliability data and metrics across utilities, allowing for easy access to the information at all times.

1. **Contributor Name & Contact Information.**
   Joint Utilities of New York – Patricia D'Costa – patricia.dcosta@icf.com (consultant)

2. **Use Case Category:** Utility Functions

3. **Use Case Sub-Category:** System Operations/System Planning

4. **What Question(s) Does the Stakeholder Seek to Answer with This Use Case?**
   - How does the reliability performance (similarities and differences) of circuits in like-for-like geographical regions compare between the utilities?
   - What reliability measures are the utilities providing (System Average Interruption Frequency Index (SAIFI), Customer Average Interruption Duration Index (CAIDI), Customer Average Interruption Frequency Index (CAIFI), etc.)?
   - What kind of granularity is available for reliability data (*e.g.,* by load area, zip code, etc.)?
   - What system design configurations help improve reliability performance? (conventional design and non-conventional design)
   - What proactive measures help improve reliability performance in rural areas and in urban areas?

5. **What Information Should the Use Case Produce for the Stakeholder?**

   a. **How Will the Stakeholder Use the Information Produced by This Use Case?**
   The information used will help the utility assess existing system design and construction standards and other actionable items (*e.g.,* weather forecasting ahead of storms) to improve reliability performance. The information will help the utility present their performance with context to other NYS utilities.

   b. **What are the Minimum Necessary Attributes for Each Type of Information Produced?**

5. Information Type Produced	5a. How will the stakeholder use the information produced by this use case?	5b. What are the minimum necessary attributes for each type of information produced?
Reliability metrics including SAIDI, SAIFI, CAIDI	Utility will benchmark its performance against those of the other utilities in New York State using different reliability metrics and corresponding thresholds for each utility	System level, zonal level, zip code or town level, substation level, feeder level, and segment or protection zone with annual updates
Metric thresholds (with explanation side notes to understand reasons for differences across utilities)	Utility will benchmark its performance against those of the other utilities in New York State using different reliability metrics and corresponding thresholds for each utility	System to feeder level with annual updates
Outage Cause	Utility will use this information to learn and adopt reliability measures, where applicable, from other utilities with the lowest outages associated with a particular cause	Number and duration of outages associated with each cause (*e.g.,* vegetation, weather, equipment failure). System to feeder level with annual updates
Major Storm Exclusion events	Utility will use this information to normalize reliability statistics and compare impacts of extreme weather events on its systems with other utilities within New York state	System to feeder level with annual updates
Weather information for New York utility jurisdictions	Weather data would help utilities normalize reliability statistics from other utilities for accurate data benchmarking. Improve forecasting for event impact	System level, zip code level, substation, street segment

6. **How Should the IEDR User Interface Present the Information Produced by the Use Case?**
   The IEDR user interface should present the information in an interactive online dashboard with a mix of graphs, tables, and bar charts with a geographical overlay and then an extractable spreadsheet version based on filtered criteria.

7. **What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?**

   a. **What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?**

Information Type Produced	7. What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?	7a. What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?
Reliability metrics including SAIDI, SAIFI, CAIDI	Number of interruptions, number of customers interrupted, total duration of customer interruptions, total number of customers served	System level, zonal level, zip code or town level, substation level, feeder level, and segment or protection zone with annual updates
Metric thresholds (with explanatory notes to understand reasons for differences across utilities)	Thresholds for each reliability metric. Short explanations on how the thresholds are established for each utility	System to feeder level with annual updates
Outage Cause	Different categories of outage cause across all utilities in New York state. Number and duration of outages attributed to each cause for each utility.	System to feeder level with annual updates
Major Storm Exclusion Events	Number, durations, and dates of major storm exclusion events	System to feeder level with annual updates
Weather information for New York utility jurisdictions	Historical weather data - Precipitation, wind gust, wind speed, snow, rain, direction	System level, zip code level, substation, street segment level with annual updates

8. **What Data Relationships Does the IEDR Need to Analyze for This Use Case?**
   Data relationships to be analyzed
   - Outages with weather conditions
   - System with outage causes
   - Weather with outage causes
   - System design configuration (conventional and non-conventional) with outage performance
   - Reliability impact by cause per circuit with a geographical relationship per circuit (town) to associate topographical challenges and weather impact

9. **What Data Analysis Function(s) Does the IEDR Need for This Use Case?**
   Determining averages, minimums, maximums, percentile (50, 90, 95, 98, etc), whisker charts, greater than and/or equal to, less than and/or equal to, and equal to.

   b. **What are the Minimum Necessary User Input Variables Needed to Enable a Useful Analysis?**

Number of interruptions, number of customers served, number of customer hours impacted, number of customers impacted, level of tree density, likelihood of outage, and level of non-conventional resources available.

10. **How Often Does the Stakeholder Expect to Employ This Use Case?**
    This data will be used annually for planning purposes, as well as on an ongoing basis.

11. **How Does This Use Case Benefit the Stakeholder?**
    The "Reliability Benchmarking" Use Case will allow the utilities to streamline their processes as they analyze their individual utility operational performance. Housing the data used for each utility reliability analysis on the IEDR will create efficiencies in the way the utilities currently share such information.

12. **Why Should This Use Case Be Prioritized From the Perspective of i) the Industry and ii) the Citizens of New York State?**
    Streamlining the sharing of reliability data for purposes of benchmarking will help the utilities identify and address areas for reliability performance improvement more quickly, which will benefit all citizens of New York State who rely on power within their homes and businesses.

Use Case 4: *EV Fleets*

Definition/Description

The EV Fleets Use Case will help utilities identify existing business fleets and their characteristics within New York State to identify or predict future fleet electrification plans, the timing, and the resulting impact of a potential fleet electrification for the grid. This modeling can be incorporated in utility forecasting and planning exercises to prepare the grid for potential fleet electrification.

This Use Case would also be helpful in identifying EV Fleets in DACs, which would advance CLCPA goals.

1. **Contributor Name & Contact Information.**
   Joint Utilities of New York – Patricia D'Costa – patricia.dcosta@icf.com (consultant)

2. **Use Case Category:** Utility Functions

3. **Use Case Sub-Category:** System Planning

4. **What Question(s) Does the Stakeholder Seek to Answer with This Use Case?**

   - Where are large vehicle fleets located within utility jurisdictions?
   - Which fleets have already electrified? Which (if any) are planning to electrify or have emissions related goals?
   - How large are existing fleets?
   - What types of vehicles are within existing fleets?

- What are the travel characteristics of the vehicles including average daily mileage and utilization schedules?

5. **What Information Should the Use Case Produce for the Stakeholder?**
   a. **How Will the Stakeholder Use the Information Produced by This Use Case?**

   b. **What are the Minimum Necessary Attributes for Each Type of Information Produced?**

5. Information Type Produced	**5a. How will the stakeholder use the information produced by this use case?**	**5b. What are the minimum necessary attributes for each type of information produced?**
Existing Fleet Information	Information on existing fleets in NYS including the associated business, location, size, charging profile (i.e. 2x5 Direct Charge/Fast Charge (DCFC), 1x10, etc.), and vehicle types will allow the utilities to identify locations where large vehicle electrification projects could occur and determine the scope of potential grid impacts if electrification efforts were to be pursued.	Site level granularity, refreshed annually
Business Sustainability and Electrification Goals	Information on business sustainability and electrification goals will help utilities perform propensity analysis to determine if/when and where they can expect large fleet electrification projects to occur.	Site level granularity, refreshed annually

6. **How Should the IEDR User Interface Present the Information Produced by the Use Case?**
   The IEDR user interface should present the information in a downloadable spreadsheet format so that the utilities can download and analyze the data internally.

7. **What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?**
   a. **What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?**

Information Type Produced	**7. What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?**	**7a. What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?**
Existing Fleet Information	Business name	Site level granularity, refreshed annually
	Business address	Site level granularity, refreshed annually

	Fleet address	Site level granularity, refreshed annually
	Fleet size	Site level granularity, refreshed annually
	Vehicle composition of fleet: Vehicle type(s), vehicle manufacturer(s), vehicle model(s), vehicle model year(s)	Site level granularity, refreshed annually
	Vehicle utilization data: Daily miles, utilization schedules	Site level granularity, refreshed annually
Business Sustainability and Electrification Goals	Data on businesses that have existing sustainability goals	Site level granularity, refreshed annually
	Data on businesses that have existing electrification goals	Site level granularity, refreshed annually

8. **What Data Relationships Does the IEDR Need to Analyze for This Use Case?**
   The "EVSE Fleets" Use Case information will need to have the following data relationships:

   - If existing fleet information and business sustainability and electrification goals come from different sources, relationships will need to be made between the datasets so that fleet information and sustainability/electrification goals can be attributed to the proper businesses. Associations can be made via business name or address.
   - Customer Account Information

   All data elements will need to be associated by business name and/or address.

9. **What Data Analysis Function(s) Does the IEDR Need for This Use Case?**
   To be identified as the data sets are developed.

   a. **What are the Minimum Necessary User Input Variables Needed to Enable a Useful Analysis?**
      N/A

10. **How Often Does the Stakeholder Expect to Employ This Use Case?**
    The utilities will employ this Use Case annually.

11. **How Does This Use Case Benefit the Stakeholder?**
    The "EV Fleets" Use Case will provide the utilities with relevant information to identify where and when vehicle fleets in their service territories may electrify. This will allow the utilities to anticipate potential grid impacts and maintain the safety and reliability of the grid.

12. **Why Should This Use Case Be Prioritized from the Perspective of i) the Industry and ii) the Citizens of New York State?**
    Utilities will use the EV Fleets Use Case to help EV and EVSE equipment manufacturers, developers, and installers identify customers looking to purchase electric fleet vehicles and EVSE.

    New York would benefit from air quality improvement due to reduced emissions of electric vehicles compared to gasoline powered vehicles. Additional benefits include safety and reliability of the utility grid as utilities work to forecast and plan for potential grid impacts from fleet electrification.

Use Case 5: EVSE Siting – Strategic Locations Suitability

Definition/Description

To identify ideal locations for EVSE siting, the Joint Utilities propose housing customer and geographic information, including data such as EV registration, transportation patterns, and parking locations, on the IEDR. The information would help the utilities identify charging locations that would be most useful for individual drivers (as opposed to EV fleets) in their jurisdictions, based on where electric vehicles are already traveling and parking. When layered with DAC customer data (see Use Case 2), as well as existing EVSE load serving capacity maps (released December 2020), the information produced by the "EVSE Siting – Strategic Locations Suitability" Use Case can be used to identify priority locations to deploy EVSE.

1. **Contributor Name & Contact Information.**
   Joint Utilities of New York – Patricia D'Costa – patricia.dcosta@icf.com (consultant)

2. **Use Case Category:** Utility Functions

3. **Use Case Sub-Category:** Market Enablement

4. **What Question(s) Does the Stakeholder Seek to Answer with This Use Case?**
   - Where would it be most useful to place EVSE for individual EV owners?
     - Where is the "home site" for existing EVs?
     - Where are existing vehicles traveling most often?
     - What types of EVs are currently on the road?
     - Where are existing vehicles parking for longer periods? Short periods?
     - Where are existing parking spots that could house EVSE?
     - How does this compare with electric system load serving capability?
     - How does this compare with planned or forecasted EVSE?

5. **What Information Should the Use Case Produce for the Stakeholder?**

   a. **How Will the Stakeholder Use the Information Produced by This Use Case?**

b. **What are the Minimum Necessary Attributes for Each Type of Information Produced?**

5. Information Type Produced	5a. How will the stakeholder use the information produced by this use case?	5b. What are the minimum necessary attributes for each type of information produced?
Traffic Patterns	Information on traffic patterns in NYS, including number of yearly travelers by road and gasoline sales by zip code, will help utilities determine where customers are likely to be traveling, indicating where they may need to stop and charge their vehicle.	Refreshed annually
Parking Lots	Information on where large parking lots are located in NYS, separated by lot type (commuter lot, office lot, shopping complex, etc.) indicating where there could be spots readily available for EVSE installations, as well as how long patrons would typically be parked at the locations (based on parking lot type).	Refreshed annually
ICE Registration	Data on where and what type of ICE vehicles are registered throughout the state so that utilities are aware of where differences in EV adoption and where homeowners' incentives for charging equipment may make sense. Information could also be used to inform EV adoption propensity models.	Refreshed annually
EV Registration	Data on where and what type of EVs are registered throughout the state so that utilities are aware of where different types of EVs are located throughout the state, and where homeowners could be installing charging equipment. Information could also be used to inform EV adoption propensity models.	Refreshed annually
Installed EVSE Equipment	Information on currently installed EVSE so that utilities can identify and rule out locations that already have EV charging capabilities.	Refreshed monthly
Site Zoning and Ownership	Information on site zoning and ownership so that utilities can easily contact, or put developers/customers in touch with, site owners.	Refreshed annually
New construction	Information on new developments pre-construction can help utilities proactively contact new businesses about fleet electrification.	Refreshed continuously
Electric System Capability	Information in distribution circuits (3 phase vs 1 phase) and available load serving capacity at the location	Refreshed bi-annually

6. **How Should the IEDR User Interface Present the Information Produced by the Use Case?**
   The information should be presented in tabular data with spatial relation so that the utilities can identify where suitable EVSE sitting opportunities areas are located. The information should also be downloadable in Excel or CSV format so that the utilities can easily download and conduct analysis on the data.

7. **What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?**
   a. **What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?**

Information Type Produced	**7. What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?**	**7a. What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?**
Traffic Patterns	Locations of all roads	Road level granularity, refreshed annually
	Number of yearly travelers	Road level granularity, refreshed annually
	Gasoline sales	Zip code granularity, refreshed annually
Parking Lots	Locations of parking lots	Site level granularity, refreshed annually
	Number of spots available	Site level granularity, refreshed annually
	Type of parking lot (commuter lot, office, shopping, residential, etc.),	Site level granularity, refreshed annually
	Public or private lot	Site level granularity, refreshed annually
EV Registration	VIN	Vehicle level granularity, refreshed annually
	Registration start date	Vehicle level granularity, refreshed annually
	State registration street address	Vehicle level granularity, refreshed annually
	Vehicle information: EV type, EV manufacturer, EV model, EV model year	Vehicle level granularity, refreshed annually
	Vehicle charging information: Compatible charger type(s), maximum EV charging power (W), EV battery capacity (kWh)	Vehicle level granularity, refreshed annually
	Milage information: Efficiency (miles per kWh), estimated annual miles	Vehicle level granularity, refreshed annually
Installed EVSE Equipment	Identification information: Charger ID, service point ID, utility ID, owner ID, operator ID	Charger level granularity, refreshed monthly
	Location information: Location category, street address, GIS coordinates	Site level granularity, refreshed monthly

	Installation timeframe: Date installed, date removed (if applicable)	Charger level granularity, refreshed monthly
	Number of charger ports	Site level granularity, refreshed monthly
	Charger access category	Site level granularity, refreshed monthly
	Charger technology information: Charger class level	Charger level granularity, refreshed monthly
Site Zoning and Ownership	Information on who owns land parcels, associated contact information	Site level granularity, refreshed annually
	Zoning information on sites	Site level granularity, refreshed annually
New construction	Business name, industry, existing fleets and/or plans to introduce fleets	Site level granularity, refreshed continuously

8. **What Data Relationships Does the IEDR Need to Analyze for This Use Case?**
   The "EVSE Siting – Strategic Locations Suitability" Use Case information will need to have data relationships:

   - All outlined data types within the "EVSE Siting – Strategic Locations Suitability" Use Case will need to be associated via location information (address or geographic coordinates);
   - EVSE load serving capacity information;
   - "EVSE Siting – LMI Customer" Use Case information;
   - Customer account information; and
   - EV MRP Approved Contractor information.

   All data elements should be associated with location by full address and geographic coordinates. If full address is not possible, data should include zip code so that each data element can be compared to identify ideal locations for EVSE siting.

   Addresses should be in the same format as utility customer account data so that ideal locations can be associated with customer account information. This will allow utilities to easily identify contact information for customers with potential host sites. Utilities can also use address and service territory information from the list of EV MRP Approved Contractors to perform outreach to contractors performing work in ideal locations.

9. **What Data Analysis Function(s) Does the IEDR Need for This Use Case?**
   To be identified as the data sets are developed.

   a. **What are the Minimum Necessary User Input Variables Needed to Enable a Useful Analysis?**
      N/A

10. **How Often Does the Stakeholder Expect to Employ This Use Case?**
    The utilities will employ this Use Case annually.

11. **How Does This Use Case Benefit the Stakeholder?**
    1. **Driving towards CLCPA goals:** The "EVSE Siting – Strategic Locations Suitability" Use Case empowers the utilities with information to advance the deployment of Zero-Emissions Vehicles in New York State, which will help advance CLCPA emissions goals.
    2. **Meeting EV MRP Order requirements:** The Use Case will also help the utilities meet requirements outlined in NYPSC's Order Establishing Electric Vehicle Infrastructure Make-Ready Program and Other Programs,[5] where the Joint Utilities were directed to identify strategic locations for EVSE deployment so they can perform targeted education and outreach to potential site hosts and developers in those areas.

12. **Why Should This Use Case Be Prioritized From the Perspective of i) the Industry and ii) the Citizens of New York State?**
    Utilities will use information provided by the "EVSE Siting – Strategic Locations Suitability" Use Case to provide industry with information that will allow them to target customers with optimal sites for EVSE. This will help developers and other EVSE installation service providers expand their business throughout New York State. This in turn will help the citizens of NYS by increasing accessibility of EVSE equipment and improving air quality through reduced emissions compared to gasoline-powered vehicles.

    This Use Case will also provide information that will inform EVSE adoption scenarios for overall system impact and load forecasting.

[5] Case 18-E-0138, *Proceeding on Motion of the Commission Regarding Electric Vehicle Supply Equipment and Infrastructure* (EVSE Proceeding), Order Establishing Electric Vehicle Infrastructure Make-Ready Program and Other Programs (issued July 16, 2020) and EVSE Proceeding, Errata Notice (issued November 3, 2020).

July 23, 2021

Re: Mission:data Coalition Use Cases for NYSERDA IEDR

On behalf of Mission:data Coalition, a non-profit organization working to improve permission-based energy data exchanges nationwide for the benefit of consumers and distributed energy resources (DERs), please see our enclosed Use Case Profiles. By representing 30 advanced energy companies, many of whom provide services to New Yorkers today, we believe our submittal provides NYSERDA with practical and actionable insights about what data is used today by leading DER providers and how access to customer data can be improved.

Most immediate needs that the IEDR should address as soon as possible: To reiterate from our March 15, 2021 comments filed in Docket No. 20-M-0082, the immediate needs of DER providers are the following:

A) Permission-based access to customer energy data (electric and gas), including usage, account information, billing history and bill images

B) Analysis of portfolio-level energy savings, and providing tools for DER providers to link individual customers to the portfolio as a whole

C) Enable the loading of software "apps" onto smart meters, focused on Avangrid and National Grid

Prioritization criteria: In addition to enclosing detailed cost-benefit analysis information where available, Mission:data believes the following criteria for prioritization should apply:

1. Use cases should serve multiple DER providers as a category, rather than be tailored to individual firms

Respectfully submitted,

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Use Case #1:

Permission-based access to comprehensive customer energy data for DERs

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2-3. Use case categories and sub-categories

The following categories and sub-categories apply to this use case:

- DER development and use
  - identifying, evaluating, and/or engaging potential DER customers
  - preparing and/or optimizing DER development plans
  - preparing and/or optimizing DER operating plans
  - designing, implementing, and/or operating DER aggregations
  - monitoring and evaluating the deployment and use of DERs
  - designing and implementing Community Distributed Generation
- Transportation electrification
  - identifying, evaluating, and/or engaging existing EV owners/operators
  - identifying, evaluating, and/or engaging potential EV owners/operators
  - monitoring and/or evaluating EV acquisitions and uses
  - preparing and/or optimizing plans for developing EV charging facilities
  - preparing and/or optimizing plans for operating EV charging facilities
  - monitoring and/or evaluating the deployment and use of EV charging facilities
- Building electrification
  - identifying, evaluating, and/or engaging energy consumers and energy managers in existing buildings
  - monitoring and/or evaluating acquisitions and uses of building electrification solutions
  - building energy benchmarking
  - identifying, evaluating, and/or selecting opportunities for building electrification
  - preparing and/or optimizing plans for developing building electrification solutions
  - preparing and/or optimizing plans for operating building electrification solutions
  - monitoring and/or evaluating the deployment and performance of building electrification solutions

- Energy efficiency
    - identifying, evaluating, and/or engaging customers with existing EE solutions;
    - identifying, evaluating, and/or engaging potential EE customers;
    - monitoring and/or evaluating EE acquisitions and uses;
    - building energy benchmarking;
    - identifying, evaluating, and/or selecting EE opportunities;
    - preparing and/or optimizing plans for deploying EE solutions;
    - monitoring and/or evaluating the deployment and use of EE solutions;
    - designing and implementing Community Choice Aggregation (CCA) solutions

4. What question(s) does the stakeholder seek to answer with this use case?

As discussed with NYSERDA during our June 28, 2021 meeting with Michael Murray, this use case covers a very broad range of activities. The common thread is that a customer is working with a non-utility DER provider and the customer grants his or her permission to the utility to share usage, account, billing and other information with the DER provider in order to access a product or service. Here is a subset of questions that could be posed by the DER provider:

- What opportunities exist for energy efficiency, demand response, building electrification, etc. given the home or building's energy profile?
- How did a home/building (or a collection of homes/buildings) perform with regard to a historical energy efficiency intervention or demand response event?
- What is the payback time of rooftop solar or heat pumps at my house?[1]
- What is my home's "base load" of always-on electronics and how much could I save?

5. What information should the use case produce for the stakeholder?

The information sought from the utility is all **customer-specific** data that falls into these categories: (1) usage data (at whatever interval is available), (2) account information (including, but not limited to, account numbers, meter numbers, service addresses, and the relationships among them), (3) billing information (including, but not limited to, the rates or tariffs applicable to the customer, bill line items, bill images or PDFs, payment history, etc.) and (4) any information necessary to determine eligibility for participation in efficiency, demand response, or renewable energy programs.

[1] Note: We do *not* expect the IEDR to provide cost information on solar panels or heat pump installation. The DER provider will have cost information, and will use the customer's usage and billing history from the IEDR to calculate payback time.

(a) How will the stakeholder use the information produced by this use case?

It is difficult to answer this question given the range of possibilities. The DER provider will digest and analyze the customer data, combine it with other data they have available (such as contractors' bids, interest rates for financing given customer credit scores, square footage information from Zillow, etc.) described above in order to suit their offering. However, in addition to the example scenarios above, see our two reports that highlight several DERs and provide examples of the services they could provide to customers:

http://www.missiondata.io/s/EmPOWEREDConsumer_CaseStudy.pdf

http://www.missiondata.io/s/Got-Data-value-of-energy-data-access-to-consumers.pdf

(b) What are the minimum necessary attributes for each type of information produced?

We answer this question in two parts. First, the data provided should meet a "best available" standard. This means that whatever the utility has at any particular time that is the best or most accurate information to the utility's knowledge should be made available to the DER provider. If subsequent usage or billing data becomes available to the utility that is more accurate for any reason (such as a disputed bill or an estimated interval usage reading), then that information should be transmitted to the DER provider and clearly marked as being updated. This is a particularly useful principle to apply when, for example, wading through the complexities of validation, editing and estimation (VEE) rules that apply to meter data.

Second, there are necessary attributes of the IEDR platform from an information technology perspective. These are what you might refer to as "non-functional requirements" and should include the following:

- Uptime: 99.5% uptime or greater, measured on a calendar month basis
- Scheduled maintenance: Maintenance windows up to 12 hours per month, announced several weeks in advance
- Responsiveness: After a customer clicks "Agree" to share their data with a DER provider, the requested data should be transmitted within 60-90 seconds
- Metrics and reporting: On a publicly-available website, the IEDR should report uptime, web page load time, customer funnel statistics, and the like, sortable by time period, device type and operating system

California provides a model for these performance metrics.

6. How should the IEDR user interface present the information produced by the use case?

We do not believe the IEDR user interface needs any special tools for presenting the information because it is the DER provider that will manipulate the data with their own tools. Nevertheless, the IEDR user interface should help facilitate administrative functions, such as:

- Security certificate management (adding/deleting SSL certificates)
- Viewing uptime, server status, outages, scheduled maintenance periods, etc.
- Submitting trouble tickets or bugs
- Viewing customers who have completed authorizations in a rudimentary dashboard, with simple data download capabilities (if the DER provider does not want to develop software to communicate via API, they could use the dashboard as an alternative)

As part of its evaluation, Mission:data recommends that NYSERDA consider the Smart Meter Texas dashboard (www.smartmetertexas.com), developed by the Texas utilities, and the Silicon Valley Clean Energy dashboard (data.svcleanenergy.org), provided by UtilityAPI, as starting points.

7. What type(s) of data does the IEDR need to analyze for this use case?

None. The IEDR does not need to analyze any of the customer data requested, because that is the role of the DER provider.

(a) What are the minimum necessary data attributes for each type of data collected and analyzed?

Not applicable.

8. What data relationships does the IEDR need to analyze for this use case?

In general, the IEDR itself does not need to analyze any of the customer data requested in this use case. However, as a "conduit" for DER providers to access customer data, the IEDR will of course need to maintain accurate relationships between customers, their service addresses and meters, so that the correct usage information consistent with the customer's authorization is transmitted.

9. What data analysis functions does the IEDR need for this use case?

None.

(a) What are the minimum necessary user input variables needed to enable a useful analysis?

Not applicable.

10. How often does the stakeholder expect to employ this use case?

Every day, including holidays and weekends. DER providers will run various marketing campaigns, and customers will complete the authorization whenever it is convenient for them. In other words, the API services need to be available 24x7x365.

11. How does this use case benefit the stakeholder?

See the Mission:data reports cited above that document potential energy savings of 6% to 18% when customers have access to data-driven energy management services. In addition, DER providers and utilities will benefit because the IEDR provides a pathway other than credential-sharing (this is the practice of asking customers for their usernames and passwords to their utility accounts and accessing the information automatically). Credential-sharing can be costly for DERs, and utilities will gain confidence in knowing which entities are accessing customer data.

12. Why should this use case be prioritized from the perspective of (i) the industry and (ii) the citizens of New York State?

Mission:data views this as foundational to virtually all of the other REV goals New York seeks to achieve. We also reiterate that other jurisdictions have conducted cost-benefit analyses of improved access to customer-specific data and found a CAD$180-$198 benefit per commercial building per year, in addition to 2%-10% energy savings benefits. See Michael Murray's email to iedr@nyserda.ny.gov on June 29, 2021 on the topic of cost-benefit analyses in other jurisdictions.

Use Case #2:

Enabling demand flexibility markets

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2-3. Use case categories and sub-categories

The following categories and sub-categories apply to this use case:

- DER development and use
  - identifying, evaluating, and/or engaging potential DER customers
  - preparing and/or optimizing DER development plans
  - preparing and/or optimizing DER operating plans
  - designing, implementing, and/or operating DER aggregations
  - monitoring and evaluating the deployment and use of DERs
- Transportation electrification
  - identifying, evaluating, and/or engaging existing EV owners/operators
  - identifying, evaluating, and/or engaging potential EV owners/operators
  - monitoring and/or evaluating EV acquisitions and uses
  - monitoring and/or evaluating the deployment and use of EV charging facilities
- Building electrification
  - identifying, evaluating, and/or engaging energy consumers and energy managers in existing buildings
  - monitoring and/or evaluating acquisitions and uses of building electrification solutions
  - identifying, evaluating, and/or selecting opportunities for building electrification
  - preparing and/or optimizing plans for developing building electrification solutions
  - preparing and/or optimizing plans for operating building electrification solutions
  - monitoring and/or evaluating the deployment and performance of building electrification solutions
- Energy efficiency
  - identifying, evaluating, and/or engaging customers with existing EE solutions;
  - identifying, evaluating, and/or engaging potential EE customers;
  - monitoring and/or evaluating EE acquisitions and uses;
  - building energy benchmarking;

    - identifying, evaluating, and/or selecting EE opportunities;
    - preparing and/or optimizing plans for deploying EE solutions;
    - monitoring and/or evaluating the deployment and use of EE solutions;
    - designing and implementing Community Choice Aggregation (CCA) solutions
- Local government functions
    - Community Choice Aggregation
    - Other: evaluating the impacts of building codes or local efficiency programs
- State government functions
    - Energy-related R&D
    - Regulatory research and planning
    - Regulatory oversight
    - Other: evaluating impacts and cost-effectiveness of market-based demand-side energy procurement

4. What question(s) does the stakeholder seek to answer with this use case?

The Stakeholder in this use case would be a vendor interested in implementing a state-wide demand flexibility marketplace (such as www.demandflexmarket.com).

The IEDR would not have to answer any questions, and would rather serve as a central hub for access to standardized data on energy consumption and key meta data to operationalize the marketplace.

In the course of implementing the marketplace, the following questions, and many others, may be answered:

- How much energy is being saved among a portfolio of homes/buildings at a particular time?
- What project attributes are yielding the greatest energy savings (i.e. contractor, measure type, zip code, building type, etc.)?
- How much will I get paid in a pay-for-performance program given my performance over a given time period?

5. What information should the use case produce for the stakeholder?

The use case is a market implementation model for deploying distributed energy resources that can in turn be bought or procured by utilities, program administrators, the NYISO or state agencies in aggregate to meet climate goals or optimize grid resources.

The IEDR would serve as a data access hub for qualified vendors (per the data access framework certification requirements) to support the aggregation of DERs.

(a) How will the stakeholder use the information produced by this use case?

Data would be made accessible to the stakeholder to operationalize the marketplace. This would include energy consumption data, customer meta data, including locational data. All data would be protected and secured by the vendor.

(b) What are the minimum necessary attributes for each type of information produced?

Hourly energy consumption data would need to be available for the scope of the market footprint geographically and updated annually, quarterly, or daily depending on the requirements of the procurement (e.g. a demand response marketplace may need daily; whereas an electrification program may suffice with quarterly or annual updates). The precision, accuracy and granularity would also be dependent on the procurement. Settlement quality meter data at the hourly level may be sufficient for the assumptions of this exercise.

6. How should the IEDR user interface present the information produced by the use case?

Direct access via API would be the only interface necessary for access to raw data to enable this use case. The vendor may also present information externally as illustrated in the form of maps and reports to answer publicly relevant questions. For example, see: https://seat-poc.herokuapp.com/

7. What type(s) of data does the IEDR need to analyze for this use case?

Hourly energy consumption data is the primary data type that would be collected along with basic customer account information (name, location, rate, building type). Standardization across utilities (formats, fields etc) would be completed within the IEDR.

(a) What are the minimum necessary data attributes for each type of data collected and analyzed?

Settlement-quality interval usage data will be necessary for energy savings analysis.

8. What data relationships does the IEDR need to analyze for this use case?

The IEDR will need to associate projects with contractors, homes/buildings and meters. However, there would be no supplemental data analysis by the IEDR.

9. What data analysis functions does the IEDR need for this use case?

The IEDR would not be used for analysis in this use case.

(a) What are the minimum necessary user input variables needed to enable a useful analysis?

The IEDR would not be used for analysis in this use case. Vendor would need to specify boundaries of service territory and sector within which the marketplace was being deployed to access the minimum data.

10. How often does the stakeholder expect to employ this use case?

Depending on the marketplace parameters, daily, monthly, quarterly or annually may all be possible timeline for accessing data for this use case.

11. How does this use case benefit the stakeholder?

A myriad of programs currently operate in New York each of which is independently contracted and secured through arduous contracting processes. Opportunities to quickly respond and deploy solutions to things like gas constraints or significantly expand demand flexibility are hampered by that process. They are also necessarily constrained to data access agreements with each utility and data handling has to be customized to each unique situation. Since NY has opted for a centralized data repository, a key benefit would be curating raw data per a standardized specification for basic energy consumption data and customer data and make it available to qualified vendors.

12. Why should this use case be prioritized from the perspective of (i) the industry and (ii) the citizens of New York State?

Demand flexibility opportunities are not being procured in New York in a streamlined way. This use case could open doors for more actors to support New York's climate goals and scale investment in a meaningful way. This would benefit the citizens of New York State through greater investment, more jobs, enhanced infrastructure, and a cleaner future. In addition, this use case ensures that pay-for-performance programs remain innovative and cost-effective. Because pay-for-performance shifts performance risk onto DER aggregators, innovation cycles will be shorter than in traditional programs.

Use Case #3:

Customers load energy analysis "apps" onto their smart meter

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2-3. Use case categories and sub-categories

The following categories and sub-categories apply to this use case:

- DER development and use
  - identifying, evaluating, and/or engaging potential DER customers
  - preparing and/or optimizing DER development plans
  - preparing and/or optimizing DER operating plans
  - designing, implementing, and/or operating DER aggregations
  - monitoring and evaluating the deployment and use of DERs
- Transportation electrification
  - identifying, evaluating, and/or engaging existing EV owners/operators
  - identifying, evaluating, and/or engaging potential EV owners/operators
  - monitoring and/or evaluating EV acquisitions and uses
  - monitoring and/or evaluating the deployment and use of EV charging facilities
- Building electrification
  - identifying, evaluating, and/or engaging energy consumers and energy managers in existing buildings
  - monitoring and/or evaluating acquisitions and uses of building electrification solutions
  - identifying, evaluating, and/or selecting opportunities for building electrification
  - preparing and/or optimizing plans for developing building electrification solutions
  - preparing and/or optimizing plans for operating building electrification solutions
  - monitoring and/or evaluating the deployment and performance of building electrification solutions
- Energy efficiency
  - identifying, evaluating, and/or engaging customers with existing EE solutions;
  - identifying, evaluating, and/or engaging potential EE customers;
  - monitoring and/or evaluating EE acquisitions and uses;
  - building energy benchmarking;

- identifying, evaluating, and/or selecting EE opportunities;
- preparing and/or optimizing plans for deploying EE solutions;
- monitoring and/or evaluating the deployment and use of EE solutions;

4. What question(s) does the stakeholder seek to answer with this use case?

In this use case, the DER aggregator need permission to deploy, via the utility's AMI network, a software "app" onto a customer's meter. This use case only applies to customers of Avangrid and National Grid that have the latest smart meter technology in which a Linux computer is embedded in the meter. The questions this use case helps answer are:

- Is a given customer eligible to have an app loaded onto their meter? (Perhaps AMI network limitations or other restrictions make it impossible.)
- Does the utility report any errors after the customer has granted authorization to load the app?

For more information about how the new smart meters function, please see our enclosed report, "Digital Platform Regulation."

5. What information should the use case produce for the stakeholder?

Once successful in deploying an app to a customer's meter, the IEDR should enable the DER provider to receive, directly from the customer's meter over their home or business Wifi connection, the following two pieces of information: (1) the customer's real-time energy usage data (perhaps every 1-5 seconds) and (2) disaggregation of usage into devices and appliances (e.g., "your water heater is 20% of your total bill"). Disaggregation is performed on the meter itself, with only the results being transmitted directly to the DER provider. To be clear, the IEDR is not the source of this information; instead, the IEDR merely manages the permissions and deployment of a software app made by a DER provider onto the customer's meter(s).

(a) How will the stakeholder use the information produced by this use case?

It will be used by DER aggregators to improve their offerings by knowing what devices and appliances are consuming electricity. In particular, real-time usage data at intervals of a few seconds will be extremely valuable for demand response.

(b) What are the minimum necessary attributes for each type of information produced?

To be clear, this use case is not about the IEDR delivering data to the DER provider. Rather, it is about the IEDR facilitating the deployment of smart meter "apps" over the utilities' AMI networks. Both Avangrid and National Grid are pursuing a new generation of advanced meter in which apps can be loaded to run computations locally on the meter. The DER provider can write its own software application to perform whatever functions are supported by that particular meter manufacturer. The important point is that the IEDR is not involved in authoring such apps, but rather serves as an important centralized administrator to deploy the app over the utility's AMI network once the customer has granted permission.

6. How should the IEDR user interface present the information produced by the use case?

A simple management dashboard would suffice for managing customers' app authorizations, app loading status, error messages, etc.

7. What type(s) of data does the IEDR need to analyze for this use case?

Besides interacting with the utilities' AMI systems, there is no customer data the IEDR itself needs to analyze.

(a) What are the minimum necessary data attributes for each type of data collected and analyzed?

Not applicable.

8. What data relationships does the IEDR need to analyze for this use case?

The IEDR needs to maintain correct relationships between customers and their meters.

9. What data analysis functions does the IEDR need for this use case?

None.

(a) What are the minimum necessary user input variables needed to enable a useful analysis?

Not applicable.

10. How often does the stakeholder expect to employ this use case?

Daily – whenever a customer is solicited and approves loading the app of their choice.

11. How does this use case benefit the stakeholder?

See the attached report, "Digital Platform Regulation," that shows disaggregations accuracies of 90% or greater are possible with meter-based computing platforms.

12. Why should this use case be prioritized from the perspective of (i) the industry and (ii) the citizens of New York State?

One of the promises of New York's multi-billion-dollar advanced metering deployment is that customers will have increased insight into, and control over, their energy usage. This promise can only be fulfilled when utilities are not the bottleneck to innovation. By opening the meter-based computing platforms to entrepreneurs, customers can choose to have an app of their choice assist them with home energy management functions.

COMMENTS OF THE NEW YORK POWER AUTHORITY

Proposed Use Case: Determine Customer Site Hosting Capacity

Name and Contact Information

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Most Immediate Needs that the IEDR Should Address as soon as possible

Deployment of distributed energy resources (DER) is a key part of New York's strategy to achieve the Climate Leadership and Community Protection Act's (CLCPA) clean energy goals. The Integrated Energy Data Resource (IEDR) Program should expand equal access to regularly updated data that DER developers can use to evaluate site feasibility and project economics, thereby reducing barriers to DER development. Including such data in Phase 1 of the IEDR Program will support economic and efficient DER interconnection, growth of competitive DER development and aggregation markets, and integration of clean energy resources into New York's energy system.

Criteria used to prioritize initial use cases

The New York Power Authority (NYPA) recommends that initial use cases should be evaluated in the extent to which they support the following:

- Providing market participants with equal access to information that can be used to analyze DER business cases
- Identifying viable DER interconnection sites
- Reducing costs associated with DER deployment

1) Contributor Name & Contact Information

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2) Use Case Category

Deploying and using DERs

3) Use Case Sub-Categories

- Identifying, evaluating, and/or selecting potential DER locations
- Identifying, evaluating, and/or engaging potential DER customers
- Preparing and/or optimizing DER development plans
- Preparing and/or optimizing DER operating plans
- Designing, implementing, and/or operating DER aggregations
- Monitoring and evaluating the deployment and use of DERs
- Designing and implementing Community Distributed Generation (CDG) solutions

4) What Question(s) Does the Stakeholder Seek to Answer with This Use Case?

- How much integration/load capacity exists on the local distribution system for an existing or potential DER interconnection or for increasing load?
- How much integration/load capacity exist on the local distribution system to support larger scale EV charging facilities or other related services that would significantly change loads?

5) What Information Should the Use Case Produce for the Stakeholder?

The use case should be able to provide the stakeholder with up-to-date information on substation load and hosting capacity, circuit load and hosting capacity, and customer site load and hosting capacity. Users should be able to view and query estimated hosting/load capacities for sites, circuits, and substations whereby estimated hosting capacity is provided for all service points and all relevant levels of aggregation.

This use case would be focused on providing direct access to proposed IEDR data elements including hosting capacity at the substation transformer, hosting capacity at the end of the line, and hosting capacity at the service address. This use case would determine the preliminary planning estimates of customer site hosting capacity. Important aspects of the use case would include the timely updating of data based on new DER interconnections and changes in circuit characteristics, components, or topology.

(a) How Will the Stakeholder Use the Information Produced by This Use Case?

NYPA will use information on hosting and load capacity to plan and evaluate potential DER sites. For instance, information on hosting and load capacity can be used to determine whether a given site could be approved for a DER to provide ancillary grid services.

(b) What are the Minimum Necessary Attributes for Each Type of Information Produced?

Substation loads and hosting capacities,

- Load rating at the substation
- Load factor at the substation
- Historical hosting capacity at the substation
- Forecasted hosting capacity at the substation
- 3V0 protection at the substation

Circuit loads and hosting capacities

- Historical hosting capacity at end of line
- Forecasted hosting capacity at end of line
- Hosting capacity calculation methodology
- Hosting capacity calculation inputs
- Hosting capacity constraint reason(s)
- Circuit average load
- Circuit average peak
- Circuit peak times
- Circuit load factor
- Nominal circuit voltage
- Distance to the substation

Customer site loads and hosting capacities

- Local energy value
- Local capacity value
- Measured consumption interval data
- Synthesized consumption interval data
- Hosting capacity at service location
- Service Voltage
- Number of phases
- Load factor

Queued DER details

- Interconnection Request ID
- Interconnection queue position
- Interconnection status
- Forecasted power interval data
- Planned operational date

Forecasted DER details

- Forecasted DER ID
- Forecasted DER type
- Forecasted DER capacity
- Forecasted power interval data
- Forecasted operational date

In addition to the above data items, which were proposed in the IEDR Whitepaper, NYPA also recommends that the IEDR include historical Value of Distributed Energy Resources (VDER) Rates at the point of interconnection. This will enable developers to model potential DER project compensation rates.

6) How Should the IEDR User Interface Present the Information Produced by the Use Case?

The IEDR user interface should utilize simple cascading dashboards that allow for visualizations of hosting and load capacity at the substation, circuit, and site levels. The interface should support user searches by address, transmission node, and substation. Additionally, the user should be able to manually search for hosting and load capacity in a given geographic location by using manual pan/zoom/select methods over a street map. Data produced by the use case should be consumable by the interface either through a custom application programming interface (API) or representational state transfer (REST) endpoint. The IEDR user interface should also generate a standard profile report at each of the levels identified above.

The IEDR user interface should also utilize an interactive screen for entering potential DER loads at a given site and recalculating available integration capacity. In this setting, the user should be able to add discreet DER load and receive summary hosting capacity data at the sites, circuits, and substation levels.

7) What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?

(a) What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?

Utility data should be updated monthly, with a 5% accuracy threshold. Historical utility data should go back 5 years. Building/EV level data should be updated daily, with a 2% accuracy threshold. Historical building/EV level data should go back 3 years.

8) What Data Relationships Does the IEDR Need to Analyze for This Use Case?

The required electric hierarchical relationship that is required is site to feeder to substation transformer to substation high side bus (ISO Node).

9) What Data Analysis Function(s) Does the IEDR Need for This Use Case?

For the data elements identified in 5b, above, the IEDR should be able to generate averages, maximums, and minimums. For all consumption-based information, data should be available as a 24-hour profile whereby load information is reported hourly. The IEDR should also be able to provide a summer peak profile, winter peak profile, and average monthly profile for all data elements listed in 5b.

(a) What are the Minimum Necessary User Input Variables Needed to Enable a Useful Analysis?

For the proposed use case, the critical data is the hosting capacity and load information at the site and the substation. One missing component is that the IEDR fields are proposed to collect the high side bus loading of substation transformers. Users must be able to view this transformer information summarized to the high-side bus of the substation to ascertain overall hosting capacity at the substation. User input would be the criteria to search and locate specific sites or substations. The specific methods should be TBD for the actual use case design/build however most likely this input

would be a geographic location (e.g. address, intersection, municipality, coordinates, or manual pan/zoom via a geographic interface) and parameters related to identifying substations connected to a specific node with at least "X" hosting capacity."

10) How Often Does the Stakeholder Expect to Employ This Use Case?

NYPA expects that this use case would be used weekly.

11) How Does This Use Case Benefit the Stakeholder?

This use case will allow stakeholders to know if a customer site is connected to the distribution system operator's (DSO) distribution network in a location that has hosting capacity for DERs.

12) Why Should This Use Case Be Prioritized from the Perspective of i) the Industry and ii) the Citizens of New York State?

Industry

From the industry's perspective, this use case will allow prosumers to better evaluate the economics of DER investments and to reduce interconnection requests at non-viable locations. It will enable greater visibility into hosting capacity available at a given site, thus helping DER developers and aggregators understand when investments in utility distribution system upgrades would be needed to increase hosting capacities.

Citizens of New York State

This use case will benefit the citizens of New York State by promoting an open DER market with equal access to information on site economics, thereby ensuring that DSOs do not have an unfair advantage in knowing where DER deployments are viable. By providing information on where DER interconnections are viable, the use case will support competition between aggregators and reduce customer costs for aggregation services. This will facilitate greater customer choice and promote job growth via a vibrant and competitive aggregation services market. Competition will allow additional DER aggregators to serve customers in New York, facilitating greater customer choice in aggregator service providers and promoting job growth in this industry. Furthermore, this use case will support New York's efforts to deploy clean energy and reduce carbon emissions pursuant to the goals of the CLCPA.

Integrated Energy Data Resource (IEDR) Stakeholder Use Case Survey Template

Comments Due: July 23, 2021 to iedr@nyserda.ny.gov

Backgroud and Overview:

The Integrated Energy Data Resource (IEDR) concept has developed through several years of prior work that ultimately led to the New York Public Service Commission's IEDR Order[1] on February 11, 2021. As the resulting IEDR program begins, NYSERDA asks stakeholders to help by identifying, characterizing, and prioritizing a preliminary set of potential IEDR use cases.

The IEDR is intended to eventually support many use cases, but development will begin with an initial set of five to ten priority use cases. These first use cases need to have practical value, urgency, and reliability that a novel data platform can deliver. At the outset, the descriptions of the initial IEDR use cases may be high-level, but specifications will become much more detailed as development proceeds. Also, to achieve a successful launch of the IEDR, we will consider how the initial set of IEDR use cases functions as a portfolio.

To aid our investigation of potential IEDR use cases, NYSERDA is asking stakeholders to use the form provided below to profile use cases that will be most valuable to them. To arrive at consistent profiles of potential use cases, stakeholders, together with the Program Manager and later with the participation of the Solution Architect, will subsequently discuss overlaps, similarities, and differences across their submissions.

Individuals and organizations comprising an industry sector and/or including multiple industry sectors are strongly encouraged to collaborate in the preparation of use case profiles.

The stakeholders' use case profiles will serve as a starting point for specifying and prioritizing IEDR use cases. As the IEDR program progresses, stakeholders may be asked to provide additional details. As potential use cases become better understood, stakeholders should expect their specifications to evolve through peer review.

In preparing these initial profiles, stakeholders should keep in mind that in its Order, the Commission stated that the IEDR is intended to enable use cases that materially improve and/or accelerate investment, operational, or regulatory decisions related to DERs, energy efficiency, environmental justice, or electrification strategies for transportation and buildings thereby facilitating one or more of New York State's REV and CLCPA objectives to accelerate New York's progress toward the climate and equity goals set for the state in the CLCPA and related legislation Orders issued by the Commission. IEDR use cases and their individual goals must be clearly aligned with these statewide commitments.

Instructions for Submitting Comments and Profiles:

Each submission of comments is to include:

- A cover sheet that contains
  - the name and contact information for each of the individual(s) or organization(s) on whose behalf the comments are submitted
  - what are your most immediate needs that the IEDR should address as soon as possible
  - what criteria should be used to prioritize initial use cases
  - if desired, a suggested definition of use case to be used for the IEDR
- A separate use case profile, consisting of responses to the topics below, should be completed for each potential use case presented by a stakeholder(s).
- Each profile should contain:

[1] See New York State Case 20-M-0082 – Strategic Use of Energy Related Data, (Order Instituting Proceeding) (March 19, 2020); and Case 16-M-0411, Summary Report: Distributed Energy Resource Market Enablement Data Needs (filed in the public comments section on January 6, 2020); and Recommendation to Implement an Integrated Energy Data Resource, Case 20-M-0082: Proceeding on Motion of the Commission Regarding Strategic Use of Energy Related Data, a New York Department of Public Service Staff Whitepaper (May 20, 2020).

- a name/description of the use case being profiled
- a response to each topic beginning with an indication of the topic being addressed, up to one page of narrative, and up to one additional page of diagrams, charts, tables, maps, and references (e.g., sources of key claims or evidence). Please specify dates, times, metrics, and quantities when they are essential.

Use Case Profile Form (using fillable form below is optional) :

1) Contributor Name & Contact Information

Enter the name(s), organization(s), and contact information for the contributor(s) of this profile form.

NYSERDA: Jennifer Singh, jennifer.singh@nyserda.ny.gov; Vanessa Ulmer, vanessa.ulmer@nyserda.ny.gov

2) Use Case Category

Select and enter one of the use case categories listed at the end of this form.

Building Electrification

3) Use Case Sub-Category

Select and enter one of the use case sub-categories listed at the end of this form.

Identifying, evaluating, and/or selecting opportunities for building electrification.

4) What Question(s) Does the Stakeholder Seek to Answer with This Use Case?

Enter the questions that this IEDR use case could answer with information that would be useful to the Stakeholder.

Does a building have adequate service capacity for electrification?

5) What Information Should the Use Case Produce for the Stakeholder?

Describe the type(s) of useful information that the use case should produce.

1) Service capacity in Amps of feeder/wires serving the building
2) Voltage
3) Type of system (delta or wye; single or three phase)
4) Peak demand (electricity) of the building
5) Aggregate electricity usage/consumption data for the building
6) Hosting capacity of the grid at service location
7) "Nice to have": Peak and average annual gas demand of the building
8) "Nice to have": Indication of whether the building is in a gas service area that is at risk of supply constraints (as identified by the gas utility)

(a) How Will the Stakeholder Use the Information Produced by This Use Case?

Explain how the Stakeholder will use each type of information produced.

Today, one barrier to building electrification is a building owner or service provider cannot easily determine whether a building has adequate service capacity for electrification. A stakeholder must request information on the building's existing electrical service from the utility, which can take significant time to get, and often the utility will provide this info only after an application for service upgrade has been submitted. This can require a building owner or service provide to have an engineer complete a feasibility study first, which is an upfront cost, prior to even knowing if electrification is feasible from a service capacity standpoint.

(b) What are the Minimum Necessary Attributes for Each Type of Information Produced?

For each type of information produced, specify the minimum necessary information attributes (i.e. precision, accuracy, granularity, etc.).

1) Service capacity in Amps of feeder/wires serving the building: street address level
2) Service voltage: at service point
3) Type of system (delta or wye; single or 3 phase): at service point
4) Peak demand (electricity): at street address / building level; over past 3 years
5) Aggregate electricity consumption data: at street address / building level; over past 3 years, monthly or annual aggregate consumption
6) Hosting capacity of the grid at service location: per regularly updated data
7) Peak and average annual gas demand: at street address / building level; over past 3 years (as available)
8) Indication of whether the building is in a gas service area that is at risk of supply constraints: YES/NO, per latest utility filing

6) How Should the IEDR User Interface Present the Information Produced by the Use Case?

Identify one or more useful ways to present the output information to the user (i.e. list, table, graph, bar chart, pie chart, map, ... , etc.). For example, a bar chart that shows the number of electric customers on each of several rates within a zip code.

Tabular format
The user could search for a building by street address and access the output information in a table

7) What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?

Identify the one or more types of data - from utilities and/or other sources - that the IEDR will need to analyze to produce useful information. See Appendix B of the Staff IEDR Whitepaper for a preliminary list of data types that could be collected and analyzed by the IEDR.

Electric Service Point Details: Service point ID, Street Address, GIS coordinates, Connected Circuit ID, Service Voltage, Number of Phases, Average Load, Average Peak, hosting capacity at service location

Gas Service Point Details: Service point ID, Street Address, GIS coordinates, Connected Pipeline ID, Interconnection flow rating, Meter ID, Average Demand, Averaged Demand Peak, utility filings on geographic areas at risk of gas supply constraints

(a) What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?

For each type of data analyzed, specify the minimum necessary data attributes (i.e. precision, accuracy, granularity, age, ... , etc.).

The data would be collected and made available via a user-friendly output at the granularity of the building's street address, using data that is refreshed on a periodic basis, with a clear date stamp for the data vintage.

Further development of this use case would require specifying how often the data would be refreshed and what size buildings would be covered (e.g., exclude single family homes and other small buildings that tend to have standardized electrical service).

8) What Data Relationships Does the IEDR Need to Analyze for This Use Case?

Identify the one or more data relationships, if any, that must exist in the IEDR to enable the analyses needed for this use case. For example, the user may want to identify EV registrations and electric utility customer accounts that share the same street address.

n/a

9) What Data Analysis Function(s) Does the IEDR Need for This Use Case?

Identify the one or more analytic functions that the IEDR must apply to each type of data used in this use case. For example, the use case may require the determination of averages, maximums, minimums, durations, and values greater/lesser/equal/between variables set by the user.

Calculation of feeder headroom / available capacity at the service location.

(a) What are the Minimum Necessary User Input Variables Needed to Enable a Useful Analysis?

For each analytic function, specify the one or more input variables that the user must provide (if any) to enable the desired analysis. For each type of input variable needed, specify the type(s) of condition to be applied in the analysis (i.e., greater than, equal to, less than, between, not between, etc.).

Search field for street address

10) How Often Does the Stakeholder Expect to Employ This Use Case?

For example: sub-daily; daily; weekly; monthly; quarterly; semi-annually; annually ...

As needed / on-demand; this data will be most frequently accessed when a building is being considered for electrification

11) How Does This Use Case Benefit the Stakeholder?

Describe how this use case would benefit its Stakeholder(s) and explain how the use case would enable those benefits. Benefits described and explained could include reduced cost, reduced time, greater revenue, reduced risk, increased understanding, ... , etc.

By making data available around the ability of building-level electrical service and local grid infrastructure to support building electrification, this should reduce the risk and costs for building owners/managers and their service providers associated with investing in building electrification measures. This improved transparency should make it less likely that hidden costs or delays appear during the electrification process due to the need to invest in local grid infrastructure, such as feeders/wires or transformers.

12) Why Should This Use Case Be Prioritized From the Perspective of i) the Industry and ii) the Citizens of New York State?

Service providers and building owners/managers benefit from increased transparency over building-level and local grid readiness for building electrification. By providing upfront information around any needed grid infrastructure constraints and potential investments, this will help to expedite projects, and encourage electrification projects that might otherwise not be pursued in the face of uncertainty. Citizens of New York benefit from this enablement of building electrification, due to the co-benefits of improved air quality from the reduction of on-site combustion of fossil fuels, and the reduction in carbon emissions, which is a shared benefit of all New Yorkers.

***The IEDR use case profiles submitted will be shared, and should contain no proprietary information.**

The profiles are regarded as preliminary working papers, and may be revised based on subsequent analysis and discussion. Advocates submitting profiles of similar use cases will work together with the IEDR development teams to come to a consensus. For consistency in development, the IEDR team may elect to format use case submissions into a stanbdardized format such as UML or BPMN.

Use Case Categories:

Enter one of the following use case categories in Part 2 of the survey form.

- DER Development and Use
- Transportation Electrification
- Building Electrification
- Energy Efficiency (EE)
- Electric Utility Function
- Gas Utility Function
- Local Government Function
- State Government Function
- Other (please describe)

Use Case Sub-Categories:

Enter one of the following use case sub-categories in Part 3 of the survey form.

- For DER Development and Use:
  - identifying, evaluating, and/or selecting potential DER locations;
  - identifying, evaluating, and/or engaging potential DER customers;
  - preparing and/or optimizing DER development plans;
  - preparing and/or optimizing DER operating plans;
  - designing, implementing, and/or operating DER aggregations;
  - monitoring and evaluating the deployment and use of DERs;
  - designing and implementing Community Distributed Generation (CDG) solutions; or,
  - other (please describe)

- For Transportation Electrification:
  - identifying, evaluating, and/or engaging existing EV owners/operators;
  - identifying, evaluating, and/or engaging potential EV owners/operators;
  - monitoring and/or evaluating EV acquisitions and uses;
  - identifying, evaluating, and/or selecting potential locations for EV charging facilities;
  - preparing and/or optimizing plans for developing EV charging facilities;
  - preparing and/or optimizing plans for operating EV charging facilities;
  - monitoring and/or evaluating the deployment and use of EV charging facilities
  - other (please describe)

- For Building Electrification:
  - identifying, evaluating, and/or engaging energy consumers and energy managers in existing buildings;
  - identifying, evaluating, and/or engaging energy consumers and energy managers in planned buildings;
  - monitoring and/or evaluating acquisitions and uses of building electrification solutions;
  - building energy benchmarking;
  - identifying, evaluating, and/or selecting opportunities for building electrification;
  - preparing and/or optimizing plans for developing building electrification solutions;
  - preparing and/or optimizing plans for operating building electrification solutions;
  - monitoring and/or evaluating the deployment and performance of building electrification solutions
  - other (please describe)

- For Energy Efficiency (EE):
  - identifying, evaluating, and/or engaging customers with existing EE solutions;
  - identifying, evaluating, and/or engaging potential EE customers;
  - monitoring and/or evaluating EE acquisitions and uses;
  - building energy benchmarking;
  - identifying, evaluating, and/or selecting EE opportunities;
  - preparing and/or optimizing plans for deploying EE solutions;
  - monitoring and/or evaluating the deployment and use of EE solutions;
  - designing and implementing Community Choice Aggregation (CCA) solutions
  - other (please describe)

- For Electric Utility Functions:
  - system planning;
  - DER interconnection;
  - system operations;
  - market enablement;
  - market operations;
  - customer programs and services;
  - regulatory/statutory compliance;
  - other (please describe)

- For Gas Utility Functions:
  - system planning;
  - system operations;
  - market enablement;
  - market operations;
  - customer programs and services;
  - regulatory/statutory compliance;
  - other (please describe)

- For Local Government Functions:
  - building energy benchmarking;
  - Community Choice Aggregation;
  - Community Distributed Generation;
  - facility siting and permitting;
  - environmental justice initiatives;
  - economic development;
  - planning and zoning;
  - other (please describe)

- For State Government Functions:
  - energy-related R&D;
  - regulatory research and planning;
  - regulatory oversight;
  - building energy benchmarking;
  - facility siting and permitting;
  - environmental justice initiatives;
  - economic development;
  - other (please describe)

Integrated Energy Data Resource (IEDR) Stakeholder Use Case Survey Response

Submitted by:

New York State Energy Research and Development Authority (NYSERDA)

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Immediate IEDR Needs:

- Improved understanding of customer energy use and characteristics, including disadvantaged communities
- Access to utility consumption data and/or consumption data trends for participants and nonparticipants
- Distribution of fuels by fuel type and sector
- Energy use intensity data

Criteria for Prioritization:

- Relevance of use case to support statewide, public information sharing
- Application of use case in supporting measurement and verification of savings, market baselines/market progress and clean energy potential
- Application of use case in offsetting time-intensive and costly primary data collection activities

Integrated Energy Data Resource (IEDR) Stakeholder Use Case Survey Template

Comments Due: July 23, 2021 to iedr@nyserda.ny.gov

1) **Contributor Name & Contact Information**
Victoria Engel-Fowles; NYSERDA; victoria.engel-fowles@nyserda.ny.gov; 518-862-1090 x3207

2) **Use Case Category**
State Government Function

3) **Use Case Sub-Category**
Other: Market Characterization, Strategy Development and Program Evaluation

4) **What Question(s) Does the Stakeholder Seek to Answer with This Use Case?**

NYSERDA seeks information to support the following market characterization, strategy and evaluation needs:

- Improved understanding of customer (across sectors) energy use and characteristics, including disadvantaged communities
- Access to utility consumption data and/or consumption data trends for participants and nonparticipants
- Distribution of fuels by fuel type and sector, especially use of utility natural gas or not (with presumption of delivered fuels if not)
- Energy use intensity (EUI) understanding, for example total site energy use per square foot for commercial and residential properties (will apply where building = utility account)

5) **What Information Should the Use Case Produce for the Stakeholder?**

NYSERDA relies on the data sources listed above to conduct measurement and verification of program savings, assess market baselines, monitor market progress and assess clean energy potential in order to design the most effective strategy and programs. However, in absence of ready access to this information, NYSERDA commits significant time and resources to the planning, data collection and analysis of these variables to support evaluation activities as well as communicating the outputs from these analyses to the public. Streamlined access to this information will offset the time and resources needed to collect and analyze this data. Additionally, NYSERDA's current method is to collect these variables from a statistical sample of customers, which is always challenging to extrapolate to a heterogenous population; thus, having the actual data for the entire population is far superior.

(a) How Will the Stakeholder Use the Information Produced by This Use Case?

As described in Question 5 above, the information gathered from this use case will be used to conduct measurement and verification of program savings, assess market baselines, monitor market progress, assess clean energy potential, offset time-intensive and costly primary data collection, and allow for a holistic perspective of data (versus statistical sampling). As an example, customer energy use and characteristics and EUI data supports statewide building/facility stock studies and the strata analyzed therein. In addition, utility consumption data has long been used to assess energy savings prior to and following program interventions for a variety of programs and sectors.

(b) What are the Minimum Necessary Attributes for Each Type of Information Produced?

Pending further discussion, NYSERDA offers the following minimum attributes:

- It is assumed that all consumption data is derived from utility grade meters. In circumstances where data provided is derived from other sources, the information produced should indicate this alternate source and associated precision/accuracy of measurement.
- Where appropriate, site-level data would be ideal, where confidentiality of utility customers is maintained. As an alternative, categorizing data by consumption levels could also be considered.

6) How Should the IEDR User Interface Present the Information Produced by the Use Case?

At minimum, tabular format (Excel or similar). In addition, maps, graphs and bar charts would be useful to help users select data needed for more analysis. All information should be available for download in Excel/CSV format for additional analysis, similar to the existing DER portal.

7) What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?

Certain components of the data types listed in Appendix B of the Staff IEDR Whitepaper would be useful, less any personally-identifiable data (e.g., account ID and customer name). Further, certain variables, such as square footage of homes/buildings/facilities would be useful to add, if available. NYSERDA looks forward to further discussion.

Data types include:

- Electric Customer Details
- Gas Customer Details
- Installed DER Details
- Queued DER Details
- Forecasted DER Details
- Existing Building Details
- Forecasted New Building Details
- Forecasted Building Modification Details

(a) What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?

Response to this question will likely be informed by further discussion. Some minimum necessary data attributes are outlined in the response to Question 5b.

8) What Data Relationships Does the IEDR Need to Analyze for This Use Case?

Where available, data relationships would ideally include a common identifier to cross-reference NYSERDA program participation (where relevant) with other programs, or clearly indicate non-participation.

9) What Data Analysis Function(s) Does the IEDR Need for This Use Case?

Pending further discussion, example analytic functions that the IEDR must apply to each type of data outlined in this use case includes, but is not limited to:

- A histogram indicating the distribution of consumption across selected groups
- Maximum/minimum consumption characteristics to determine peak periods across identified groups/sectors as noted above

(a) What are the Minimum Necessary User Input Variables Needed to Enable a Useful Analysis?

Pending further discussion, input needs include, but are not limited to:

- Fuel type
- Location, including identification of disadvantaged communities
- Sector

10) How Often Does the Stakeholder Expect to Employ This Use Case?

Quarterly or semi-annually

11) How Does This Use Case Benefit the Stakeholder?

As described in Question 5, NYSERDA relies on the data sources listed above to conduct measurement and verification of program savings, assess market baselines, monitor market progress and assess clean energy potential. However, in the absence of ready access to this information, NYSERDA commits significant time and resources to the planning, data collection and analysis of these variables to support evaluation activities as well as communicating the outputs from these analyses to the public. Streamlined access to this information will offset the time and resources needed to collect and analyze this data. Additionally, NYSERDA's current method is to collect these variables from a statistical sample of customers, which is always challenging to extrapolate to a heterogenous population; thus, having the actual data for the entire population is far superior.

As such, the benefits outlined here have relevance to NYS as a whole. In addition to sharing its reports publicly, NYSERDA endeavors to share its anonymized data on OpenNY. Information leveraged from this use case, where appropriate, can contribute to this public-facing data sharing to serve multiple stakeholders, market actors and the public at large.

12) Why Should This Use Case Be Prioritized From the Perspective of i) the Industry and ii) the Citizens of New York State?

As described above, the benefits outlined in this use case do not apply narrowly to NYSERDA. NYSERDA's studies and reports are typically shared publicly; outputs from this use case will leverage and support these studies and reports and contribute to the body of information that is shared publicly.

***The IEDR use case profiles submitted will be shared, and should contain no proprietary information.**

The profiles are regarded as preliminary working papers, and may be revised based on subsequent analysis and discussion. Advocates submitting profiles of similar use cases will work together with the IEDR development teams

to come to a consensus. For consistency in development, the IEDR team may elect to format use case submissions into a standardized format such as UML or BPMN.

Use Case Categories:

Enter one of the following use case categories in Part 3 of the survey form.

- DER Development and Use
- Transportation Electrification
- Building Electrification
- Energy Efficiency (EE)
- Electric Utility Function
- Gas Utility Function
- Local Government Function
- State Government Function
- Other (please describe)

Use Case Sub-Categories:

Enter one of the following use case sub-categories in Part 4 of the survey form.

- For DER Development and Use:
  - identifying, evaluating, and/or selecting potential DER locations;
  - identifying, evaluating, and/or engaging potential DER customers;
  - preparing and/or optimizing DER development plans;
  - preparing and/or optimizing DER operating plans;
  - designing, implementing, and/or operating DER aggregations;
  - monitoring and evaluating the deployment and use of DERs;
  - designing and implementing Community Distributed Generation (CDG) solutions; or,
  - other (please describe)

- For Transportation Electrification:
  - identifying, evaluating, and/or engaging existing EV owners/operators;
  - identifying, evaluating, and/or engaging potential EV owners/operators;
  - monitoring and/or evaluating EV acquisitions and uses;
  - identifying, evaluating, and/or selecting potential locations for EV charging facilities;
  - preparing and/or optimizing plans for developing EV charging facilities;
  - preparing and/or optimizing plans for operating EV charging facilities;
  - monitoring and/or evaluating the deployment and use of EV charging facilities
  - other (please describe)

- For Building Electrification:
  - identifying, evaluating, and/or engaging energy consumers and energy managers in existing buildings;
  - identifying, evaluating, and/or engaging energy consumers and energy managers in planned buildings;
  - monitoring and/or evaluating acquisitions and uses of building electrification solutions;
  - building energy benchmarking;
  - identifying, evaluating, and/or selecting opportunities for building electrification;
  - preparing and/or optimizing plans for developing building electrification solutions;
  - preparing and/or optimizing plans for operating building electrification solutions;
  - monitoring and/or evaluating the deployment and performance of building electrification solutions
  - other (please describe)

- For Energy Efficiency (EE):
  - identifying, evaluating, and/or engaging customers with existing EE solutions;
  - identifying, evaluating, and/or engaging potential EE customers;
  - monitoring and/or evaluating EE acquisitions and uses;
  - building energy benchmarking;
  - identifying, evaluating, and/or selecting EE opportunities;
  - preparing and/or optimizing plans for deploying EE solutions;
  - monitoring and/or evaluating the deployment and use of EE solutions;

- designing and implementing Community Choice Aggregation (CCA) solutions
- other (please describe)

- For Electric Utility Functions:
  - system planning;
  - DER interconnection;
  - system operations;
  - market enablement;
  - market operations;
  - customer programs and services;
  - regulatory/statutory compliance;
  - other (please describe)

- For Gas Utility Functions:
  - system planning;
  - system operations;
  - market enablement;
  - market operations;
  - customer programs and services;
  - regulatory/statutory compliance;
  - other (please describe)

- For Local Government Functions:
  - building energy benchmarking;
  - Community Choice Aggregation;
  - Community Distributed Generation;
  - facility siting and permitting;
  - environmental justice initiatives;
  - economic development;
  - planning and zoning;
  - other (please describe)

- For State Government Functions:
  - energy-related R&D;
  - regulatory research and planning;
  - regulatory oversight;
  - building energy benchmarking;
  - facility siting and permitting;
  - environmental justice initiatives;
  - economic development;
  - other (please describe)

Integrated Energy Data Resource (IEDR) Stakeholder Use Case Survey Template

Comments Due: July 23, 2021 to iedr@nyserda.ny.gov

Backgroud and Overview:

The Integrated Energy Data Resource (IEDR) concept has developed through several years of prior work that ultimately led to the New York Public Service Commission's IEDR Order[1] on February 11, 2021. As the resulting IEDR program begins, NYSERDA asks stakeholders to help by identifying, characterizing, and prioritizing a preliminary set of potential IEDR use cases.

The IEDR is intended to eventually support many use cases, but development will begin with an initial set of five to ten priority use cases. These first use cases need to have practical value, urgency, and reliability that a novel data platform can deliver. At the outset, the descriptions of the initial IEDR use cases may be high-level, but specifications will become much more detailed as development proceeds. Also, to achieve a successful launch of the IEDR, we will consider how the initial set of IEDR use cases functions as a portfolio.

To aid our investigation of potential IEDR use cases, NYSERDA is asking stakeholders to use the form provided below to profile use cases that will be most valuable to them. To arrive at consistent profiles of potential use cases, stakeholders, together with the Program Manager and later with the participation of the Solution Architect, will subsequently discuss overlaps, similarities, and differences across their submissions.

Individuals and organizations comprising an industry sector and/or including multiple industry sectors are strongly encouraged to collaborate in the preparation of use case profiles.

The stakeholders' use case profiles will serve as a starting point for specifying and prioritizing IEDR use cases. As the IEDR program progresses, stakeholders may be asked to provide additional details. As potential use cases become better understood, stakeholders should expect their specifications to evolve through peer review.

In preparing these initial profiles, stakeholders should keep in mind that in its Order, the Commission stated that the IEDR is intended to enable use cases that materially improve and/or accelerate investment, operational, or regulatory decisions related to DERs, energy efficiency, environmental justice, or electrification strategies for transportation and buildings thereby facilitating one or more of New York State's REV and CLCPA objectives to accelerate New York's progress toward the climate and equity goals set for the state in the CLCPA and related legislation Orders issued by the Commission. IEDR use cases and their individual goals must be clearly aligned with these statewide commitments.

Instructions for Submitting Comments and Profiles:

Each submission of comments is to include:

- A cover sheet that contains
  - the name and contact information for each of the individual(s) or organization(s) on whose behalf the comments are submitted
  - what are your most immediate needs that the IEDR should address as soon as possible
  - what criteria should be used to prioritize initial use cases
  - if desired, a suggested definition of use case to be used for the IEDR
- A separate use case profile, consisting of responses to the topics below, should be completed for each potential use case presented by a stakeholder(s).
- Each profile should contain:

[1] See New York State Case 20-M-0082 – Strategic Use of Energy Related Data, (Order Instituting Proceeding) (March 19, 2020); and Case 16-M-0411, Summary Report: Distributed Energy Resource Market Enablement Data Needs (filed in the public comments section on January 6, 2020); and Recommendation to Implement an Integrated Energy Data Resource, Case 20-M-0082: Proceeding on Motion of the Commission Regarding Strategic Use of Energy Related Data, a New York Department of Public Service Staff Whitepaper (May 20, 2020).

- a name/description of the use case being profiled
- a response to each topic beginning with an indication of the topic being addressed, up to one page of narrative, and up to one additional page of diagrams, charts, tables, maps, and references (e.g., sources of key claims or evidence). Please specify dates, times, metrics, and quantities when they are essential.

Use Case Profile Form (using fillable form below is optional) :

1) **Contributor Name & Contact Information**
Enter the name(s), organization(s), and contact information for the contributor(s) of this profile form.

Carmen Best
VP of Policy & Emerging Markets
Recurve Analytics, Inc.
carmen@recurve.com

2) **Use Case Category**
Select and enter one of the use case categories listed at the end of this form.

DER Development and Use; Transportation Electrification; Building Electrification; Energy Efficiency (EE); Electric Utility Function; Gas Utility Function
[Note: this use case spans these categories for optimizing distributed energy resources]

3) **Use Case Sub-Category**
Select and enter one of the use case sub-categories listed at the end of this form.

Potentially all of the sub-categories of the Use Case categories above.

4) **What Question(s) Does the Stakeholder Seek to Answer with This Use Case?**

Enter the questions that this IEDR use case could answer with information that would be useful to the Stakeholder.

The Stakeholder in this use case would be a vendor interested in implementing a state-wide demand flexibility marketplace [www.demandflexmarket.com] with qualifying credentials to securely handle customer data.

The IEDR would not have to answer any questions, and would rather serve as a central hub for access to standardized data on energy consumption and key meta data to operationalize the marketplace.

5) **What Information Should the Use Case Produce for the Stakeholder?**

Describe the type(s) of useful information that the use case should produce.

The use case is a market implementation model for deploying distributed energy resources that can in turn be bought or procured by investor owned utilities, program administrators, the New York Independent System Operator (NYISO) or state agencies in aggregate to meet climate goals or optimize grid resources. It could also be a solution for munis and coops if data was available for these entities were included in the IEDR.

The IEDR would serve as a data access hub for qualified vendors (per the data access framework certification requirements) to support aggregation of DERs.

(a) How Will the Stakeholder Use the Information Produced by This Use Case?

Explain how the Stakeholder will use each type of information produced.

Data would be made accessible to the stakeholder to operationalize the marketplace. This would include energy consumption data (gas and electric), customer meta data, including locational data. All data would be protected and secured by the vendor.

(b) What are the Minimum Necessary Attributes for Each Type of Information Produced?

For each type of information produced, specify the minimum necessary information attributes (i.e. precision, accuracy, granularity, etc.).

Hourly energy consumption data would enable the full scope of the marketplace. Monthly energy consumption (electric and gas) would enable the basic scope of the marketplace concept. The data would need to be provided for the geographic footprint of the marketplace and updated annually, quarterly, or daily depending on the requirements of the procurement (e.g. a demand response marketplace may need daily; whereas an electrification program may suffice with quarterly or annual updates). The precision, accuracy and granularity would also be dependent on the procurement. Settlement quality meter data (electric / gas) at the hourly level would be ideal for the assumptions of this exercise; but monthly electric / gas may also suffice prior to full AMI roll out.

6) **How Should the IEDR User Interface Present the Information Produced by the Use Case?**

Identify one or more useful ways to present the output information to the user (i.e. list, table, graph, bar chart, pie chart, map, ... , etc.). For example, a bar chart that shows the number of electric customers on each of several rates within a zip code.

Direct access via API would be the only interface necessary for access to raw data to enable this use case.

7) **What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?**

Identify the one or more types of data - from utilities and/or other sources - that the IEDR will need to analyze to produce useful information. See Appendix B of the Staff IEDR Whitepaper for a preliminary list of data types that could be collected and analyzed by the IEDR.

Hourly energy consumption data is the primary data type that would be collected along with basic customer account information (name, location, rate, building type). Standardization across utilities (formats, fields etc) would be completed within the IEDR. Both electric and gas consumption data would enable this use case to provide marketplace solutions for things like non-pipes alternatives, or electrification strategies.

(a) What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?

For each type of data analyzed, specify the minimum necessary data attributes (i.e. precision, accuracy, granularity, age, ... , etc.).

No analysis is necessary, beyond curating compliance with standardized data specification.

8) What Data Relationships Does the IEDR Need to Analyze for This Use Case?

Identify the one or more data relationships, if any, that must exist in the IEDR to enable the analyses needed for this use case. For example, the user may want to identify EV registrations and electric utility customer accounts that share the same street address.

The IEDR would not be used for analysis in this use case, but key joins of a customers meta data to their usage data and potentially between gas and electric consumption data for a single customer may be important to include in the data cleaning and processing via the IEDR.

9) What Data Analysis Function(s) Does the IEDR Need for This Use Case?

Identify the one or more analytic functions that the IEDR must apply to each type of data used in this use case. For example, the use case may require the determination of averages, maximums, minimums, durations, and values greater/lesser/equal/between variables set by the user.

The IEDR would not be used for analysis in this use case.

(a) What are the Minimum Necessary User Input Variables Needed to Enable a Useful Analysis?

For each analytic function, specify the one or more input variables that the user must provide (if any) to enable the desired analysis. For each type of input variable needed, specify the type(s) of condition to be applied in the analysis (i.e., greater than, equal to, less than, between, not between, etc.).

The IEDR would not be used for analysis in this use case. A vendor would specify the boundaries of the service territory and/or a sector within which the marketplace was being deployed to access the minimum data.

10) How Often Does the Stakeholder Expect to Employ This Use Case?

For example: sub-daily; daily; weekly; monthly; quarterly; semi-annually; annually ...

Depending on the marketplace parameters, daily, monthly, quarterly or annually may all be possible timeline for accessing data for this use case. Note that electric and gas consumption data may have different access schedules depending on the frequency of the underlying data and the market application.

11) How Does This Use Case Benefit the Stakeholder?

Describe how this use case would benefit its Stakeholder(s) and explain how the use case would enable those benefits. Benefits described and explained could include reduced cost, reduced time, greater revenue, reduced risk, increased understanding, ... , etc.

This use case would benefit the State of New York by enabling a more streamlined way to tackle climate change objectives with performance-based accountability. A myriad of programs currently operate in New York each of which is independently contracted and secured through arduous contracting processes. Opportunities to quickly respond and deploy solutions to things like gas constraints or significantly expand demand flexibility are hampered by that process. They are also necessarily constrained to data access agreements with each utility and data handling has to be customized to each unique situation. Since NY has opted for a centralized data repository, a key benefit would be curating raw data per a standardized specification for basic energy consumption data and customer data and make it available to qualified vendors. Recurve Analytics, Inc would be a qualified vendor that would want to implement demand flexibility market places in New York.

12) Why Should This Use Case Be Prioritized From the Perspective of i) the Industry and ii) the Citizens of New York State?

Demand flexibility opportunities are not being procured in New York in a streamlined way. This use case could open doors for more actors to support New York's climate goals and scale investment in a meaningful way. This would benefit the citizens of New York State through greater investment, more jobs, enhanced infrastructure, and a cleaner future.

***The IEDR use case profiles submitted will be shared, and should contain no proprietary information.**

The profiles are regarded as preliminary working papers, and may be revised based on subsequent analysis and discussion. Advocates submitting profiles of similar use cases will work together with the IEDR development teams to come to a consensus. For consistency in development, the IEDR team may elect to format use case submissions into a stanbdardized format such as UML or BPMN.

Use Case Categories:

Enter one of the following use case categories in Part 2 of the survey form.

- DER Development and Use
- Transportation Electrification
- Building Electrification
- Energy Efficiency (EE)
- Electric Utility Function
- Gas Utility Function
- Local Government Function
- State Government Function
- Other (please describe)

Use Case Sub-Categories:

Enter one of the following use case sub-categories in Part 3 of the survey form.

- For DER Development and Use:
  - identifying, evaluating, and/or selecting potential DER locations;
  - identifying, evaluating, and/or engaging potential DER customers;
  - preparing and/or optimizing DER development plans;
  - preparing and/or optimizing DER operating plans;
  - designing, implementing, and/or operating DER aggregations;
  - monitoring and evaluating the deployment and use of DERs;
  - designing and implementing Community Distributed Generation (CDG) solutions; or,
  - other (please describe)

- For Transportation Electrification:
  - identifying, evaluating, and/or engaging existing EV owners/operators;
  - identifying, evaluating, and/or engaging potential EV owners/operators;
  - monitoring and/or evaluating EV acquisitions and uses;
  - identifying, evaluating, and/or selecting potential locations for EV charging facilities;
  - preparing and/or optimizing plans for developing EV charging facilities;
  - preparing and/or optimizing plans for operating EV charging facilities;
  - monitoring and/or evaluating the deployment and use of EV charging facilities
  - other (please describe)

- For Building Electrification:
  - identifying, evaluating, and/or engaging energy consumers and energy managers in existing buildings;
  - identifying, evaluating, and/or engaging energy consumers and energy managers in planned buildings;
  - monitoring and/or evaluating acquisitions and uses of building electrification solutions;
  - building energy benchmarking;
  - identifying, evaluating, and/or selecting opportunities for building electrification;
  - preparing and/or optimizing plans for developing building electrification solutions;
  - preparing and/or optimizing plans for operating building electrification solutions;
  - monitoring and/or evaluating the deployment and performance of building electrification solutions
  - other (please describe)

- For Energy Efficiency (EE):
  - identifying, evaluating, and/or engaging customers with existing EE solutions;
  - identifying, evaluating, and/or engaging potential EE customers;
  - monitoring and/or evaluating EE acquisitions and uses;
  - building energy benchmarking;
  - identifying, evaluating, and/or selecting EE opportunities;
  - preparing and/or optimizing plans for deploying EE solutions;
  - monitoring and/or evaluating the deployment and use of EE solutions;
  - designing and implementing Community Choice Aggregation (CCA) solutions
  - other (please describe)

- For Electric Utility Functions:
  - system planning;
  - DER interconnection;
  - system operations;
  - market enablement;
  - market operations;
  - customer programs and services;
  - regulatory/statutory compliance;
  - other (please describe)

- For Gas Utility Functions:
  - system planning;
  - system operations;
  - market enablement;
  - market operations;
  - customer programs and services;
  - regulatory/statutory compliance;
  - other (please describe)

- For Local Government Functions:
  - building energy benchmarking;
  - Community Choice Aggregation;
  - Community Distributed Generation;
  - facility siting and permitting;
  - environmental justice initiatives;
  - economic development;
  - planning and zoning;
  - other (please describe)

- For State Government Functions:
  - energy-related R&D;
  - regulatory research and planning;
  - regulatory oversight;
  - building energy benchmarking;
  - facility siting and permitting;
  - environmental justice initiatives;
  - economic development;
  - other (please describe)

Integrated Energy Data Resource (IEDR) Use Cases Stakeholder Cover Letter

- **Contact Information for RESA Members Submitting IEDR Case Studies**
  - John Kern- John.Kern@constellation.com
  - Rich Barlette- Richard.Barlette@exeloncorp.com
  - Rich Spilky- Richard.Spilky@constellation.com
  - Neal Roper- Neal.Roper@constellation.com
  - David Ricketts- David.Ricketts@vistracorp.com
  - John Schatz- John.Schatz@vistracorp.com
  - Stephen Wilson- Stephen.Wilson@vistracorp.com
  - Jeffrey Levine- Jeffrey.Levine@engie.com
  - Joey Lee Miranda- jmiranda@RC.com

- **RESA's Most Immediate Needs that the IEDR Should Address as Soon as Possible**
  - RESA believes that the IEDR should focus on partnering with key stakeholders to standardize and define the data access requirements for ESCOs and other third parties. This includes providing consistent and clear guidance on the step-by-step processes required for ESCOs and others to access customers' energy-related interval data. Additionally, the IEDR data access process should prioritize protecting customers data; this includes the development of uniform cybersecurity and data protection requirements. The IEDR process must also ensure that unnecessary data access barriers are not placed on ESCOs and other third parties that would delay or prevent the development of energy related products and services that benefit customers and help New York achieve its climate and clean energy goals.

- **Criteria Used to Prioritize Initial Use Cases**
  - IEDR should prioritize use cases that require access to customers' energy-related interval data in order to develop and offer products and services that would help customers reduce their carbon footprint and energy consumption. Additionally, all use cases selected should include products or services that will assist New York in achieving the state's Clean Energy goals.

Integrated Energy Data Resource (IEDR) Stakeholder Use Case Survey Template

Comments Due: July 23, 2021 to iedr@nyserda.ny.gov

Backgroud and Overview:

The Integrated Energy Data Resource (IEDR) concept has developed through several years of prior work that ultimately led to the New York Public Service Commission's IEDR Order[1] on February 11, 2021. As the resulting IEDR program begins, NYSERDA asks stakeholders to help by identifying, characterizing, and prioritizing a preliminary set of potential IEDR use cases.

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To aid our investigation of potential IEDR use cases, NYSERDA is asking stakeholders to use the form provided below to profile use cases that will be most valuable to them. To arrive at consistent profiles of potential use cases, stakeholders, together with the Program Manager and later with the participation of the Solution Architect, will subsequently discuss overlaps, similarities, and differences across their submissions.

Individuals and organizations comprising an industry sector and/or including multiple industry sectors are strongly encouraged to collaborate in the preparation of use case profiles.

The stakeholders' use case profiles will serve as a starting point for specifying and prioritizing IEDR use cases. As the IEDR program progresses, stakeholders may be asked to provide additional details. As potential use cases become better understood, stakeholders should expect their specifications to evolve through peer review.

In preparing these initial profiles, stakeholders should keep in mind that in its Order, the Commission stated that the IEDR is intended to enable use cases that materially improve and/or accelerate investment, operational, or regulatory decisions related to DERs, energy efficiency, environmental justice, or electrification strategies for transportation and buildings thereby facilitating one or more of New York State's REV and CLCPA objectives to accelerate New York's progress toward the climate and equity goals set for the state in the CLCPA and related legislation Orders issued by the Commission. IEDR use cases and their individual goals must be clearly aligned with these statewide commitments.

Instructions for Submitting Comments and Profiles:

Each submission of comments is to include:

- A cover sheet that contains
  - the name and contact information for each of the individual(s) or organization(s) on whose behalf the comments are submitted
  - what are your most immediate needs that the IEDR should address as soon as possible
  - what criteria should be used to prioritize initial use cases
  - if desired, a suggested definition of use case to be used for the IEDR
- A separate use case profile, consisting of responses to the topics below, should be completed for each potential use case presented by a stakeholder(s).
- Each profile should contain:

[1] See New York State Case 20-M-0082 – Strategic Use of Energy Related Data, (Order Instituting Proceeding) (March 19, 2020); and Case 16-M-0411, Summary Report: Distributed Energy Resource Market Enablement Data Needs (filed in the public comments section on January 6, 2020); and Recommendation to Implement an Integrated Energy Data Resource, Case 20-M-0082: Proceeding on Motion of the Commission Regarding Strategic Use of Energy Related Data, a New York Department of Public Service Staff Whitepaper (May 20, 2020).

- a name/description of the use case being profiled
- a response to each topic beginning with an indication of the topic being addressed, up to one page of narrative, and up to one additional page of diagrams, charts, tables, maps, and references (e.g., sources of key claims or evidence). Please specify dates, times, metrics, and quantities when they are essential.

Use Case Profile Form (using fillable form below is optional) :

1) Contributor Name & Contact Information

Enter the name(s), organization(s), and contact information for the contributor(s) of this profile form.

1) Contributor Names- David Ricketts, John Schatz, Stephen Wilson
2) Contributor Contact Information- David.Ricketts@vistracorp.com (512-349-6441); John.Schatz@vistracorp.com (972-868-3933); Stephen.Wilson@vistracorp.com (972-868-4549)

2) Use Case Category

Select and enter one of the use case categories listed at the end of this form.

Transportation Electrification.

3) Use Case Sub-Category

Select and enter one of the use case sub-categories listed at the end of this form.

Identifying, evaluating, and/or engaging existing and potential EV owners/operators.

4) What Question(s) Does the Stakeholder Seek to Answer with This Use Case?

Enter the questions that this IEDR use case could answer with information that would be useful to the Stakeholder.

If Energy Service Companies (ESCOs) are provided with accurate and timely access to customers' current and historical 15 minute interval usage data, can ESCOs develop products and services that will enable customers to charge their vehicles at reduced energy rates while also providing an incentive for customers to charge their vehicles during the evenings and on weekends, which will reduce stress on the New York electricity grid? Will the products proposed in this use case contribute to the expansion of electric vehicle adoption and transportation electrification in New York? Will these products contribute to New York's clean energy goals?

5) What Information Should the Use Case Produce for the Stakeholder?

Describe the type(s) of useful information that the use case should produce.

The use case will produce data demonstrating that with improved and timely access to customers' 15 minute interval data, ESCOs can offer EV owners a time-of-use (TOU) plan that enables the customer to charge their EV during the evenings and on weekends at energy rates that are lower than the rates customers are charged during the weekday. Time-of-use is a rate plan in which rates vary according to the time of day, season, and day type (weekday or weekend/holiday). Higher fixed rates are charged during the peak demand hours and lower fixed rates are charged during off-peak (low) demand hours, which are typically the evenings and weekends.

The use case will also demonstrate that by providing ESCOs with access to interval data, ESCOs can offer lower energy rates during the evenings and weekends which will result in customers adjusting their EV charging behavior. This shift will reduce stress on the grid during the peak energy

(a) How Will the Stakeholder Use the Information Produced by This Use Case?

Explain how the Stakeholder will use each type of information produced.

The information produced in this use case will help ESCOs better understand New York residents' current EV charging behavior as well as better understand how wholesale energy prices differ based on the time of day and day of the week. This type of data will enable ESCOs to develop an EV TOU product that meets the needs of New York residents. The data and information produced by this use case will help ESCOs demonstrate that with access to customers' 15 minute interval data, ESCOs can offer TOU plans that support existing EV owners through reduced energy rates when customers charge their vehicle in the evening and on weekends, and at the same time, provide an incentive for prospective EV owners to purchase an EV. Customers will have more of an incentive to purchase an EV if they are armed with the knowledge that that they can charge their vehicle in the evenings and on the weekends at an energy rate that is lower than what they pay during the weekday.

(b) What are the Minimum Necessary Attributes for Each Type of Information Produced?

For each type of information produced, specify the minimum necessary information attributes (i.e. precision, accuracy, granularity, etc.).

15 minute interval data should be VEE (Validation, Editing, and Estimation) quality (i.e. billing quality data), the interval data should be provided as accurately (99% accuracy) and timely (within 1-2 days of read date) as possible.

6) How Should the IEDR User Interface Present the Information Produced by the Use Case?

Identify one or more useful ways to present the output information to the user (i.e. list, table, graph, bar chart, pie chart, map, ... , etc.). For example, a bar chart that shows the number of electric customers on each of several rates within a zip code.

It is critical that an EV owner who enrolls on a TOU plan that offers reduced electricity rates on the evenings and weekends is provided with, on their monthly electricity bill, an easy to understand graph or chart highlighting the discount or reduced energy charges during the evenings and weekends when customers may be charging their vehicle. By displaying the savings and highlighting the benefits of the product, customers are more likely to continue charging their vehicle during the evening and weekends which will help them save money and reduce stress on New York's grid.

7) What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?

Identify the one or more types of data - from utilities and/or other sources - that the IEDR will need to analyze to produce useful information. See Appendix B of the Staff IEDR Whitepaper for a preliminary list of data types that could be collected and analyzed by the IEDR.

IEDR may be interested in analyzing current energy usage patterns for New York EV owners who charge their vehicle, to determine how future growth of this existing charging behavior (based on the assumption that their will be significant EV growth in New York in the coming years) could impact New York's grid. IEDR may also be interested in analyzing historical NYISO wholesale energy interval prices to understand how wholesale prices shift based on the time-of-day and day of the week. Finally, IEDR may want to analyze EV usage patterns in states with high levels of EV penetration, such as California. This analysis may highlight the challenges and benefits electric vehicles can have on the energy grid. We believe an analysis of wholesale pricing and EV charging data will demonstrate that encouraging EV owners to charge during the evenings and weekends will allow ESCOs to offer energy products with reduced rates on the evenings and weekends and will

(a) What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?

For each type of data analyzed, specify the minimum necessary data attributes (i.e. precision, accuracy, granularity, age, ... , etc.).

From a high level, IEDR may want to analyze the 15 minute interval usage patterns of EV owners, particularly in states with high EV penetration. The 15 minute interval data should be provided as accurately (99% accuracy) and timely (within 1-2 days of read date) as possible.

8) What Data Relationships Does the IEDR Need to Analyze for This Use Case?

Identify the one or more data relationships, if any, that must exist in the IEDR to enable the analyses needed for this use case. For example, the user may want to identify EV registrations and electric utility customer accounts that share the same street address.

IEDR may want to analyze whether New York EV owners currently have higher energy costs and higher energy usage patterns than customers who don't own electric vehicles. Through this information, IEDR can analyze and determine whether EV owners contribute to a higher percentage of usage during peak demand periods which can cause stress on the grid. IEDR can also begin to determine the savings EV owners could achieve by shifting charging to non-peak usage periods.

9) What Data Analysis Function(s) Does the IEDR Need for This Use Case?

Identify the one or more analytic functions that the IEDR must apply to each type of data used in this use case. For example, the use case may require the determination of averages, maximums, minimums, durations, and values greater/lesser/equal/between variables set by the user.

It would be helpful if IEDR had access to customers' account/meter numbers. When possible, the utility or other government entity could provide a list of EV owners, including neighborhood or communities with higher EV adoption. ESCOs would like to see duration of usage and have the ability to filter data based on variables such as greater than, lesser than, equal to, or between specific time frame variables.

(a) What are the Minimum Necessary User Input Variables Needed to Enable a Useful Analysis?

For each analytic function, specify the one or more input variables that the user must provide (if any) to enable the desired analysis. For each type of input variable needed, specify the type(s) of condition to be applied in the analysis (i.e., greater than, equal to, less than, between, not between, etc.).

It would be helpful if IEDR could analyze usage patterns of EV owners compared to non-EV owners and then determine the increased impact EV owners can have when charging their vehicle during peak weekday usage periods.

10) How Often Does the Stakeholder Expect to Employ This Use Case?

For example: sub-daily; daily; weekly; monthly; quarterly; semi-annually; annually ...

ESCOs seeking to offer an EV product would analyze and monitor customer usage patterns multiple times during a given day.

11) How Does This Use Case Benefit the Stakeholder?

Describe how this use case would benefit its Stakeholder(s) and explain how the use case would enable those benefits. Benefits described and explained could include reduced cost, reduced time, greater revenue, reduced risk, increased understanding, ... , etc.

In a highly competitive retail electricity market like New York, ESCOs are constantly seeking ways to differentiate themselves from competitors and further strengthen their relationship with existing customers as well as form relationships with perspective customers. This use case would benefit the stakeholder by allowing ESCOs to offer an electricity plan that differentiates them from competitors and contributes to Governor Cuomo and New York State's goal of "accelerating electric vehicle ownership" in order to fight climate change and grow the state's clean energy economy. We believe New York customers will be eager to enroll on a plan that offers reduced energy charges when customers are charging their vehicle, while also helping New York reach the state's clean energy goals.

12) Why Should This Use Case Be Prioritized From the Perspective of i) the Industry and ii) the Citizens of New York State?

This use case should be prioritized because it will help New York state increase EV adoption by offering a product that allows customers to charge their EV at an energy rate in the evening and on weekends that that is lower than the price of energy during the day; thus making the purchase of an EV more attractive to customers. By incentivizing customers to charge their EV during the evening and on weekends, this use case would reduce strain on the electricity grid while also contributing to a reduction in pollution caused by motor vehicles. The New York Department of Environmental Conservation notes on their website that "...motor vehicles are the single largest contributor to ground-level ozone. Ozone causes public health problems including coughing, wheezing, shortness of breath, and permanent lung damage, and is a major component of smog."

***The IEDR use case profiles submitted will be shared, and should contain no proprietary information.**

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- Building Electrification
- Energy Efficiency (EE)
- Electric Utility Function
- Gas Utility Function
- Local Government Function
- State Government Function
- Other (please describe)

Use Case Sub-Categories:

Enter one of the following use case sub-categories in Part 3 of the survey form.

- For DER Development and Use:
  - identifying, evaluating, and/or selecting potential DER locations;
  - identifying, evaluating, and/or engaging potential DER customers;
  - preparing and/or optimizing DER development plans;
  - preparing and/or optimizing DER operating plans;
  - designing, implementing, and/or operating DER aggregations;
  - monitoring and evaluating the deployment and use of DERs;
  - designing and implementing Community Distributed Generation (CDG) solutions; or,
  - other (please describe)

- For Transportation Electrification:
  - identifying, evaluating, and/or engaging existing EV owners/operators;
  - identifying, evaluating, and/or engaging potential EV owners/operators;
  - monitoring and/or evaluating EV acquisitions and uses;
  - identifying, evaluating, and/or selecting potential locations for EV charging facilities;
  - preparing and/or optimizing plans for developing EV charging facilities;
  - preparing and/or optimizing plans for operating EV charging facilities;
  - monitoring and/or evaluating the deployment and use of EV charging facilities
  - other (please describe)

- For Building Electrification:
  - identifying, evaluating, and/or engaging energy consumers and energy managers in existing buildings;
  - identifying, evaluating, and/or engaging energy consumers and energy managers in planned buildings;
  - monitoring and/or evaluating acquisitions and uses of building electrification solutions;
  - building energy benchmarking;
  - identifying, evaluating, and/or selecting opportunities for building electrification;
  - preparing and/or optimizing plans for developing building electrification solutions;
  - preparing and/or optimizing plans for operating building electrification solutions;
  - monitoring and/or evaluating the deployment and performance of building electrification solutions
  - other (please describe)

- For Energy Efficiency (EE):
  - identifying, evaluating, and/or engaging customers with existing EE solutions;
  - identifying, evaluating, and/or engaging potential EE customers;
  - monitoring and/or evaluating EE acquisitions and uses;
  - building energy benchmarking;
  - identifying, evaluating, and/or selecting EE opportunities;
  - preparing and/or optimizing plans for deploying EE solutions;
  - monitoring and/or evaluating the deployment and use of EE solutions;
  - designing and implementing Community Choice Aggregation (CCA) solutions
  - other (please describe)

- For Electric Utility Functions:
  - system planning;
  - DER interconnection;
  - system operations;
  - market enablement;
  - market operations;
  - customer programs and services;
  - regulatory/statutory compliance;
  - other (please describe)

- For Gas Utility Functions:
  - system planning;
  - system operations;
  - market enablement;
  - market operations;
  - customer programs and services;
  - regulatory/statutory compliance;
  - other (please describe)

- For Local Government Functions:
  - building energy benchmarking;
  - Community Choice Aggregation;
  - Community Distributed Generation;
  - facility siting and permitting;
  - environmental justice initiatives;
  - economic development;
  - planning and zoning;
  - other (please describe)

- For State Government Functions:
  - energy-related R&D;
  - regulatory research and planning;
  - regulatory oversight;
  - building energy benchmarking;
  - facility siting and permitting;
  - environmental justice initiatives;
  - economic development;
  - other (please describe)

Integrated Energy Data Resource (IEDR) Stakeholder Use Case Survey Template

Comments Due: July 23, 2021 to iedr@nyserda.ny.gov

Backgroud and Overview:

The Integrated Energy Data Resource (IEDR) concept has developed through several years of prior work that ultimately led to the New York Public Service Commission's IEDR Order[1] on February 11, 2021. As the resulting IEDR program begins, NYSERDA asks stakeholders to help by identifying, characterizing, and prioritizing a preliminary set of potential IEDR use cases.

The IEDR is intended to eventually support many use cases, but development will begin with an initial set of five to ten priority use cases. These first use cases need to have practical value, urgency, and reliability that a novel data platform can deliver. At the outset, the descriptions of the initial IEDR use cases may be high-level, but specifications will become much more detailed as development proceeds. Also, to achieve a successful launch of the IEDR, we will consider how the initial set of IEDR use cases functions as a portfolio.

To aid our investigation of potential IEDR use cases, NYSERDA is asking stakeholders to use the form provided below to profile use cases that will be most valuable to them. To arrive at consistent profiles of potential use cases, stakeholders, together with the Program Manager and later with the participation of the Solution Architect, will subsequently discuss overlaps, similarities, and differences across their submissions.

Individuals and organizations comprising an industry sector and/or including multiple industry sectors are strongly encouraged to collaborate in the preparation of use case profiles.

The stakeholders' use case profiles will serve as a starting point for specifying and prioritizing IEDR use cases. As the IEDR program progresses, stakeholders may be asked to provide additional details. As potential use cases become better understood, stakeholders should expect their specifications to evolve through peer review.

In preparing these initial profiles, stakeholders should keep in mind that in its Order, the Commission stated that the IEDR is intended to enable use cases that materially improve and/or accelerate investment, operational, or regulatory decisions related to DERs, energy efficiency, environmental justice, or electrification strategies for transportation and buildings thereby facilitating one or more of New York State's REV and CLCPA objectives to accelerate New York's progress toward the climate and equity goals set for the state in the CLCPA and related legislation Orders issued by the Commission. IEDR use cases and their individual goals must be clearly aligned with these statewide commitments.

Instructions for Submitting Comments and Profiles:

Each submission of comments is to include:

- A cover sheet that contains
  - the name and contact information for each of the individual(s) or organization(s) on whose behalf the comments are submitted
  - what are your most immediate needs that the IEDR should address as soon as possible
  - what criteria should be used to prioritize initial use cases
  - if desired, a suggested definition of use case to be used for the IEDR
- A separate use case profile, consisting of responses to the topics below, should be completed for each potential use case presented by a stakeholder(s).
- Each profile should contain:

[1] See New York State Case 20-M-0082 – Strategic Use of Energy Related Data, (Order Instituting Proceeding) (March 19, 2020); and Case 16-M-0411, Summary Report: Distributed Energy Resource Market Enablement Data Needs (filed in the public comments section on January 6, 2020); and Recommendation to Implement an Integrated Energy Data Resource, Case 20-M-0082: Proceeding on Motion of the Commission Regarding Strategic Use of Energy Related Data, a New York Department of Public Service Staff Whitepaper (May 20, 2020).

- a name/description of the use case being profiled
- a response to each topic beginning with an indication of the topic being addressed, up to one page of narrative, and up to one additional page of diagrams, charts, tables, maps, and references (e.g., sources of key claims or evidence). Please specify dates, times, metrics, and quantities when they are essential.

Use Case Profile Form (using fillable form below is optional) :

1) Contributor Name & Contact Information

Enter the name(s), organization(s), and contact information for the contributor(s) of this profile form.

1) Contributor Names- David Ricketts, John Schatz, Stephen Wilson
2) Contributor Contact Information- David.Ricketts@vistracorp.com (512-349-6441); John.Schatz@vistracorp.com (972-868-3933); Stephen.Wilson@vistracorp.com (972-868-4549)

2) Use Case Category

Select and enter one of the use case categories listed at the end of this form.

Transportation Electrification.

3) Use Case Sub-Category

Select and enter one of the use case sub-categories listed at the end of this form.

Identifying, evaluating, and/or engaging existing and potential EV owners/operators.

4) What Question(s) Does the Stakeholder Seek to Answer with This Use Case?

Enter the questions that this IEDR use case could answer with information that would be useful to the Stakeholder.

If Energy Service Companies (ESCOs) are provided with accurate and timely access to customers' current and historical 15 minute interval usage data, can ESCOs develop products and services that will enable customers to charge their vehicles at reduced energy rates while also providing an incentive for customers to charge their vehicles during the evenings and on weekends, which will reduce stress on the New York electricity grid? Will the products proposed in this use case contribute to the expansion of electric vehicle adoption and transportation electrification in New York? Will these products contribute to New York's clean energy goals?

5) What Information Should the Use Case Produce for the Stakeholder?

Describe the type(s) of useful information that the use case should produce.

The use case will produce data demonstrating that with improved and timely access to customers' 15 minute interval data, ESCOs can offer EV owners a time-of-use (TOU) plan that enables the customer to charge their EV during the evenings and on weekends at energy rates that are lower than the rates customers are charged during the weekday. Time-of-use is a rate plan in which rates vary according to the time of day, season, and day type (weekday or weekend/holiday). Higher fixed rates are charged during the peak demand hours and lower fixed rates are charged during off-peak (low) demand hours, which are typically the evenings and weekends.

The use case will also demonstrate that by providing ESCOs with access to interval data, ESCOs can offer lower energy rates during the evenings and weekends which will result in customers adjusting their EV charging behavior. This shift will reduce stress on the grid during the peak energy

(a) How Will the Stakeholder Use the Information Produced by This Use Case?

Explain how the Stakeholder will use each type of information produced.

The information produced in this use case will help ESCOs better understand New York residents' current EV charging behavior as well as better understand how wholesale energy prices differ based on the time of day and day of the week. This type of data will enable ESCOs to develop an EV TOU product that meets the needs of New York residents. The data and information produced by this use case will help ESCOs demonstrate that with access to customers' 15 minute interval data, ESCOs can offer TOU plans that support existing EV owners through reduced energy rates when customers charge their vehicle in the evening and on weekends, and at the same time, provide an incentive for prospective EV owners to purchase an EV. Customers will have more of an incentive to purchase an EV if they are armed with the knowledge that that they can charge their vehicle in the evenings and on the weekends at an energy rate that is lower than what they pay during the weekday.

(b) What are the Minimum Necessary Attributes for Each Type of Information Produced?

For each type of information produced, specify the minimum necessary information attributes (i.e. precision, accuracy, granularity, etc.).

15 minute interval data should be VEE (Validation, Editing, and Estimation) quality (i.e. billing quality data), the interval data should be provided as accurately (99% accuracy) and timely (within 1-2 days of read date) as possible.

6) How Should the IEDR User Interface Present the Information Produced by the Use Case?

Identify one or more useful ways to present the output information to the user (i.e. list, table, graph, bar chart, pie chart, map, ... , etc.). For example, a bar chart that shows the number of electric customers on each of several rates within a zip code.

It is critical that an EV owner who enrolls on a TOU plan that offers reduced electricity rates on the evenings and weekends is provided with, on their monthly electricity bill, an easy to understand graph or chart highlighting the discount or reduced energy charges during the evenings and weekends when customers may be charging their vehicle. By displaying the savings and highlighting the benefits of the product, customers are more likely to continue charging their vehicle during the evening and weekends which will help them save money and reduce stress on New York's grid.

7) What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?

Identify the one or more types of data - from utilities and/or other sources - that the IEDR will need to analyze to produce useful information. See Appendix B of the Staff IEDR Whitepaper for a preliminary list of data types that could be collected and analyzed by the IEDR.

IEDR may be interested in analyzing current energy usage patterns for New York EV owners who charge their vehicle, to determine how future growth of this existing charging behavior (based on the assumption that their will be significant EV growth in New York in the coming years) could impact New York's grid. IEDR may also be interested in analyzing historical NYISO wholesale energy interval prices to understand how wholesale prices shift based on the time-of-day and day of the week. Finally, IEDR may want to analyze EV usage patterns in states with high levels of EV penetration, such as California. This analysis may highlight the challenges and benefits electric vehicles can have on the energy grid. We believe an analysis of wholesale pricing and EV charging data will demonstrate that encouraging EV owners to charge during the evenings and weekends will allow ESCOs to offer energy products with reduced rates on the evenings and weekends and will

(a) What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?

For each type of data analyzed, specify the minimum necessary data attributes (i.e. precision, accuracy, granularity, age, ... , etc.).

From a high level, IEDR may want to analyze the 15 minute interval usage patterns of EV owners, particularly in states with high EV penetration. The 15 minute interval data should be provided as accurately (99% accuracy) and timely (within 1-2 days of read date) as possible.

8) What Data Relationships Does the IEDR Need to Analyze for This Use Case?

Identify the one or more data relationships, if any, that must exist in the IEDR to enable the analyses needed for this use case. For example, the user may want to identify EV registrations and electric utility customer accounts that share the same street address.

IEDR may want to analyze whether New York EV owners currently have higher energy costs and higher energy usage patterns than customers who don't own electric vehicles. Through this information, IEDR can analyze and determine whether EV owners contribute to a higher percentage of usage during peak demand periods which can cause stress on the grid. IEDR can also begin to determine the savings EV owners could achieve by shifting charging to non-peak usage periods.

9) What Data Analysis Function(s) Does the IEDR Need for This Use Case?

Identify the one or more analytic functions that the IEDR must apply to each type of data used in this use case. For example, the use case may require the determination of averages, maximums, minimums, durations, and values greater/lesser/equal/between variables set by the user.

It would be helpful if IEDR had access to customers' account/meter numbers. When possible, the utility or other government entity could provide a list of EV owners, including neighborhood or communities with higher EV adoption. ESCOs would like to see duration of usage and have the ability to filter data based on variables such as greater than, lesser than, equal to, or between specific time frame variables.

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It would be helpful if IEDR could analyze usage patterns of EV owners compared to non-EV owners and then determine the increased impact EV owners can have when charging their vehicle during peak weekday usage periods.

10) How Often Does the Stakeholder Expect to Employ This Use Case?

For example: sub-daily; daily; weekly; monthly; quarterly; semi-annually; annually ...

ESCOs seeking to offer an EV product would analyze and monitor customer usage patterns multiple times during a given day.

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In a highly competitive retail electricity market like New York, ESCOs are constantly seeking ways to differentiate themselves from competitors and further strengthen their relationship with existing customers as well as form relationships with perspective customers. This use case would benefit the stakeholder by allowing ESCOs to offer an electricity plan that differentiates them from competitors and contributes to Governor Cuomo and New York State's goal of "accelerating electric vehicle ownership" in order to fight climate change and grow the state's clean energy economy. We believe New York customers will be eager to enroll on a plan that offers reduced energy charges when customers are charging their vehicle, while also helping New York reach the state's clean energy goals.

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This use case should be prioritized because it will help New York state increase EV adoption by offering a product that allows customers to charge their EV at an energy rate in the evening and on weekends that that is lower than the price of energy during the day; thus making the purchase of an EV more attractive to customers. By incentivizing customers to charge their EV during the evening and on weekends, this use case would reduce strain on the electricity grid while also contributing to a reduction in pollution caused by motor vehicles. The New York Department of Environmental Conservation notes on their website that "...motor vehicles are the single largest contributor to ground-level ozone. Ozone causes public health problems including coughing, wheezing, shortness of breath, and permanent lung damage, and is a major component of smog."

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Enter one of the following use case categories in Part 2 of the survey form.

- DER Development and Use
- Transportation Electrification
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- Electric Utility Function
- Gas Utility Function
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- Other (please describe)

Use Case Sub-Categories:

Enter one of the following use case sub-categories in Part 3 of the survey form.

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  - identifying, evaluating, and/or selecting potential DER locations;
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  - designing, implementing, and/or operating DER aggregations;
  - monitoring and evaluating the deployment and use of DERs;
  - designing and implementing Community Distributed Generation (CDG) solutions; or,
  - other (please describe)

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  - DER interconnection;
  - system operations;
  - market enablement;
  - market operations;
  - customer programs and services;
  - regulatory/statutory compliance;
  - other (please describe)

- For Gas Utility Functions:
  - system planning;
  - system operations;
  - market enablement;
  - market operations;
  - customer programs and services;
  - regulatory/statutory compliance;
  - other (please describe)

- For Local Government Functions:
  - building energy benchmarking;
  - Community Choice Aggregation;
  - Community Distributed Generation;
  - facility siting and permitting;
  - environmental justice initiatives;
  - economic development;
  - planning and zoning;
  - other (please describe)

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  - energy-related R&D;
  - regulatory research and planning;
  - regulatory oversight;
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Integrated Energy Data Resource (IEDR) Stakeholder Use Case Survey Template

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Each submission of comments is to include:

- A cover sheet that contains o the name and contact information for each of the individual(s) or organization(s) on whose behalf the comments are submitted
  - o what are your most immediate needs that the IEDR should address as soon as possible o what criteria should be used to prioritize initial use cases

[1] See New York State Case 20-M-0082 – Strategic Use of Energy Related Data, (Order Instituting Proceeding) (March 19, 2020); and Case 16-M-0411, Summary Report: Distributed Energy Resource Market Enablement Data Needs (filed in the public comments section on January 6, 2020); and Recommendation to Implement an Integrated Energy Data Resource, Case 20-M-0082: Proceeding on Motion of the Commission Regarding Strategic Use of Energy Related Data, a New York Department of Public Service Staff Whitepaper (May 20, 2020).

- if desired, a suggested definition of use case to be used for the IEDR

- A separate use case profile, consisting of responses to the topics below, should be completed for each potential use case presented by a stakeholder(s).
- Each profile should contain:
  - a name/description of the use case being profiled
  - a response to each topic beginning with an indication of the topic being addressed, up to one page of narrative, and up to one additional page of diagrams, charts, tables, maps, and references (e.g., sources of key claims or evidence). Please specify dates, times, metrics, and quantities when they are essential.

Use Case Profile Form:

1) **Contributor Name & Contact Information** Enter the name(s), organization(s), and contact information for the contributor(s) of this profile form.

Richard Barlette, Richard.Barlette@exeloncorp.com
Steven Gaines, Steven.Gaines@constellation.com
John Kern, john.kern@constellation.com
Shera McFearn, Shera.Mcfearn@constellation.com
Sam Mermall, Samuel.Mermall@Exeloncorp.com
Guillermo Pereira, Guillermo.Pereira@constellation.com
Richard Spilky, richard.spilky@constellation.com

2) **Use Case Category** Select and enter one of the use case categories listed at the end of this form.

DER Development and Use: Solar/Multi-facility and commodity product.

3) **Use Case Sub-Category** Select and enter one of the use case sub-categories listed at the end of this form.

Other: Designing and implementing a IDER solution combined with commodity to multiple locations under a single commodity/DER contract. As an example, providing solar plus commodity to multiple C&I chain stores across the state.

4) **What Question(s) Does the Stakeholder Seek to Answer with This Use Case?** Enter the questions that this IEDR use case could answer with information that would be useful to the Stakeholder.

Our objective is to serve electric commodity supply in combination with several DER installations (presumably solar panels but could be other DER devices too) spread across a number of Commercial and Industrial facilities under a single agreement across the state. By way of example; consider a chain store with dozens of locations across the state, a portion of which would have DER installed, each receiving electric supply commodity service from an ESCO, and each receiving an allocation of DER generation and VDER credits (including the facilities that don't have DER installed at their premises). This we call a DER/Commodity combination use case (or "product") offering from an ESCO. At a high level there two general areas of data requirements:

1) Data required to evaluate the best economic and technically feasible locations to deploy DER resources, such as areas where substations are nearing capacity. This data will need to focus on the economic viability of the project for evaluation purposes. In this document we classify upfront data requirements pertaining to commodity related information separately from upfront DER related data requirements.

2) Data required to administer the product once it's up and running. The main area of data requirements here revolve around allocating credits (e.g. energy, VDER, net-metering, etc.) to the ESCO in such a

manner that they can allocate those credits to each of the accounts involved pursuant to the retail agreement with the C&I customer grouping.

5) **<u>What Information Should the Use Case Produce for the Stakeholder?</u>** Describe the type(s) of useful information that the use case should produce.

1. The Use Case should provide the stakeholder with information to validate data requirements for the successful scoping and implementation of an economically viable commodity and DER combination project under the VDER tariffs within NYS.

2. The Use Case should provide the stakeholder with information to evaluate pricing structures.

   As outlined in Exhibit 1, the ESCOs require the following information: Electric Service Point Details, NYISO Market Details, Utility Tariff Details.[1]

3. The Use Case should provide the stakeholder with information to properly bill and administer the product including the value difference +/- between the current ICAP tags and the previous year and include the future value. Electronic Data Interchange (EDI) transactions would provide clarity to the type of data being provided by using a meter type/or data type identifier. The EDI transactions should include the consumption, generation, and netted usage in the same EDI. Historical summary and interval data usage history that is sometimes available today (in various formats by EDC) should be made available in a consistent format as demonstrated in the EDC data table submitted by RESA.[2] The EDC data table provides for the preferred format that usage history should be made and this could be made accessible via screen scrape and/or EDI. The information would provide VDER/or net meter tracking of the banked and customer disbursed credits. The ESCO could allocate the credits, along with the relevant data types and billing determinants (e.g. consumption, generation, and net usage) to provide the customer with clear, concise, and accurate billing.

(a) **<u>How Will the Stakeholder Use the Information Produced by This Use Case?</u>** Explain how the Stakeholder will use each type of information produced.

The data required on the front end of the DER/Commodity product will be used to evaluate the best economic and technically feasible locations to deploy DER resource. For instance, there may be a group of 100 commercial convenience stores but only a portion have access to DER due to economic or technical reasons. However, each of the stores will be under the same commodity contract with their chosen commodity supplier/ESCO. This will lead to determining the best locations to deploy the DER resources and install them. This in turn will enable the project to maximize the economic benefits to the customers and other market participants.

Once the product is up and running, on-going data requirements to administer the product include billing, reporting and other data necessary to evaluate the project. For example, monthly invoices will need to be sent to each of the store locations that will include both the commodity charges as well as the proper allocation of credits (e.g. energy, VDER, net-metering, etc.) to each of the C&I store locations/accounts under the contract served commodity by the ESCO. The key being the allocation of all the credits attributable to the DER assets will be provided to the accounts that have DER resources and those that don't. Each are included in the C&I customer product grouping.

(b) **<u>What are the Minimum Necessary Attributes for Each Type of Information Produced?</u>** For each type of information produced, specify the minimum necessary information attributes (i.e. precision, accuracy, granularity, etc.).

[1] An examination of existing PSC rules (e.g., Net Metering) may be required to implement this Use Case.

[2] PSC Case No. 20-M-0082, *Proceeding on Motion of the Commission Regarding Strategic Use of Energy Related Data*, Retail Energy Supply Association's Comments re Integrated Energy Data Resource Whitepaper (Aug. 24, 2020), Attachment A.

1. The minimum necessary attributes to identify the pricing structures are found in Exhibit 1.

2. The minimum necessary attributes to identify the best locations for installation are found in Exhibit 2.

3. The minimum necessary attributes to administer and bill this product are found in Exhibit 3.

6) **How Should the IEDR User Interface Present the Information Produced by the Use Case?** Identify one or more useful ways to present the output information to the user (i.e. list, table, graph, bar chart, pie chart, map, ... , etc.). For example, a bar chart that shows the number of electric customers on each of several rates within a zip code.

1. The information required to evaluate the best location for installation should be presented to the user in the form of a map with multiple overlays including grid congestion (both current and future projections), local environmental tariff benefits of green DER, existing DER, current DER in the queue, total DER, projected load on feeders, transformers, substations, and planned improvements and/or expansions to electrical infrastructure. Users can draw a bounding box around a specific region on the map to pull tabulated grid information (including infrastructure within that zone, number of customers served, and existing/current/projected DER), as well as pull info by zip code or city/town. This information should be made available to ESCOs via a webbased interface.

2. The information required to evaluate the pricing structures are found in Exhibit 1 and should be presented to the user in a "screen scrape" and/or tabular format.

3. The information required to evaluate the administration and billing of this product are found in Exhibit 3 and should be presented to the user in a "screen scrape" and/or tabular format.

7) **What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?** Identify the one or more types of data - from utilities and/or other sources - that the IEDR will need to analyze to produce useful information. See Appendix B of the Staff IEDR Whitepaper for a preliminary list of data types that could be collected and analyzed by the IEDR.

The type of data required to analyze the best locations for this Use Case is a location which is not only favorable given the VDER value stack, but also utility-specific information, such as: which feeders, substations, and transformers have the capacity to accept additional load. A more detailed list is found in Exhibit 4.

The type of data required to analyze the administration and billing for this Use Case is found in Exhibit 3 and should contemplate dual billing for commodity supply and DER credit allocation purposes.

(a) **What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?** For each type of data analyzed, specify the minimum necessary data attributes (i.e. precision, accuracy, granularity, age, ... , etc.).

1. The minimum necessary data attributes for each type of data collected and analyzed to evaluate the best locations for installation should be available with a fidelity high enough for reasonable analysis. Customer interval data will ideally be in increments of 30 minutes or less.

2. The minimum necessary data attributes for each type of data collected and analyzed to administer and bill this product are found in Exhibit 3.

8) **What Data Relationships Does the IEDR Need to Analyze for This Use Case?** Identify the one or more data relationships, if any, that must exist in the IEDR to enable the analyses needed for this use case. For example, the user may want to identify EV registrations and electric utility customer accounts that share the same street address.

1. The data relationships required to successfully evaluate the best locations for installation of the DER/Commodity product should take into account a variety of economic factors including the VDER tariffs. The data required to evaluate the economic factors falls into three categories. The first is the customer side, where the data relationship between interval data, tariff, service address, structural health (for solar), electricity prices (demand, delivery, supply), metering facilities, and direct transfer trip must be understood. The second is the utility, where the data relationship between the local feeder(s), transformer(s), substation, peak load (along those impacted assets), and queued interconnection projects must be evaluated together. And finally, at the ISO level where the data relationship between network congestion, queued DER, pre-existing DER, forecasted DER, forecasted load growth, and DER environmental impacts must be evaluated.

2. The data relationships required to successfully administer and bill this product are found in Exhibit 3.

9) **What Data Analysis Function(s) Does the IEDR Need for This Use Case?** Identify the one or more analytic functions that the IEDR must apply to each type of data used in this use case. For example, the use case may require the determination of averages, maximums, minimums, durations, and values greater/lesser/equal/between variables set by the user.

1. The ESCO will need to have the data necessary to properly evaluate the value proposition of the DER/Commodity product in the customer's eyes regarding the economic, sustainability, and environmental perspectives. This can be captured in terms of interconnection costs (dictated by feeder/transformer rating combined with peak load, and any substation upgrades, along with utility interconnection fees), infrastructure costs (physical DER asset installation, upgrades to existing infrastructure to support), any RECs or SRECs, and commodity costs being offset by DER (commodity supply, demand, and tariff). The deployment of a DER/Commodity product may have an effect to both utilities and the NYISO in the sense that the operation of the grid will be influenced by this deployment. Similarly the NYISO will need to understand how the deployment of a new DER/Commodity product will impact network congestion and generation mix (through an environmental lens).

2. Data required to administer/bill the product -- The Use Case should provide VDER requirements (e.g. eligibility, agent forms, allocation forms, certifications, procedural guidelines, agent authorization and reporting tools).

(a) **What are the Minimum Necessary User Input Variables Needed to Enable a Useful Analysis?** For each analytic function, specify the one or more input variables that the user must provide (if any) to enable the desired analysis. For each type of input variable needed, specify the type(s) of condition to be applied in the analysis (i.e., greater than, equal to, less than, between, not between, etc.).

1. The minimum necessary user input variables needed to evaluate the best locations for installation are found in Exhibit 5.

2. The minimum necessary user input variables needed to administer and bill this product are found in Exhibit 3.

10) **How Often Does the Stakeholder Expect to Employ This Use Case?** For example: sub-daily; daily; weekly; monthly; quarterly; semi-annually; annually ...

If approved, the information provided by this IEDR Use Case would help facilitate an environment where ESCOs could offer a DER/Commodity product combination to all C&I customers with multiple locations across New York state. As more businesses commit to meeting renewable/clean energy goals, demand for sustainability products is increasing, however; project realization and implementation may be difficult, carry unwanted risks, and don't make a strong enough sustainability statement. A DER/Commodity combination Use Case can eliminate these barriers leading to more widespread adoption within the C&I business community.

11) How Does This Use Case Benefit the Stakeholder? Describe how this use case would benefit its Stakeholder(s) and explain how the use case would enable those benefits. Benefits described and explained could include reduced cost, reduced time, greater revenue, reduced risk, increased understanding, ... , etc.

Commercial and Industrial businesses (customers) are increasingly seeking more impactful renewable options to establish or further their respective sustainability goals. By installing this DER/Commodity product across their portfolio of buildings/properties, companies can report their commitment to renewable/clean energy by showcasing their specific DER facility and the corresponding clean power their buildings would be consuming. This DER/Commodity product combination will be unique in its deployment of IEDR resources as it will:

o Enhance the allocation of VDER credits to customers. o Will reduce the overall costs to the customer. o Since ESCOs are assuming risks that would otherwise fall to the customer, overall customer risk is reduced. o Provide sustainability and economic benefits in furtherance of New York's sustainability objectives.

12) Why Should This Use Case Be Prioritized From the Perspective of i) the Industry and ii) the Citizens of New York State?

1) This DER/Commodity product combination is designed to capture customers' increasing interest in pursuing clean energy, reducing their carbon footprint, and maximizing economic efficiency while at the same time achieving the state's sustainability goals.
2) ESCOs are uniquely positioned to make this DER/Commodity product combination both cost effective and competitive which will increase its deployment. ESCOs are already interconnected with the utilities for commodity and have extensive knowledge of the energy markets (both capacity and usage). ESCOs also have a proven track record of working with customers to assist in managing their energy risks. Finally, ESCOs have the financing and expertise necessary to offer this combination product.
3) Additionally, successful deployment of this product will help further New York's public policy objectives set forth in the Climate Community Protection Act and help combat climate change, benefitting all New Yorkers.

***The IEDR use case profiles submitted will be shared, and should contain no proprietary information.**

The profiles are regarded as preliminary working papers, and may be revised based on subsequent analysis and discussion. Advocates submitting profiles of similar use cases will work together with the IEDR development teams to come to a consensus. For consistency in development, the IEDR team may elect to format use case submissions into a standardized format such as UML or BPMN.

EXHIBIT 1

Commodity Pricing Attributes

Electric Service Point Details	Attributes
customer name	
postal address	
street address	
account ID	
account status	
utility ID	
NYISO zone (primarily for LBMP and ICAP)	Where NYISO Load is settled. Currently some LDCs display a value other than where the account is settled
utility subzonal unaccounted for energy (UFE) – hourly	Hourly values
service point ID	
service class	
service assigned load profile	
service voltage	
meter ID	
interval/smart meter - data availability flag	Y/N
interval data settlement flag – indicate if interval is used to report load to NYISO	Y/N
tax exemption status	Y/N
enrollment block status	Exists - Y/N
low income customer flag	Y/N
Mass Market/Protected Class customer flag	Y/N
current tariff/program ID	
monthly billed demand	
monthly billed energy	
monthly billed service charge	
behind the meter generation flag	Y/N
NYPA incentive program details (ex. PFJ, RNY, TPA, Replacement etc.)	Program Name, Allocation Size, Allocation Start/Stop Dates, Allocation change dates
UDC incentive program details	Program Name, Allocation/credit size, Allocation/credit Start/Stop Dates

measured consumption interval data – profiled hourly data if interval is unavailable (Total Load), including smart meter data	Hourly (min 24 months)
NYISO reported interval data (used for settlement) – profiled hourly data if interval is unavailable	Hourly, Only ConEd currently makes available for active customers but not available pre-enrollment. Not available from other UDCs when interval is unavailable. (min 24 months)
NYPA served hourly interval data – if applicable, profiled hourly data if interval is unavailable	Hourly, not currently provided (min 24 months)
Generation hourly interval data – if applicable, profiled hourly data if interval is unavailable	Hourly, not currently provided. UDCs typically only provide net load not generation and consumption amounts. (min 24 months)
system peak load capacity contribution (ICAP Tags)	Currently only effective tag available, in addition would like historical 3 prior years + future year when available

EXHIBIT 2

Locational DER Related Attributes

Current feeder congestion,
Current loading on feeder
Feeder rating
Load on impacted transformer(s)
Transformer rating existing DERs on feeder
Queued DER on feeder
Potential tariff benefits based on VDER criteria (environmental impact, peak congestion)
Interval data (hourly minimum, 30-15 min preferred)
Service address
Electrical prices (supply, demand, delivery).

EXHIBIT 3

Billing/Invoicing Attributes

Rate class with rate description, load profile, voltage, price zone, meter cycle
PLC Values: Current values, values from the previous year, and future values.
Net Meter accounts -EDI transactions to include consumption, generation, and net usage in the same EDI and available on the website.
VDER and net meter credits at the account level would be available on the website.
Meter type identifier in the EDI and website (E.g. consumption, generation, and net usage)
Interval meter identifier
Ability to web scrape summary and interval usage with kWh
24 months of Historical usage – Summary data with kWh
24 months of Historical interval.
Ability to download summary and interval data from website.
The website/or portal would include RNY/or other incentive load program details. Effective date when the customer started taking RNY? The allocation amount, allocation adjustments, date of adjustment and if there are companion accounts.
Notification of new or revised rate classes, load profiles or other determinates that will impact how the customer is being billed.
Ability to create a case ticket for account assistance, based on utility, request type (e.g. EDI, PLC, enrollment/drop, billing inquiry), attach documents and include specific or multiple accounts.
Ability to check status of inquiry case tickets for resolution and/or pending additional information.
ESCO settlement statement

EXHIBIT 4

Locational Data to Analyze the Use Case

All	Impacted Substation ID
All	Utility name
All	NYISO zone
All	NYISO transmission node
Transformer	IDs on eligible circuits
Transformer	Hourly load forecast data
Transformer	Load rating
Transformer	Transformer GIS coordinates
Feeder	ID/number
Feeder	Average daily load
Feeder	Average daily peak load
Feeder	Annual peak load
Feeder	Protection details (in the event of transformer failure at the DER)
Feeder	Hosting capacity at substation
Service	Address
Service	DER GPS coordinates
Customer	Tariff
Customer	Demand Charges
Customer	Energy Charges
Forecasted DER	DER ID
Forecasted DER	Utility name
Forecasted DER	Circuit ID
Forecasted DER	Type
Forecasted DER	Capacity
Other	Direct transfer trip requirement?
Other	Roof Age (if mounting solar)

Use Case Categories:

Enter one of the following use case categories in Part 2 of the survey form.

- DER Development and Use
- Transportation Electrification
- Building Electrification
- Energy Efficiency (EE)
- Electric Utility Function
- Gas Utility Function
- Local Government Function
- State Government Function
- Other (please describe)

Use Case Sub-Categories:

Enter one of the following use case sub-categories in Part 3 of the survey form.

- For DER Development and Use:
  - o identifying, evaluating, and/or selecting potential DER locations; o identifying, evaluating, and/or engaging potential DER customers; o preparing and/or optimizing DER development plans; o preparing and/or optimizing DER operating plans; o designing, implementing, and/or operating DER aggregations; o monitoring and evaluating the deployment and use of DERs; d
  - o designing and implementing Community Distributed Generation (CDG) solutions; or,
  - o other (please describe)

- For Transportation Electrification:
  - o identifying, evaluating, and/or engaging existing EV owners/operators; o identifying, evaluating, and/or engaging potential EV owners/operators; o monitoring and/or evaluating EV acquisitions and uses;
  - o identifying, evaluating, and/or selecting potential locations for EV charging facilities; o preparing and/or optimizing plans for developing EV charging facilities; o preparing and/or optimizing plans for operating EV charging facilities; o monitoring and/or evaluating the deployment and use of EV charging facilities o other (please describe)

- For Building Electrification:
  - o identifying, evaluating, and/or engaging energy consumers and energy managers in existing buildings;
  - o identifying, evaluating, and/or engaging energy consumers and energy managers in planned buildings;
  - o monitoring and/or evaluating acquisitions and uses of building electrification solutions; o building energy benchmarking;
  - o identifying, evaluating, and/or selecting opportunities for building electrification; o preparing and/or optimizing plans for developing building electrification solutions; o preparing and/or optimizing plans for operating building electrification solutions; o monitoring and/or evaluating the deployment and performance of building electrification solutions;
  - o other (please describe)

- For Energy Efficiency (EE):
  - o identifying, evaluating, and/or engaging customers with existing EE solutions; o identifying, evaluating, and/or engaging potential EE customers;
  - o monitoring and/or evaluating EE acquisitions and uses; o building energy benchmarking; o identifying, evaluating, and/or selecting EE opportunities; o preparing and/or optimizing plans for deploying EE solutions; o monitoring and/or evaluating the deployment and use of EE solutions; o designing and implementing Community Choice Aggregation (CCA) solutions; o other (please describe)

- For Electric Utility Functions: o system planning; o DER interconnection; o system operations; o market enablement; o market operations; o customer programs and services; o regulatory/statutory compliance; o other (please describe)

- For Gas Utility Functions:
  - o system planning; o system operations; o market enablement; o market operations; o customer programs and services; o regulatory/statutory compliance;
  - o other (please describe)

- For Local Government Functions: o building energy benchmarking; o Community Choice Aggregation; o Community Distributed Generation; o facility siting and permitting;
  - o environmental justice initiatives; o economic development; o planning and zoning; o other (please describe)

- For State Government Functions:
  - o energy-related R&D; o regulatory research and planning; o regulatory oversight; o building energy benchmarking; o facility siting and permitting;
  - o environmental justice initiatives; o economic development; o other (please describe)

To NYSERDA and DPS staff and IEDR stakeholders,

Uplight, Inc. is pleased to provide this input to the State of New York and the IEDR stakeholder community to inform IEDR use case development and prioritization. Uplight envisions that the IEDR will become an invaluable feature of New York's energy system by aggregating and democratizing both data and insights for the purpose of propelling forward achievement of the state's clean energy targets.

Uplight is the leading provider of comprehensive customer-centric technology dedicated solely to accelerating the clean energy ecosystem. Uplight's software solutions connect energy customers to the decarbonization goals of energy providers while helping customers save energy and lower costs, engendering a more sustainable future for all. Uplight solutions span home and business energy management, energy analytics, marketplaces, personalization, and demand-side management. Combined, these products form a unified, end-to-end customer energy experience system proven at enterprise scale, while layering on next generation innovations.

Through Uplight's work across the energy ecosystem, we bring applied experience in designing and delivering solutions that relate directly to many of the use cases identified for IEDR applications. Uplight provides energy efficiency, DER, and e-mobility programs to utilities across North America. These programs are built on comprehensive energy customer databases and artificial intelligence / machine learning analytics to generate insight for customer segmentation and marketing, clean energy offers personalized to individual customers, smart energy device control and other DER services that align customer and grid value. Uplight's input to IEDR use cases is informed by this broad, deep understanding of customer energy data in relation to clean energy solutions' delivery.

Most use cases will rely on highly related if not identical underlying data. Thus, while their final applications may differ, for example between DER customer identification and solution delivery versus regulatory review and even academic or media research, the same datasets and user functions should be leveraged to serve many of these outcomes.

With this mindset, these comments focus on a shortlist of use cases that Uplight has direct experience building and delivering. Our experience supports identification of critical data components and features to quickly generate greater functionality, as well as to avoid known pitfalls in their use. Successful delivery of these in Phase 1 of IEDR development will create near-term market and multistakeholder value, while establishing a foundation on which additional data and functionality can be quickly and effectively integrated over time.

Needs that IEDR should address. In Phase 1, the IEDR should focus on building a functional data structure and user interface that generates near-term stakeholder value by accelerating product development and solution delivery for energy efficiency investments, building electrification, DER development, and EV market growth.

Market democratization is foundational to curating a competitive landscape necessary for accelerated clean energy measure uptake. The IEDR platform will achieve market democratization early by making accessible sophisticated data analytics that support translating data into information and insights in Phase 1. Analysis can take countless formats and approaches, which the IEDR platform itself cannot not be expected to fully anticipate or deliver. On the other hand, attention to analytics and information sharing in Phase 1 of IEDR development will support clarification of what data relationships need to be created in the platform to support stakeholder analyses most effectively over time. Furthermore, the market democratization effect of the IEDR will be enhanced by flexible architecture accommodating more than data aggregation and access. The platform should include a layer of sophisticated data models and energy insights to position less established stakeholders to compete with entrenched stakeholders.

Criteria for initial use case prioritization, and suggested use cases. It is important that NYSERDA, DPS and the IEDR Program Manager focus Phase 1 on a set of use cases that balance key criteria for economic or market potential, GHG reduction potential, availability of data, and development feasibility.

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Here we have identified these down to the sub-category level. In practice many use cases are highly related within and even between categories, and thus a focus on one use case will likely spur functionality and value generation for other use cases. Based on our consideration of the above criteria, Uplight describes the following use cases in these comments.

1. DER Development and Use
    a. identifying, evaluating, and engaging potential DER customers
    b. designing, implementing, and operating DER aggregations
    c. monitoring and evaluating the deployment and use of DERs
2. Energy Efficiency
    a. identifying, evaluating, and engaging potential EE customers

Although we don't provide comments on other use cases in this submission, we note that others are also valuable, and in some cases will be supported by data and design approaches like the above set, e.g., other energy efficiency cases, as well as building and transportation electrification. We also recognize the importance of other categories of use cases, especially those listed under "Utility Functions" including market enablement and system operations, for the purpose of reducing administrative costs for settlements and measurement and verification purposes.

In practice, a focus on these use cases will not rule out applications and opportunities for other use cases not explicitly included on this list. For example, by creating a functional data structure and user interface to support the use case for *"identifying, evaluating and engaging potential DER locations"*, other uses that are not explicitly included here will be made more accessible (e.g., "*preparing and optimizing DER development plans"*).

While these represent high-value use cases for attention in IEDR platform design, New York should also consider the feasibility of achieving each with respect to the availability of necessary data. Further work is needed to understand what data sources, down to use case-specific inputs, can be directly ingested into the IEDR platform, at what frequency, and how those variables relate to other datasets in order to make them useful. The IEDR white paper by DPS staff provides a helpful inventory of desired data, categorized by Phase 1 versus Phase 2 priority, however more attention is needed to understand the availability and format within which some of these sources would be made available. That effort is beyond the immediate scope of these comments, and should be considered further before NYSERDA makes firm commitments to, or solicitations for, specific use cases.

The remainder of these comments provide use case input in the template format prescribed by NYSERDA. Of note, where the template suggests that use case input be provided from a first-person perspective (e.g., How would Uplight use or benefit from a particular use case), we have instead attempted to provide answers from stakeholder or user perspectives who we serve. That is, Uplight may not be the end user of the IEDR for most or all applications that we describe here. Our input within this submission is informed by our experience supporting a diverse array of clean energy ecosystem stakeholders. Today, through Uplight's comprehensive energy customer data and analytics platform, Uplight improves customer outcomes and accelerates uptake of stakeholder programs and technologies.

Sincerely,

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Use Case 1: Democratizing Customer Data for DERs

Energy customers acting on DER use is the ultimate necessity to achieving an at scale clean energy ecosystem. Through a central clearinghouse for customer energy data combined with data on premise and neighborhood characteristics, and DER program information (rates, rebates, etc.), solution providers will be able to quickly and accurately identify the highest potential DER customers by segment and position customized offers for them. This will animate the DER market in New York, allowing DER uptake to scale through new product innovation better tailored to customers' personalized needs. Uplight has direct experience with this use case through our Connect product line, which ingests customer data siloed in a variety of systems into a unified data lake, with a sophisticated insights engine layered above, and developer and business intelligence tools for utilities and ecosystem partners. Quick and functional delivery of this use case would be the foundation for many other use cases previously identified through the IEDR process, both within the DER category and in other categories such as Energy Efficiency, Building Electrification, and more. Thus, while Uplight identifies this under the sub-category of "*identifying, evaluating, and engaging potential DER customers"*, in fact we would imagine building this data structure to enable many other applications, including the "*selecting DER locations*" use case and others.

1) Contributor Name & Contact Information

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2) Use Case Category

DER Development and Use

3) Use Case Sub-Category

Identifying, evaluating, and engaging potential DER customers

4) What Question(s) Does the Stakeholder Seek to Answer with This Use Case?

- Which residential energy users already have DERs such as smart thermostats, solar systems, battery storage, EV chargers, etc.? Are the DERs currently or previous enrolled in a DR program?
- Which residential energy users and premises have the highest propensity for becoming a smart thermostat, solar system, battery storage, EV charger customer?
- Which residential energy users have the highest propensity for enrolling in DR programs and what DR programs are available in their geography?
- What are the demographics, premise characteristics, utility provider(s), and fuel(s) used of energy users by geography?

5) What Information Should the Use Case Produce for the Stakeholder?

- End-use detection analysis to determine whether energy users already have DERs such as smart thermostats, solar systems, battery storage, EV chargers, etc.
- Information on which energy users are already enrolled in what DR program(s).
- Propensity analysis to determine which energy users have what level of propensity for becoming a DER owner / customer.
- Propensity analysis for the previous user analysis, *and* propensity for enrolling in what available DR program(s).
- Demographic, premise characteristics, utility provider(s) / fuel(s) used of energy users by geography.

(a) How Will the Stakeholder Use the Information Produced by This Use Case?

- End-use detection analysis to be used to avoid offering DERs to energy users who likely already have DERs and / or offer upgraded DERs and related services to those who already have DERs.
- Information on what energy users are already enrolled in what DR program(s) to study DR effectiveness, develop new DR programs and / or offer competitive DR program alternatives to energy users.

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- Propensity analysis to determine with what DER / DR offer to approach energy users by segment and individually.
- Demographic, premise characteristics, utility provider / fuel used, energy use and cost, historical weather of energy users by geography to analyze energy users by segment and individually to create personalized DER / DR offers.

(b) What are the Minimum Necessary Attributes for Each Type of Information Produced?

- Propensity by DER type with confidence interval, segmented at a minimum by Low, Medium, High.
- Presence of existing DER by type, with confidence interval, segmented at a minimum by "Confirmed via OEM", "Detected by disaggregation with high confidence", Detected by disaggregation with medium confidence", "not present or “low confidence detection".
- Reported by customer (privileged information), and heatmap by zipcode+4.
- Daily accuracy of program enrollments and rate code.

6) How Should the IEDR User Interface Present the Information Produced by the Use Case?

Numerous presentation choices of the data should be made available, such as from a map (heatmap by zipcode+4 and individual customer for privileged data), to readable table, list via csv on standard website link, and json via api.

7) What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?

Key data includes customer ZIP code, energy use (15min AMI), fuel type, energy billing, demographic, historical weather, and DSM (including DR) program enrollment or exclusions.

(a) What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?

- AMI 15min, day after and 12-month historic.
- Daily update of all fields for any changes.

8) What Data Relationships Does the IEDR Need to Analyze for This Use Case?

- DER type compatible with a DR program available within a utility territory.
- Rate code by customer and associated conditions of rate including exclusions.

9) What Data Analysis Function(s) Does the IEDR Need for This Use Case?

- Propensity score grouped to be Low/Medium/High segment based on score ranges.
- DER type / make / model, demographic averages / max / min, premise type by zipcode+4.

(a) What are the Minimum Necessary User Input Variables Needed to Enable a Useful Analysis?

- equal to, contains, is blank, matches "x" attribute.

10) How Often Does the Stakeholder Expect to Employ This Use Case?

Stakeholders will likely employ this use case with high frequency to inform frequent and recurring business activities (i.e., Daily, weekly, monthly, quarterly, semi-annually, annually).

11) How Does This Use Case Benefit the Stakeholder?

Providing analytics such as DER detection and propensity to use DERs will democratize the raw data within the IEDR. Otherwise, only organizations with technology and the staff to do the analyses will make use of this data in a reasonable amount of time and financial investment.

12) Why Should This Use Case Be Prioritized From the Perspective of i) the Industry and ii) the Citizens of New York State?

Without understanding energy users in relation to DER use, no amount, ingenuity, or quality of DER technology will achieve accelerated mass adoption and cultural normalization.

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Use Case 2: Unlocking and Operating Flexible DR Programs at Scale

This use case is an important extension on the previous case for identifying DER customers. It empowers the step after contacting and enrolling new customers which is activating and orchestrating DER systems at scale. Accordingly, it will rely on many similar database features and datasets, but different questions may be asked of it and different insights provided. Considering this overlap, we have identified where IEDR features for the previous case are applicable here as well, using grey text, while additional useful data, functions, or new components of the use case are shown in black text. Uplight has deep expertise and in-market experience ingesting and using data to deliver features of this use case, in New York and across the country, including our Activate product line and with our current Smart Home Rate pilot being managed on behalf of ConEd.

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2) Use Case Category

DER Development and Use

3) Use Case Sub-Category

Designing, implementing, and operating DER aggregations

4) What Question(s) Does the Stakeholder Seek to Answer with This Use Case?

In practice, there is overlap of questions answered by this use case with those in our Use Case 1, especially those we identify in grey text below. New questions answered, or revised versions of Use Case 1 questions are shown here in black.

- Which residential energy users already have DERs such as smart thermostats, solar systems, battery storage, EV chargers, etc.? Are the DERs enrolled or previous enrolled in a DR program?
- Which residential energy users have the highest propensity for enrolling in DR programs and what DR programs are available in their geography?
- What are the demographics, premise characteristics, utility provider(s), and fuel(s) used of energy users by geography?
- What geographies have energy billing rates such as TOU, CPP and other rates compatible with DR programs?
- Which energy users are enrolled in what rates and what rates would be optimal when combined with available DR programs?

5) What Information Should the Use Case Produce for the Stakeholder?

- Residential energy users who have DERs such as smart thermostats, solar systems, battery storage, EV chargers, etc.
- Energy users with DERs enrolled in a DR program.
- Residential energy users who have the highest propensity for enrolling in DR programs and what DR programs are available in their geography.
- The demographics, premise characteristics, utility provider(s) / fuel(s) used of energy users by geography.
- Energy billing rates such as TOU, CPP and other rates compatible with DR programs by utility.
- What energy users are enrolled in what rates and what rates would be optimal when combined with available DR programs.

(a) How Will the Stakeholder Use the Information Produced by This Use Case?

- Residential energy users who have DERs such as smart thermostats, solar systems, battery storage, EV chargers - used to design DR programs and enroll participants.
- Energy users with DERs enrolled in a DR program - used to understand scale and approach with other DR program offers.

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- Residential energy users who have the highest propensity for enrolling in DR programs and what DR programs are available in their geography - used to combine DER purchase with applicable DR program(s).
- The demographics, premise characteristics, utility provider(s) / fuel(s) used of energy users by geography - used in DR program design combined with DER sales.
- Energy billing rates such as TOU, CPP and other rates compatible with DR programs by utility - used in DR program design.
- What energy users are enrolled in what rates and what rates would be optimal when combined with available DR programs - used to sell DERs combined with DR enrollment at scale.

(b) What are the Minimum Necessary Attributes for Each Type of Information Produced?
The data attributes are very similar for this use case as for Use Case 1, and hence are displayed in grey text to reflect their redundancy with our input on that use case.

- Propensity by DER type with confidence interval, segmented at a minimum by Low, Medium, High.
- Presence of existing DER by type, with confidence interval, segmented at a minimum by "Confirmed via OEM", "Detected by disaggregation with high confidence", Detected by disaggregation with medium confidence", "not present or low confidence detection".
- Reported by customer (privileged information), and heatmap by zipcode+4.
- Daily accuracy of program enrollments and rate code.

6) How Should the IEDR User Interface Present the Information Produced by the Use Case?
The user interface attributes are very similar for this use case as for Use Case 1, and hence are displayed in grey text.
map (heatmap by zipcode+4 and individual customer for privileged data), readable table, list via csv on standard website link, and json via api.

7) What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?
Key data includes (grey text indicates where data is repeated from Use Case 1): customer ZIP code, energy use (AMI at 15min), fuel type, energy billing, demographic, historical weather, DSM (including DR) program enrollment and exclusions, available rates, enrolled rates, and currently available DSM (including DR) programs.

(a) What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?

- AMI 15min, day after and 12-month historic.
- Daily update of all fields for any changes.

8) What Data Relationships Does the IEDR Need to Analyze for This Use Case?

- DER type compatible with a DR program available within a utility territory.
- Rate code by customer and associated conditions of rate including exclusions.

9) What Data Analysis Function(s) Does the IEDR Need for This Use Case?

- Propensity score grouped to be Low/Medium/High segment based on score ranges.
- DER type / make / model, demographic averages / max / min, premise type by zipcode+4.

(a) What are the Minimum Necessary User Input Variables Needed to Enable a Useful Analysis?

- equal to, contains, is blank, matches "x" attribute.

10) How Often Does the Stakeholder Expect to Employ This Use Case?
Stakeholders will likely employ this use case with high frequency to inform frequent and recurring business activities (i.e., Daily, weekly, monthly, quarterly, semi-annually, annually).

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11) How Does This Use Case Benefit the Stakeholder?
Visibility into DER proliferation and program enrollments allows for quick and less burdensome DR study across all NY utilities. Providing analytics on what rates are ideally suited for what DERs and related DR programs accelerates DER adoption at scale, rates adoption and rate-optimized DR.

12) Why Should This Use Case Be Prioritized From the Perspective of i) the Industry and ii) the Citizens of New York State?
The key to scaling and normalizing DR is to combine DER sales with DR program enrollments and this will only be successful through access to information that links DERs with DR enrollment and rates that can be optimized by DR.

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Use Case 3: Performance Evaluation of DERs

Where the previous two use cases address needs for identifying and engaging potential DER customs then operating DER assets, this use case provides for *ex post* monitoring and reporting on performance following events. This will allow greater transparency and accountability to the performance of DERs and of DER operators, as well as support continued innovation to make DER services more efficient and reliable. It would build upon the data and database structures of the previous two use cases, although with critical additional data needs for event performance and other system conditions that can explain performance.

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2) Use Case Category
DER Development and Use

3) Use Case Sub-Category
Monitoring and evaluating the deployment and use of DERs

4) What Question(s) Does the Stakeholder Seek to Answer with This Use Case?
How well are DERs performing, including:

- How are DERs affecting geographies with load constraints?
- How are DERs used in conjunction with rate optimization?
- What is the effect on energy costs of DER use?
- How well did DERs perform during load shedding or other grid events?
- What is the average and range of customer opt-out and override rates by DER type for participation in events?

5) What Information Should the Use Case Produce for the Stakeholder?

- Peak load shift / reduction by DER.
- DER effect on individual users' TOU and other dynamic billing rates.

(a) How Will the Stakeholder Use the Information Produced by This Use Case?
Information will be used to inform program evaluation, reporting and improvement, including:

- DR program adjustments
- Rate design adjustments
- DER configuration improvements
- Case studies to generate more DER and rate adoption

(b) What are the Minimum Necessary Attributes for Each Type of Information Produced?
Seasonal peak kW and kWh impact potential and estimated dollar impact (rate code specific) by DER device type and individual customer.

6) How Should the IEDR User Interface Present the Information Produced by the Use Case?
Information should be presented in similar formats as Use Cases 1 and 2 and should be produced annually to include hourly device data reports, event reports, and aggregated program reports.

7) What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?

- Runtime data from participating DERs by device by customer
- Event conditions - date, time, duration, dispatch instruction, participation instructions, weather conditions
- AMI data (15min where available)
- Opt-out and over-rides per event per device type

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(a) What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?

- AMI 15min, day after and 12-month historic.
- 15min device data where available, hour frequency minimum per event.

8) What Data Relationships Does the IEDR Need to Analyze for This Use Case?

- Device ID and telemetry to customer ID
- Program enrollments to customer ID
- Customer ID to opt-out data

9) What Data Analysis Function(s) Does the IEDR Need for This Use Case?

- Baseline based on treatment and control groups and/or matched days, by DER device type and individual customer per event.
- Evaluation of per hour per event performance of max., average, and minimum aggregate population segment load shift per DER device type.

(a) What are the Minimum Necessary User Input Variables Needed to Enable a Useful Analysis?

- DER type equal to
- Season equal to

10) How Often Does the Stakeholder Expect to Employ This Use Case?

- Per season

11) How Does This Use Case Benefit the Stakeholder?

This use case has broad application for program monitoring and market/grid performance. In addition, transparent DER performance information will reduce risk in DER use and accelerate innovation across DER OEMs and load constraint plans. Related peak demand and rates outcomes correlated to DER use will accelerate DER capabilities to resolve load constraints and save energy users money.

12) Why Should This Use Case Be Prioritized From the Perspective of i) the Industry and ii) the Citizens of New York State?

DER use presents the best opportunity to resolve load constraint issues resultant from population growth and energy generation emissions reduction / clean energy generation growth. Democratized, transparent, readily accessible information on the performance of DERs is necessary to support DER innovation and DER performance predictability.

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Use Case 4: Democratizing Customer Data for Energy Efficiency

Like DER customer identification and engagement (Use Case 1), the IEDR should prioritize enabling the expansion of New York's energy efficiency market size and reach. Fortunately, much of the same data and database functions for Use Case 1 will naturally support the same applications for identifying and enrolling customers in EE programs and implementing EE measures. As such, this use case represents an incremental build on the previously described use cases, while unlocking much greater market potential. As we have above, our responses to this use case include grey text to indicate where the same data and features are the same or would be achieved by building other use cases, while black text emphasizes the new features or considerations for this foundational energy efficiency use case.

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2) Use Case Category
Energy Efficiency (EE)

3) Use Case Sub-Category
identifying, evaluating, and engaging potential EE customers

4) What Question(s) Does the Stakeholder Seek to Answer with This Use Case?
In addition to those questions that Use Case 1 answers (), which are also relevant to this use case, additional questions include:

- What is customer energy usage (kWh and / or therms) over months or days, in comparison to averages or target levels for a comparably sized, comparable year-built premise?
- Which customers have and have not participated in known EE programs and have and have not implemented known EE measures?

5) What Information Should the Use Case Produce for the Stakeholder?

- Energy use and cost data by fuel type and related similar efficient premise comparison analytics.
- Utility customer program participation analysis to determine whether energy users already have participated in EE programs, rebates, and incentives.
- Information on what energy users have interacted with EE program, rebate, and incentive information.
- Propensity analysis to determine what energy users have what level of propensity for participating in specific EE programs.
- Demographic, premise characteristics, utility provider(s) and fuel(s) used of energy users by geography.

(a) How Will the Stakeholder Use the Information Produced by This Use Case?

- Focus customer outreach for EE programs, rebates and incentives offers, and education based on personalized recommendations specific to individual energy use and cost data, demographic context, and available programs.
- This supports a step change from early-stage EE measures like building envelope and insulation improvement to later state measures like smart thermostats and furnace upgrades.

(b) What are the Minimum Necessary Attributes for Each Type of Information Produced?

- AMI data aggregated by season and by fuel type.
- Daily accuracy on program participation history, current participation.
- Propensity by DER type with confidence interval, segmented at a minimum by Low, Medium, High.

Presence of existing technology by type, with confidence interval, segmented at a minimum by "Confirmed via OEM", "Detected by disaggregation with high

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- confidence", “Detected by disaggregation with medium confidence", "not present or low confidence detection" Reported by customer (privileged information), and heatmap by zipcode+4.

6) How Should the IEDR User Interface Present the Information Produced by the Use Case?
The user interface attributes are very similar for this use case as for Use Cases 1 and 2, and hence are displayed in grey text.
map (heatmap by zipcode+4 and individual customer for privileged data), readable table, list via csv on standard website link, and json via api.

7) What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?
Key data includes many items also included in use cases 1 and 2 (show in in grey text), as well as additional data for EE program participation: customer ZIP code, energy use (15min AMI), fuel type, energy billing, demographic, historical weather, EE program enrollment or exclusions.

(a) What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?

- AMI 15min, day after and 12-month historic.
- Daily update of all fields for any changes.

8) What Data Relationships Does the IEDR Need to Analyze for This Use Case?

- Customer and technology type compatible with an EE program available within a utility territory.
- Rate code by customer and associated conditions of rate including exclusions.

9) What Data Analysis Function(s) Does the IEDR Need for This Use Case?

- Propensity score grouped to be Low/Medium/High segment based on score ranges.
- DER type / make / model, demographic averages / max / min, premise type by zipcode+4.

(b) What are the Minimum Necessary User Input Variables Needed to Enable a Useful Analysis?

- equal to, contains, is blank, matches "x" attribute.

10) How Often Does the Stakeholder Expect to Employ This Use Case?
Stakeholders will likely employ this use case with high frequency to inform frequent and recurring business activities (i.e., Daily, weekly, monthly, quarterly, semi-annually, annually).

11) How Does This Use Case Benefit the Stakeholder?
Providing analytics such as customer EE program participation / EE measure implementation history and propensity to enroll in EE programs and implement EE measures will democratize the raw data within the IEDR. Otherwise, only organizations with technology and the staff to do the analyses will make use of this data in a reasonable amount of time and financial investment.

12) Why Should This Use Case Be Prioritized From the Perspective of i) the Industry and ii) the Citizens of New York State?
Without understanding energy users in relation to historical EE participation and propensity for future EE participation no amount, ingenuity, or quality of EE technology will achieve accelerated mass adoption and cultural normalization.

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New York State Integrated Energy Data Resource
Input on Initial Use Cases for Prioritization
U.S. EPA, ENERGY STAR Buildings Program
July 23, 2021

Submitter

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Immediate Needs

The U.S. EPA's ENERGY STAR Buildings program is submitting this template to support prioritization of an IEDR Use Case to **support building owners and managers in obtaining the whole-building energy consumption data required for building energy benchmarking**. Due to the central role that benchmarking plays (and will continue to play) in New York, for both mandatory and voluntary programs at both the state and local level, consistent and streamlined access to whole-building energy data is critical in order to drive:

- Building owner compliance with laws/policies that require benchmarking;
- Building owner participation in voluntary initiatives that leverage benchmarking;
- Building owner pursuit and implementation of energy improvement measures, based on benchmarking results; and ultimately
- Attainment of the energy and climate policy goals set forth at both the state and local levels.

In submitting this use case, EPA draws upon its experience working with a number of ENERGY STAR partners and stakeholders – not just building owners/operators, but also state and local government entities, energy service providers, and utilities that are actively engaged in promoting and providing technical support around benchmarking. Through its engagement with these stakeholders, EPA understands the challenges and the best practices associated with data access for benchmarking. For this reason, EPA believes that the successful incorporation of this use case into the initial deployment of the IEDR would not only drive the success of current and future building energy policies and related initiatives in New York, but would serve as a best practice to be promoted to other states across the country.

Please see below, under "Further Context," for a complete articulation of the importance of this use case.

Suggested Criteria for Prioritizing Initial Use Cases

EPA suggests the following criteria that are important to consider in prioritizing use cases:

- Applicability of use case to current or forthcoming local ordinances and/or statewide legislation.
- Applicability of use case to current or forthcoming voluntary program offerings at the state or local level.

- Established, documented interest in the use case by local and state-level policymakers (e.g., NYC, NYSERDA, NYS PSC).
- Articulated need from the building owner/operator community.

Further Context

The importance of building energy benchmarking has been clearly emphasized by the New York State Public Service Commission in its December 13, 2018 Order Adopting Accelerated Energy Efficiency Targets (pp. 45 – 46), as well as by the New York State Department of Public Service in its May 29, 2020 Integrated Energy Data Resource White Paper (see section 3.1.6, pp. 15 – 16).

The drivers for benchmarking across New York State are significant and wide-ranging, including (but not necessarily limited to) the following:

- Longstanding recognition of benchmarking as a foundational best practice for energy management and energy performance improvement;
- Existing local laws – and anticipated statewide legislation – requiring commercial and multifamily building owners to benchmark, disclose performance, implement energy improvement measures, and/or achieve minimum energy and greenhouse gas emissions performance levels (e.g., NYC Local Laws 84, 87, and 97);
- Existing and anticipated voluntary benchmarking initiatives (e.g., NYSERDA's Clean Energy Communities program and the related "Benchmarking" and "Battle of the Buildings" high-impact actions); and
- Existing and anticipated utility programs that seek to leverage benchmarking data to better identify and target customer buildings for participation in efficiency programs.

Taken together, these drivers are expected to result in an increasing number of building owners and operators seeking to benchmark their properties – not just once, but on an ongoing basis (annually, if not monthly). In most (if not all) cases, this will entail the use of EPA's ENERGY STAR Portfolio Manager tool.

A key element required for accurate benchmarking is whole-building energy consumption data. Portfolio Manager requires that users account for the total amount of energy consumed in the operation of a building, with a minimum of 12 complete, consecutive months of usage data required for each applicable fuel type. In the simplest scenarios, the building owner/manager can enter these data directly from their monthly utility bills (presuming that the owner/manager is the customer of record for all accounts and meters located at the property, and therefore receives all relevant bills). However, in cases where the building owner/manager is not the customer of record for all accounts and meters located at the property, it can be difficult or even impossible to obtain the complete energy data required to generate accurate benchmarking metrics.

This is well-documented challenge across a number of building sectors, including multi-tenant office properties, multifamily properties, certain retail configurations, and some warehouse/industrial properties, where tenants/residents are billed directly by the utility. For this reason, it is increasingly common for utilities across the country to provide a means for property owners/managers to request and receive energy consumption data that has been aggregated at the whole-building level (by fuel type

and by month). In this way, property owners and managers can obtain access to the data they need for complete and accurate benchmarking, while the data privacy of individual tenants is maintained. Frequently, these utilities are also leveraging the Portfolio Manager web services Application Programming Interface (API) to facilitate the direct transfer of energy data to the property owner/manager's Portfolio Manager account, thereby removing a data entry step.

At present, New York State utilities have been directed to develop mechanisms for delivering whole-building aggregate energy consumption data upon request, and for delivering these data to Portfolio Manager via web services. As detailed in the IEDR White Paper and in utility filings under PSC case 18-M-0084, New York utilities are in varying states of readiness to provide this service. Furthermore, among those utilities that are currently offering a data access solution for benchmarking (Con Edison, National Grid, and National Fuel), there is notable variation between the processes by which building owner and operators' data requests are initiated and fulfilled.

The establishment of a statewide IEDR presents a significant opportunity to streamline the delivery of energy consumption data to building owners and operators, which will greatly facilitate the benchmarking process throughout New York State, and will build upon the offerings available today. Furthermore, if a single, statewide IEDR platform were to ultimately serve the role currently played by multiple discrete utility benchmarking data access solutions, this would present an opportunity to incorporate the most successful system design elements deployed to date by New York utilities (as well as best practices from other utilities across the country).

Rather than requiring individual utilities to develop and maintain their own solutions (which may result in an inconsistent experience for property owner/managers that have to request data from multiple utilities), the IEDR presents the opportunity for NYSERDA and DPS to offer a "one-stop shop" through which all energy consumption data for benchmarking can be located, requested, and compiled. This also presents an opportunity to apply consistent mechanisms for ensuring accuracy of the whole-building data provided to requestors – as opposed to relying on different QA/QC procedures implemented by individual utilities.

Furthermore, just as utilities are doing on an individual basis today, the centralized IEDR can leverage the Portfolio Manager web services API to send consumption data directly to requestors' Portfolio Manager accounts. The use of the web services API would also allow the IEDR to query Portfolio Manager in return, which provides an opportunity for the IEDR to gain access to data points that would not otherwise be available from other data sources. These include the property use details captured by Portfolio Manager (e.g., property type, square footage), as well as any additional identifiers (e.g., UBID, city-specific reporting ID) that are being associated with the Portfolio Manager property record. This can eventually lead to a more robust data set underlying the IEDR, which can grow as more users opt in to using the IEDR's Portfolio Manager web services functionality.[1]

[1] The "two way" functionality of Portfolio Manager web services requires that a requestor first initiate a sharing request with the IEDR. Only then can the IEDR send data to Portfolio Manager and/or pull data back from the property record to which access has been shared. Without the requestor-initiated sharing request, the IEDR will not simply be able to query any Portfolio Manager account at will.

The anticipated end state is a scenario where building owners and operators can spend less time navigating the technical details of benchmarking (including locating and accessing the complete data required to benchmark), and more time focused on interpreting benchmarking results, which they can use to identify and prioritize potential improvements that will drive the energy savings and greenhouse gas emissions reductions envisioned by state and local policymakers.

1.) Contributor Name & Contact Information

Enter the name(s), organization(s), and contact information for the contributor(s) of this profile form.

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2.) Use Case Category

Select and enter one of the use case categories listed at the end of this form.

Building Electrification
Energy Efficiency (EE)
Local Government Functions
State Government Functions

[NOTE: we have opted to select all four of these use case categories, since all of them contain "building energy benchmarking" as a use case sub-category]

3.) Use Case Sub-Category

Select and enter one of the use case sub-categories listed at the end of this form.

Building energy benchmarking

4.) What Question(s) Does the Stakeholder Seek to Answer With This Use Case

Enter the questions that this IEDR use case could answer with information that would be useful to the Stakeholder.

By facilitating access to the whole-building energy data needed for benchmarking, the IEDR would allow building owners/managers, state and local policymakers, utility program implementers, energy service providers, and other stakeholders to answer a range of foundational questions associated with building energy and emissions performance, such as:

- How does a given property perform compared to similar buildings?
- How has a given property's performance changed over time?
- When looking at a group of buildings, which one(s) offer(s) the most potential for energy performance improvement and/or greenhouse gas emissions reductions?
- How can a property owner/manager communicate meaningful improvements in energy performance and/or GHG reductions over time?

At a more granular level than the policy and programmatic questions noted above, the integration of this use case within the IEDR would also provide answers to key technical questions associated with the process of obtaining energy data for benchmarking. These include:

- How can building owners and operators more easily access and obtain the complete, whole-building energy consumption data required to accurately benchmark energy performance?
    - Can the availability of these data via a single statewide platform achieve efficiencies and improved user experience, as compared to navigating multiple utility-specific platforms?

- How can complete energy consumption data be obtained at a whole-building level (aggregated by month, by fuel type) when the property owner/operator is not the customer of record for all accounts/meters that serve the property, and therefore cannot request account- and meter-level data?
    - Where a property owner/operator is the customer of record for all accounts/meters that serve the property, can they also use this platform to request and receive data at the account/meter level, if they so choose?

- How can this platform integrate the ENERGY STAR Portfolio Manager web services API, so that the requested/compiled energy consumption data can be sent directly from the IEDR to the requestor's Portfolio Manager account?
    - Can the IEDR be used by data requesters to set up and manage ongoing monthly data "pushes," without requiring repeat requests?

5.) What Information Should the Use Case Produce for the Stakeholder?
Describe the type(s) of useful information that the use case should produce.

This use case should result in building owners and managers being able to request, obtain, and review monthly energy consumption data for all fuels used in the operation of one or more specified properties. If total property energy consumption comprises meters/accounts for which the owner/manager is not the customer of record, the IEDR will provide aggregated whole-building consumption data (by month, by fuel), subject to an aggregation threshold (i.e., a minimum number of tenants/accounts located at the property).

Where consumption data are being aggregated across the whole building (by month, by fuel), the IEDR will provide sufficient information for the requestor to confirm that the correct meters/accounts have been identified and "rolled up" to the aggregate total – even if the actual meter/account-level consumption data is not being exposed.

Furthermore, this use case should enable the automated transmittal of the collected monthly energy consumption data directly from the IEDR platform (where the customer will request and review the data) to a designated Portfolio Manager account (which will use these data to generate benchmarking metrics).

a. How Will the Stakeholder Use the Information Produced by This Use Case?
Explain how the Stakeholder will use each type of information produced.

As a primary goal of this use case, whole-building energy consumption data will betransmitted to (or made available for manual upload into) the EPA's Portfolio Manager tool for the purpose of benchmarking the energy performance of commercial and multifamily properties. In the case of mandatory benchmarking and disclosure ordinances (e.g., NYC Local Law 84), as well as building performance standards (e.g., NYC Local Law 97), this functionality will ensure that the requestor is able to obtain the data for compliance. Streamlined benchmarking through improved data access will also facilitate participation in voluntary programs (e.g., NYSERDA's Clean Energy Communities Benchmarking and Battle of the Buildings High-Impact Activities).

Once complete energy consumption data are populated in Portfolio Manager, building owners and operators will be able to use the tool assess the performance of their properties and use this information to inform decisions about energy reduction activities that will be pursued. Through Portfolio Manager, users have access to thousands of data points, including hundreds of calculated metrics that can be used to measure and track building performance.[2]

b. <u>What are the Minimum Necessary Attributes for Each Type of Information Produced?</u> For each type of information produced, specify the minimum necessary information attributes (i.e. precision, accuracy, granularity, etc.).

EPA's Portfolio Manager benchmarking tool requires a minimum of 12 complete and consecutive calendar months of energy consumption data for all fuels used in the operation of a property. Ideally, consumption data obtained from the IEDR should be delivered in monthly increments, with no individual consumption record spanning more than 65 days. The only exception is for "bulk delivery" fuels (e.g., fuel oil), for which it is acceptable to indicate the amount delivered on specific dates.

Where a property is generating onsite renewable electricity, it will be necessary to delineate the total amount of grid electricity consumed in the operation of the property, as well as the total amount of electricity generated onsite and used onsite. It is not sufficient to account for net-metered consumption.

6.) <u>How Should the IEDR User Interface Present the Information Produced by the Use Case?</u> Identify one or more useful ways to present the output information to the user (i.e. list, table, graph, bar chart, pie chart, map, ... , etc.). For example, a bar chart that shows the number of electric customers on each of several rates within a zip code.

[2] It is also important to note that the data pushed from the IEDR to Portfolio Manager need not be limited to energy consumption data. While energy consumption data is the focus of this use case, given that it is a central requirement for benchmarking, Portfolio Manager can also ingest and generate metrics based on data such as energy cost, monthly peak demand, water consumption, waste disposal/diversion, and much more. If the IEDR contains these data fields, they can be provided to the requestor as an additional value-add.

The IEDR user interface should contain a module that will allow data requestors to specify the physical location of their properties, as well as any other relevant information that would be necessary for the IEDR to locate all accounts/meters that comprise the specified property, prior to aggregating total energy consumption by fuel type. The module should also allow the user to specify the time period for which energy consumption data are being requested, and the fuel type(s) for which consumption data are being requested.

This module should provide the user with a descriptive list of the constituent meters/accounts that have been located for the property, so that the user can review and confirm the completeness of the data that will be used to calculate aggregated whole-building energy consumption. As necessary, the user interface should allow the user to search for and add/remove additional meters/accounts, to ensure that all consumption data are accounted for.

Upon confirmation of the constituent meters/accounts, the IEDR should generate and display one or more data tables showing the aggregate monthly consumption for the fuel type(s) requested, for the time period requested. These data tables should be made available for download in a format suitable for upload to EPA's Portfolio Manager tool. In addition, the user should be able to initiate the transfer of these data directly to a Portfolio Manager account and property record that has been connected to and shared with the IEDR.

Information regarding the number of constituent meters/accounts that comprise the aggregate whole-building consumption record at any point in time should be made available to the requestor and will be maintained in the IEDR.

7.) <u>What Type(s) of Data Does the IEDR Need to Analyze for This Use Case?</u>
Identify the one or more types of data - from utilities and/or other sources - that the IEDR will need to analyze to produce useful information. See Appendix B of the Staff IEDR Whitepaper for a preliminary list of data types that could be collected and analyzed by the IEDR.

The IEDR will require monthly energy consumption data for each fuel type used in the operation of a given property. It is expected that these data will typically be available from the respective utilities' billing information systems, although for some data points it may be necessary for utilities to provide data from further "downstream," such as meter data management systems. This may be especially relevant in the case of buildings with onsite renewable electricity generation – where it will be critical to identify the total amount of grid electricity provided to the property, regardless of any excess generation sold back to the grid (some utility billing systems may track net-metered consumption only, and may not have access to the specific amount of energy flowing into or out of the building during a given period).

a. <u>What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed?</u>
What are the Minimum Necessary Data Attributes for Each Type of Data Collected and Analyzed? For each type of data analyzed, specify the minimum necessary data attributes (i.e. precision, accuracy, granularity, age, ... , etc.).

EPA's Portfolio Manager benchmarking tool requires a minimum of 12 complete and consecutive calendar months of energy consumption data for all fuels used in the operation of a property. Ideally, data should be delivered in monthly increments, with no individual consumption record spanning more than 65 days. The only exception is for "bulk delivery" fuels (e.g., fuel oil), for which it is acceptable to indicate the amount delivered on specific dates.

Where a property is generating onsite renewable electricity, it will be necessary to delineate the total amount of grid electricity consumed in the operation of the property, as well as the total amount of electricity generated onsite and used onsite. It is not sufficient to account for net-metered consumption.

8.) <u>What Data Relationships Does the IEDR Need to Analyze for This Use Case?</u>
Identify the one or more data relationships, if any, that must exist in the IEDR to enable the analyses needed for this use case. For example, the user may want to identify EV registrations and electric utility customer accounts that share the same street address.

The IEDR will need to be able to "map" individual meters and/or accounts to a single property, based on address and/or other information provided by the user/data requestor. This mapping will be used to aggregate total energy consumption data, by fuel, at the property level, regardless of the number of discrete meters or accounts associated with the property. Since most utility data systems do not currently contain a property-level identifier that can serve as a single lookup "key," it may be necessary for the IEDR to conduct multiple queries (e.g., identify all meters/accounts associated with one or more service addresses provided by the IEDR user). If GIS/geolocation data is available for consumption records in the IEDR, this can and should be used to assist in the meter-to-building mapping process.

9.) <u>What Data Analysis Functions Does the IEDR Need for This Use Case?</u>
Identify the one or more analytic functions that the IEDR must apply to each type of data used in this use case. For example, the use case may require the determination of averages, maximums, minimums, durations, and values greater/lesser/equal/between variables set by the user.

The IEDR will need to calendarize constituent account/meter-level consumption data, so that the consumption records of meters/accounts with different start and end periods can be correctly aggregated. The assignment of consumption data to a specific calendar month should be weighted based on the number of days for a given consumption period that fall within that month.

a. <u>What Are the Minimum Necessary User Input Variables Needed to Enable a Useful Analysis?</u>
For each analytic function, specify the one or more input variables that the user must provide (if any) to enable the desired analysis. For each type of input variable needed,

specify the type(s) of condition to be applied in the analysis (i.e., greater than, equal to, less than, between, not between, etc.).

The IEDR user will need to enter all street addresses, or any other information deemed necessary for meter-to-building mapping, associated with the property for which consumption data are being requested. They will also need to enter the time period for which they are requesting energy consumption data (in the case of an ongoing data request, this will be the start date as of which aggregate whole-building energy consumption data should be provided).

10.)<u>How Often Does the Stakeholder Expect to Employ this Use Case?</u>
For example: sub-daily; daily; weekly; monthly; quarterly; semi-annually; annually ...

Benchmarking best practice encourages building owners/operators to enter monthly consumption data into Portfolio Manager. At present, Portfolio Manager cannot make use of energy consumption data more granular than monthly.

11.)<u>How Does This Use Case Benefit the Stakeholder?</u>
Describe how this use case would benefit its Stakeholder(s) and explain how the use case would enable those benefits. Benefits described and explained could include reduced cost, reduced time, greater revenue, reduced risk, increased understanding, ... , etc.

Building owners and operators seek to benchmark the energy performance of their properties – whether as a result of mandatory drivers (e.g., NYC LL 84/97; anticipated statewide benchmarking law) or voluntary activities (e.g., participation in NYSERDA's Clean Energy Communities program). However, the process of obtaining the complete, whole-building energy consumption data required for benchmarking can be difficult or even impossible – especially in the case of properties where tenants/residents are billed directly by the utility, and where the property owner/manager does not have access to these data. Across New York, utilities are currently offering or developing their own data access solutions to support energy performance benchmarking. However, at present, each utility's process for requesting and obtaining these data is different.

Standardizing this process via a statewide IEDR platform will benefit both property owners/operators – who will only need to query a single source for the data they require – as well as the utilities – which will no longer need to maintain and provide technical assistance for separate data access platforms. Furthermore, local and state government entities will benefit from improved compliance (with laws/mandates that require benchmarking) and improved participation in voluntary programs that leverage benchmarking as a first step.

12.)<u>Why Should this Use Case be Prioritized from the Perspective of i) the Industry and ii) the Citizens of New York State?</u>

If this use case is prioritized, it will provide data that are foundational for achieving multiple local and statewide objectives premised upon the measurement of commercial building energy performance and GHG emissions. In addition to the New York City benchmarking law and

building performance standard already in place, it is anticipated that New York State will be implementing a statewide benchmarking law as a means of driving energy savings and emissions reductions from commercial and multifamily buildings. The success of any mandatory benchmarking program will depend on the availability of the energy consumption data required to benchmark in Portfolio Manager, and the development of a statewide IEDR presents the opportunity to make these data more easily accessible by property owners and managers.

Integrated Energy Data Resource Stakeholder Comments

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Utilidata greatly appreciates the opportunity to provide input regarding New York's Integrated Energy Data Resource (IEDR) plans. As a software provider with over a decade of experience in distribution grid operations, we have unique experience capturing, analyzing, sharing, and making use of primary system and grid-edge data, in service of many of the goals New York State is trying to meet, including distributed energy resource (DER) development, transportation electrification, building electrification, energy efficiency, and electric utility function.

We commend the Public Service Commission and NYSERDA for recognizing the essential role data access plays in the energy sector transformation. Providing data from utilities to DER companies, energy service providers and other innovators can help drive tremendous value for customers, the overall energy system, and the effort to quickly and affordably decarbonize. Sharing data can also help reduce the information asymmetry that currently exists between utilities and various parties attempting to interface with the utility grid.

However, the success of the IEDR initiative hinges on the ability to deliver "useful energy-related data." In this context, the term "data" should be used to describe precise, actionable information. In Utilidata's experience, turning raw system data into precise, actionable information is a very complex process, requiring a great deal of attention given to what information is captured, how it is analyzed, in what time scale it is transmitted, and how it is put into context with other grid data. To say that the devil is in the details would be an understatement. Most open data initiatives fail not for lack of good intentions by the parties involved, but because these technical complexities were not navigated successfully. Developing a platform that can share relevant and actionable utility system data with third parties requires extremely close collaboration between the utility, third parties, and the provider of the data platform.

We know this to be true because we have experienced these challenges first-hand and are working collaboratively with utilities, DER developers, and national labs to overcome them. Our real-time machine learning grid optimization software is used to process, contextualize, and share data from utilities. In New York, we are currently undertaking a project funded by NYSERDA with National Grid, the National Renewable Energy Laboratory (NREL), and Standard Solar to operationalize "open data" between the grid and a solar farm in Clifton Park. This project exemplifies the collaboration between utilities and third parties that is necessary to achieve the use cases NYSERDA has identified. Our experience with this project, combined with our decade of experience operationalizing real-time

system data, highlights key foundational elements that must be addressed to achieve any of the use cases NYSERDA has identified.

While the prioritization of use cases is a worthwhile endeavor, focusing exclusively on the data needs of individual use cases -- rather than the foundational system data that could be collected and analyzed to support a broad range of use cases -- may unnecessarily limit the scalability and effectiveness of the IEDR. Therefore, we recommend that in parallel to the use case evaluation, NYSERDA also select a number of substations, in addition to the one at Clifton Park, to pilot the data collection, analysis, and sharing process to ensure that useful and relevant system data can be made available in the IEDR.

Outlined below are lessons we have learned thus far that we hope will aid NYSERDA in developing an IEDR that can not only support an initial set of prioritized use cases, but quickly and easily scale to support a wide range of use cases.

1. **The majority of primary system data needed for most IEDR use cases is available via two utility data sets.** The first crucial data set of system measurements can be obtained from the utility's SCADA system. Nearly all of the essential system measurements (including demand, current, voltage, frequency, and VARs) from primary system devices (including substations, station load-tap changers, line regulators, capacitors, reclosers, and line voltage monitors) are available via the same data transfer path from a utility's SCADA system. The process of pulling demand data from the substation, for example, is the same as pulling current data from a capacitor. Therefore, NYSERDA would be well-served to collect all of these measurements at once, rather than prioritizing the collection of a single measurement to support a prioritized use case.

   The second crucial data set is the asset description and hierarchy, which provides information about the physical attributes of the grid and connectivity between assets. This data is available via a utility's CYME or SYNERGY model.

2. **Grid-edge data is also essential, but utilities have not integrated it with their primary system data, creating an information gap that must be addressed.** The grid edge is becoming exponentially complex, particularly as New York ramps up utilization of flexible demand and the integration of solar, electric vehicles, electric heat, and batteries. Data from grid-edge end points, particularly advanced metering infrastructure (AMI), provides the most accurate and complete understanding of what is happening at the grid edge.

   Each meter records about 25 million data points per month, including demand, voltage, power flow, and DER operational characteristics. For that data to be most actionable, it should be collected, processed, and managed by a system with powerful grid-edge computing capabilities, as we explained in our public comments regarding National Grid's Benefit Implementation Plan (BIP) in Case 17-G-0239. Existing centralized utility systems are not designed to process this data for operational use, let alone turn it into actionable insights for third-party stakeholders. For example, in our Clifton Park project, because National Grid's SCADA system does not process AMI data, we had to retrieve AMI data from the meter manufacturer's cloud.

New York is making massive investments in AMI. As early as possible in the deployment process, utilities should be planning to integrate that data into a software platform that can make relevant data available for the IEDR initiative.

3. **System data must be analyzed together to truly understand grid conditions.** System measurements can be misleading if not properly analyzed and contextualized, especially grid-edge measurements. A raw data dump of intermittent AMI voltage reads, for example, will not be actionable. AMI voltage measurements are highly variable, given that homeowners and businesses use different amounts of power throughout the day. This variable AMI data must be connected to circuit models and measurements from primary system devices to understand what's happening on the system. The asset hierarchy data is essential as it explains how the various devices are connected, enabling the determination of whether devices with similar measurements are physically connected or operating in the same area of the grid.

   The kind of grid-edge operating system that we described in our BIP comments can analyze and integrate AMI data to determine grid-edge conditions at any customer location, operate the grid more efficiently, and enable the grid and DERs to communicate and coordinate operations. This kind of real-time machine learning system can also combine AMI data with primary system data to provide a more holistic and accurate view of the grid.

   As part of the Clifton Park project, we used our machine learning software system to analyze CYME models, primary device data, and AMI data, as well as metadata describing the relationships between the various datasets. This allowed us to gain a detailed understanding of the interactions between solar inverters and power flow on the system. By collaborating with other stakeholders and engaging in an in-depth analysis, we gained a better understanding of exactly what types of data, data relationships, and data analysis functions would be needed to support our project. Before this process, the stakeholders involved in this project would not have been fully able to answer questions 7, 8 and 9 in the use case profile. We believe our experience can help support a number of other use cases in DER development, transportation electrification, building electrification, and utility function use cases.

4. **Existing system datasets often contain discrepancies or inaccuracies that must be reconciled with machine learning before the data can be useful.** CYME or SYNERGY models are inadequate for understanding real-time grid conditions and contain discrepancies that must be corrected to use the circuit data for any planning exercise, particularly those that are going to change power flow, like adding new demand, generation or modeling price-responsive customer behavior. Machine learning algorithms, coupled with an understanding of power system behavior, can quickly detect and locate inaccurate model descriptions.

   For example, most utility circuit models, including those at Clifton Park, assume ideal conditions, such as three phases that are "balanced" with the same line construction and impedance values, which is rarely a reality. Additionally, many models end at the service transformer rather than showing individual service points. Our machine learning tools allowed us to combine measured data from field devices with open-source GIS, satellite, and road

information, to connect the service points - which came into our system as AMI data - and approximate the length of the service drops from the service transformer to service points. We could then approximate the impedance of the service transformer and correct the circuit models, using real-time data. A machine learning model with a robust feedback loop can use real-time data to continuously improve, adjusting its parameters to ensure it remains as accurate as possible.

5. **Even with the most advanced software platform, implementing an IEDR effectively will require close collaboration with utilities to validate and resolve discrepancies in the data.** Under the IEDR initiative, utilities are being asked to analyze and provide data in a way that has never been done before. In our experience, every time data is evaluated in a new way, it reveals unknown issues and discrepancies. For example, for the Clifton Park project, National Grid provided Utilidata with 150 GB of data, including the 2019 CYME models, primary device data, and AMI data, as well as the metadata describing the relationships between the various datasets. Even though we were using powerful machine-learning models, we still needed close collaboration with National Grid to understand the discrepancies between the simulated and measured data, the hosting capacity analysis results and procedures, technical roadmaps for supporting smart inverters in New York, and selection criteria for solar interconnections as well as forecasting data for the next 15 years.

   Therefore, IEDR cannot simply be a mandate imposed upon utilities, or a passive exchange of information between the utility and third-party stakeholders. It must be implemented in a way that fosters collaboration among all parties and creates opportunities to validate assumptions and provide crucial context. Blindly relying on data without some kind of validation will not work.

NYSERDA will need to confront these realities no matter which use cases it prioritizes. However, once the utilities have a system in place that can process and contextualize the key data sets, tweaking outputs for new use cases should not be a heavy lift, because the platform has been built the right way, from the bottom up.

We believe fully incorporating the lessons learned from the Clifton Park project will best ensure that the state successfully executes the IEDR. National Grid and the other parties have been great collaborators in this process. We would welcome the opportunity to have the project team share the details from this effort thus far. We also believe it would be fruitful to identify a number of substations in each utility service territory where New York can quickly replicate this process, in parallel to the effort to prioritize use cases. Laying the correct system data foundation at different substations in each utility service territory will provide invaluable lessons and best position the IEDR to become an effective resource for third-parties, avoiding the fate of other well-intentioned but unsuccessful pursuits to share “system data.”

We appreciate the opportunity to provide our perspective and look forward to continued collaboration as stakeholders across the state work to make the IEDR a success.