New York State Integrated Energy Data Resource
Input on Initial Use Cases for Prioritization
U.S. EPA, ENERGY STAR Buildings Program
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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]

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[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 <u>access</u> and <u>obtain</u> the complete, whole-building energy consumption data required to accurately benchmark energy performance?
  - o 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?
  - o 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?
  - o Can the IEDR be used by data requesters to set up and manage ongoing monthly data "pushes," without requiring repeat requests?

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.

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. <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.

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. ***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.).***

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.) ***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.***

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[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.) _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 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.) _What Data Analysis Functions 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 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. _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 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.) *How Often Does the Stakeholder Expect to Employ this Use Case?*
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.) *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.

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.) *Why Should this Use Case be Prioritized from the Perspective of i) the Industry and ii) the Citizens of New York State?*

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.