**U.S. Department of Energy**
**National Laboratory Operations Board**
**Infrastructure Assessment Subgroup Charter**

**Department of Energy Infrastructure Assessment Study**

**PURPOSE**:
To establish a Working Group of the National Laboratory Operations Board (Board) to assess how the infrastructure is meeting the Mission related needs of the Department of Energy (DOE)/ National Nuclear Security Administration (NNSA) laboratory complex. This study will provide Department leadership insight into the actual condition, utilization, and capabilities of infrastructure across the DOE laboratory complex. The assessment from this study may be used in future decisions for best aligning mission needs and existing space, considering and identifying needs for new infrastructure, and for providing greater visibility across the Department and with external partners about the existing capabilities and capacities across the laboratory complex.

**OBJECTIVE:**
The Subgroup will establish the strategy to conduct the study (including the available databases and software that can be relied upon to conduct the study). The study will provide an inventory of Dedicated Mission Facilities and an assessment of the condition, capabilities, and utilization of the infrastructure throughout the DOE lab complex to support these facilities. The Subgroup will determine a timeline for interim and final products, and define the methodology of the study. As an initial step, the Subgroup will be briefed on the methodology and scope used to conduct a "PNNL campus strategy" to determine whether it may be applied to the subgroup's study. The Subgroup will consist of representatives from Federal and Laboratory Chief Operating Officers (COO), other senior officials, and support staff, with representation from the Future Infrastructure Subgroup of the LOB.

This Subgroup will coordinate closely with the Infrastructure Needs Subgroup (LOB Subgroup B) to integrate efforts.

**MEMBERSHIP:**
The Infrastructure Subgroup will report to the National Laboratory Operations Board and will be chaired by the Office of Science COO and the Thomas Jefferson National Accelerator Facility COO.

**OTHER PERMANENT MEMBERS OF THE SUBGROUP WILL INCLUDE:**
NNSA COO
Office of Nuclear Energy COO
Oak Ridge National Laboratory COO
Pacific Northwest National Laboratory COO
Office of Environmental Management representative
Office of Science Subject Matter Expert
DOE Senior Real Property Officer
Director of the National Laboratory Operations Board

All members of the Subgroup will be Federal employees or full-time employees of DOE M&O contractors.

**FREQUENCY OF MEETINGS**

The subgroup shall meet biweekly. These meetings will be conducted in person or utilizing VTC. Status reports will be provided to the full Board on a recurring basis, with a rollout of the study slated for February 2014.

# Facilities and Infrastructure Assessment Guidance

## 1. Introduction

A U.S. Department of Energy (DOE) enterprise strategic infrastructure planning process has been developed to ensure:

- consistent criteria for key elements (inventory, asset condition, functionality, and utilization),
- minimal duplicative efforts by leveraging the DOE's real property data warehouse, the Facilities Information Management System (FIMS), and
- consistent, defensible, and repeatable processes and tools for analyzing and reporting the data efficiently for decision makers to support budgeting.

This Guidance document provides the information to conduct the assessment of infrastructure, which will be conducted in two phases.

**Phase 1:** By June 1, 2014, each laboratory will complete the following.

- Identify Mission Unique Facilities and identify which mission capabilities (e.g., for the Office of Science, these are the annual laboratory plan core capabilities) each one supports (see guidance Section 2). The focus of this overall effort is intended to be on general and supporting infrastructure, and so these facilities will not be included in the rest of this assessment.
- Of the remaining infrastructure assets, identify those that are most likely to be rated substandard or inadequate based on existing knowledge of the facility and mission need. These will be the subject of the first phase of the assessment so that the most dire infrastructure needs can be considered during the FY 2016 budget formulation process. For each of those assets,
  - Identify which mission capabilities they support, and
  - Assess the condition (Section 3), functionality and utilization (Section 4).

Updates are currently being made to the Department's Facilities Information Management System (FIMS) to accommodate this data. In addition, program offices will work with laboratories to report the results using their existing laboratory planning processes.

**Phase 2:** By October 31, 2014, conduct an assessment of assets not included in Phase 1.

During the assessment, questions can be referred to the points of contact identified in each section of the guidance, or to your program office.

## 2. Identification of Mission Unique Facilities

Mission unique facilities are being identified for two reasons. First, this will provide an enterprise-wide inventory of these facilities and their functionality. Secondly, because the way we manage and budget for these facilities is unique relative to general infrastructure, this inventory will allow these facilities to be set-aside for the rest of this assessment.

## 2.1 Definitions

Mission Unique Facilities are one-of-a-kind, physically unique, large-scale, technically complex, long-lived operations that are critical resources to the DOE and to the nation. These facilities are essential to the development of the innovative, breakthrough technologies required for DOE to deliver on its core mission. They each were specifically designed, constructed, and are being operated to provide mission-essential, unique capabilities and are not easily reconfigurable for alternate use. Mission Unique Facilities include:

- accelerators (particle and light sources),
- high performance computing,
- fission reactors (e.g., Advanced Test Reactor, High Flux Isotope Reactor),
- fusion research devices (e.g., National Spherical Torus Experiment),
- high-performance lasers (e.g., National Ignition Facility), and
- other large, unique production and waste processing facilities (e.g., MESAFab Fabrication Facilities, the Defense Waste Processing Facility, etc.).

## 2.2 Process

Using the definition above and the following guidance, identify Mission Unique Facilities.

- A Mission Unique Facility consists of one or more real property assets. 3000 Series Other Structures and Facilities (OSF) listed in FIMS that are within these facility assets are considered part of the Mission Unique Facility.
- Multiple assets used for a similar function (such as weapons engineering, high explosives, or nuclear waste storage) should be bundled under a single Mission Unique Facility title.
- Both DOE-owned and DOE-leased property are to be evaluated as to whether or not they are Mission Unique facilities; whether on the national laboratory site or offsite.
- Buildings easily repurposed are not considered a Mission Unique Facility.
- Office buildings, general/multiple purpose laboratories, storage buildings, and standalone OSFs are not considered mission unique.
- Generally, Work For Others (WFO) facilities are not considered mission unique.

The excel table shown below (Table 1) should then be used to capture these facilities. An example is also provided (Table 2).

Table 1. Mission Unique Facility Form

| Lab Name | Name of Mission Unique Facility | Mission Capability | Mission Unique Facility Description |
|---|---|---|---|
| Enter lab name here | Enter name of the Mission Unique Facility here | Enter one or more mission capabilities that this facility supports | Enter one or two sentences as to why the facility is unique. Indicate the number of assets that make up the Mission Unique Facility |

Table 2. Example of Completed Mission Unique Facility Form

| Lab Name | Name of Mission Unique Facility | Mission Capability | Mission Unique Facility Description |
|---|---|---|---|
| TJNAF | Continuous Electron Beam Accelerator Facility (CEBAF) | Large-Scale User Facilities – Advanced Instrumentation | CEBAF provides up to 35 weeks of operation per year at 12 GeV to approximately 1,400 users for studies of the structure of nuclear and hadronic matter using continuous beams of high-energy polarized beam electrons. CEBAF is composed of over 36 structures to include a 7/8-mile oval tunnel with 50 cryomodules, magnets, and associated radio frequency and cryogenic system regulation equipment, as well four experimental halls. |

A "Mission Unique Facilities" identifier is being added to FIMS to accommodate this data; however, in order to allow for programmatic review of the Mission Unique Facilities inventory, each site will provide their list via email by March 21, 2014, to Rusty Sprouse at sprouse@JLab.org who has already begun to collect this information. The inventory will then be consolidated and reviewed by program offices. Following that review and prior to June 1, these facilities should then be appropriately identified in FIMS.

### 2.3 Frequently Asked Questions

**How is determination of a Mission Unique Facility related to the mission and core competencies?** Mission Unique Facilities are typically related to a major mission or the laboratory identity, not necessarily every core competency.

**How do you classify assets supporting more than a single mission?** Assets supporting more than a single mission are not considered mission unique. For example, an electrical distribution system or a cooling tower that serves multiple buildings with laboratories conducting research for several programs is not part of a Mission Unique Facility.

**Who is responsible for final determination of the list of Mission Unique Facilities?** Each site has the responsibility to identify its Mission Unique Facilities. The inventory will be reviewed by the program offices before being finalized.

**When will Mission Unique Facilities be assessed?** Mission Unique Facilities will be assessed at some time after Phase 2.

### 2.4 Points of Contact

- Rusty Sprouse, TJNAF, sprouse@JLab.org, 757-269-7589
- Courtney Manrod, ORNL, manrodca@ornl.gov, 865-241-2183
- Bill Buyers, INL, william.buyers@inl.gov, 208-526-9271

## 3. Asset Condition

An asset's capability to perform current mission requirements is a key criterion for assessing condition. The goal of this step is to allow for a qualitative evaluation to be considered in the condition assessment process so that a management perspective can be used to complement quantitative results. This will provide a condition assessment relative to mission and core capability and provide a more comprehensive evaluation of infrastructure utilizing both qualitative and quantitative information.

For sites where scheduled assessments are up to date, field inspection of each asset may not be required; however, sites should engage those familiar with mission performance and core capabilities for the relevant assets in the assessment process and update the condition accordingly.

The condition of each asset assessed will be entered into FIMS. The assessment data will consist of a summary rating of Adequate, Substandard, or Inadequate for each asset covered under the scope of this assessment and narrative explaining the rationale for the summary rating. The table shown at the end of this guidance as an appendix can be used to gather information, but its use is not required.

### 3.1 Definitions

**Asset Condition** is the overall condition of a real property asset based on analysis of needs and condition assessment information and the judgment of subject matter experts (SMEs) familiar with the asset, its subsystems, and how it is used to perform the mission. The overall condition is conveyed using an Adequate, Substandard, or Inadequate rating. Ratings are not required for non-occupied excessed facilities. In selecting the rating for buildings, issues such as environment, safety, and health and/or risk, capability to perform current mission, ability to attract and maintain key staff, and the ability to meet DOE requirements should be considered. Where applicable, as for utility systems, reliability and capacity required to perform current mission should also be considered in selecting the rating.

**Asset Condition Ratings** are part of a three-level rating scale based on various qualitative and quantitative analyses. The ratings are Adequate, Substandard, and Inadequate. Table 3 provides more detailed definitions.

Table 3. Asset Condition Rating Definitions

| Physical Condition Rating | Building Asset Criteria | OSF Asset Criteria[(a)] |
|---|---|---|
| Adequate | Asset is fully capable of performing its current mission, meets all ES&H and/or security requirements, meets stated DOE objectives or goals, and has only minor deficiencies that can be corrected within normal operating budgets. | Asset is fully capable of performing its current mission, meets all ES&H and/or security requirements, meets reliability goals, has adequate capacity, meets stated DOE requirements, and has only minor deficiencies that can be corrected within normal operating budgets |
| Substandard | Asset has deficiencies that limit performance of the mission including attracting and maintaining key staff, poses added ES&H and/or security risk, or affects DOE requirements. Asset requires refurbishment to bring to adequate condition | Asset has deficiencies including reliability issues or capacity that limits performance or capacity of the mission, poses added ES&H and/or security risk, or affects DOE requirements. Asset requires refurbishment to bring to adequate condition. |
| Inadequate | Asset has major deficiencies that significantly impair or put performance of the mission at risk, poses significant ES&H and/or security risk, or is unable to meet DOE requirements. Asset requires major refurbishment or replacement to bring it to adequate condition. | Asset is unable to meet DOE requirements or has major deficiencies including reliability or capacity, which significantly impair or put performance of the mission at risk, or pose significant ES&H or security risks. Asset requires major refurbishment or replacement to bring it to adequate condition. |

[(a)]Utilities and other support infrastructure
DOE = U.S. Department of Energy
ES&H = environment, safety, and health
OSF = other structures and facilities

**Asset Deficiencies** to consider in analysis of assets and subsystems or major elements include life safety, nuclear safety, environmental stewardship, component/system failure rate, downtime versus operational time, redundancy requirements, mission environmental requirements (e.g., temperature, humidity, vibration), regulatory compliance, capacity, reliability, probability of near-term failure, ability to meet requirements, ability to recruit/retain key personnel, equipment obsolescence, and replacement part availability. Deficiencies should be considered major if the asset, or a significant portion of the asset subsystems, must be refurbished or replaced to meet mission or other requirements. Also consider deficiencies major if repair costs at the asset level are a major portion of the cost to replace the entire asset.

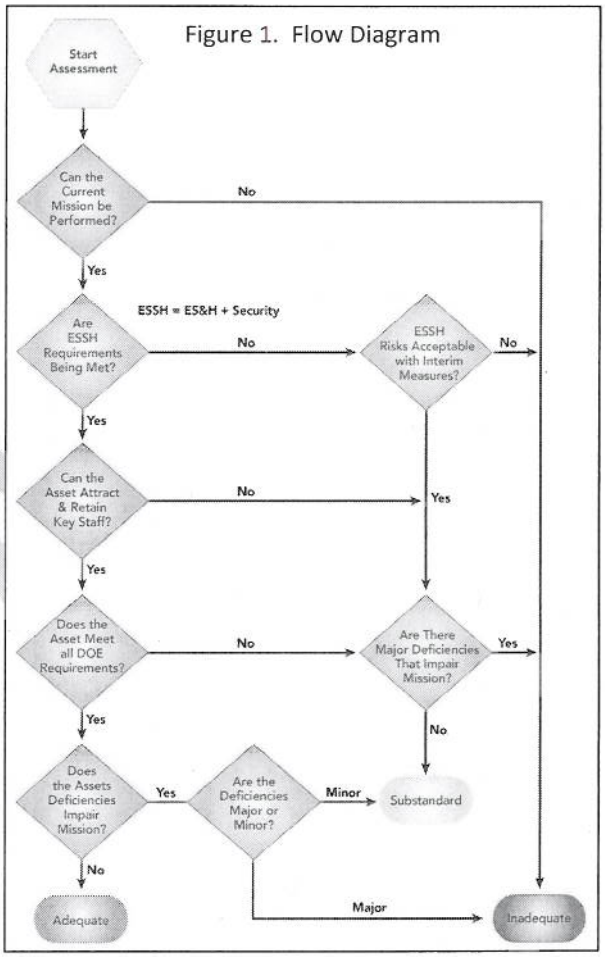
**Requirements** in the context of this assessment include specific goals and objectives identified by either DOE via official memoranda or contract requirements. Examples may include sustainability goals, production rates, and cleanup rates.

### 3.2 Process to Assess Physical Condition of Assets

Determine the condition of each asset using the following steps.

1. Gather existing asset data including previous assessment surveys and deficiency reports from maintenance systems.
2. Engage SMEs familiar with facility condition and mission/program needs to determine which one or more mission capabilities each asset supports.
3. Review asset data and SME input, and if needed perform facility walkdowns to assess asset conditions for each subsystem or major element.
4. Document significant mission-related asset deficiencies and their impact on mission and other key criteria.
5. Identify recommended summary asset condition rating and optional subsystem ratings and review with site management. The logic diagram shown in Figure 1 may be helpful in determining the rating.
6. Enter final asset summary condition rating and supporting justification notes into FIMS.
7. For each asset as identified in conjunction with the SME, enter at least one mission capability into FIMS.
8. OPTIONAL - When available in FIMS, enter subsystem rating information for each asset where available.

Figure 1. Flow Diagram




Examples that illustrate the derivation of ratings are provided in Table 4.

Table 4. Asset Condition Rating Examples

| Asset Description | Notes | Rating |
|---|---|---|
| Multi-use building – mission is in a 60-year-old-building, radiological laboratory | • Mission is being performed in a safe and secure manner.<br>• Building System Analysis:<br>– all systems are functioning as designed with no performance issues<br>– building condition does not negatively affect recruitment/retention of key staff | Adequate |
| Multi-use building – mission is in a 60-year-old-building, radiological laboratory | • Mission is currently being performed in a safe and secure manner.<br>• Building System Analysis:<br>– All systems are adequate except:<br>○ air distribution system deficiencies affecting fume hood operations, or<br>○ spare parts for electrical panel boards, motor control centers, and switchgear are no longer available, or<br>○ work environment is substandard (not renovated, insufficient lighting, failing/old finishes, non-productive layout, impacts recruitment/retention of staff) | Substandard |
| Multi-use building – mission is in a 60-year-old-building, radiological laboratory | • Mission is not being accomplished (insufficient utility capacity, not designed for current usage)<br>• Mission is not being performed in a safe and secure manner because material limits are less than needed<br>• Building System Analysis:<br>– Asset has major system deficiencies and/or performance issues | Inadequate |

### 3.3 Frequently Asked Questions

**Why are we doing these qualitative assessments when FIMS already has the calculated "Summary Condition" rating based on Asset Condition Index (ACI)?** The ACI does not include the ability of the asset to meet its mission. The key question now is can the asset fulfill the mission it is intended to fulfill. For this assessment, FIMS will be modified to accept a qualitative summary asset condition rating for each asset along with a notes field to describe at a high level the drivers for a Substandard or Inadequate rating.

**Must the Rating Form be used to collect the data?** The form is optional. The rating form in Excel can be downloaded from FIMS and can be used as an assessment tool. Once completed, the form provides a quick overview of the asset condition by subsystem to facilitate the determination of the summary condition rating and the development of supporting notes. The form can be electronically uploaded to FIMS when completed.

**Do I have to breakdown repair costs by subsystem?** Breakdown by subsystem is not required; however, if these fields can be populated it may facilitate the determination of asset condition and supporting notes. The subsystem condition fields will replace, and are an enhancement to, the current optional Deficiency System fields in FIMS.

**What if my OSF asset does not seem to match the subsystems on the form?** Breakdown by subsystem is not required. Use whatever breakdown is relevant to the OSF asset and enter summary rating and supporting notes.

**What level of detail is needed in the Summary Condition Notes field?** The notes field provides the reader with a high-level overview of how the condition of the asset is impeding the mission, and this information can inform funding requests to resolve the most impactful deficiencies. This will also provide senior management an indication of what are the common deficiencies across the DOE complex in support of funding requests. The detail should include what aspect of the asset or system deficiencies is preventing or affecting ability to execute the current mission.

**How should we rate an asset where renovation is in progress?** The purpose of this assessment is to inform new funding requests, therefore, for work in progress or about to begin, assess the asset assuming the work will be completed.

### 3.4 Points of Contact

- Monja M. Vadnais, OAPM, MA-60, monja.vadnais@hq.doe.gov, 202-586-6199
- Martin Fallier, BNL, fallier@bnl.gov, 631-344-3475

## 4. Asset Functionality and Utilization

The goals of this step are to define a common set of fundamental space types that enable the work we do, measure the amount we have and, and assess our degree of use. By doing this step, the Department will be able to define the site and enterprise in terms of enabling space defined with consistent attributes using rigorous and defensible assessment methodologies, provide a transparent linkage between infrastructure needs and program capabilities, and translate space condition and performance in meaningful ways to downstream budgets needs and priorities (at the site, program and enterprise level).

The functionality and utilization assessment described here is determined by spaces within an asset (i.e., a building), and then rolled up to provide an overall utilization for a building. A few space-types differentiated by a short list of criteria are defined, and should enable rapid assessment and assignment of a space type. When reviewed in a hierarchical fashion, each space in a building can be associated with a space type in a credible and repeatable manner. As many assets include multiple space types and utilization varies, the analysis is completed by individual space and rolled up to the building for entry into FIMS.

For site services, utilities and other infrastructure, only the condition will be assessed at this time so there is no need to complete this section for those assets. The rationale for this is that the condition should allow for a determination of the impact to the mission and gaps that exist at a site. Assessment of the degree of utilization is optional; however, assets should be identified with the descriptors for hazard category and security, as described below.

### 4.1 Definitions

**Alternatively Utilized** – This checkbox in FIMS denotes that a space is presently used for an activity that does not necessitate the space type (for example, *Ventilation Intensive* capable space used for *Storage*).

**Asset Level Utilization** – This data is presently captured in FIMS. When collected at the asset level, utilization provides quantification for the overall asset-usable square footage. For each asset, a descriptor of *over-utilized, fully utilized, under-utilized,* or *not utilized* is assigned based on a numeric calculation. Asset Level Utilization should be based on a weighted Space Type Utilization. Table 5 was derived from Federal Real Property Council guidance and identifies the adjectival rating associated with the percent utilization by space type.

Table 5. Criteria to Evaluate Utilization of Space Types

| Adjectival Utilization Rating(applied at aggregate-space-type level) | Office | High Bay, Ventilation Intensive, Power Intensive, General Space (Wet), General Space (Dry) | Storage |
|---|---|---|---|
| Over-utilized | 95% | >85% | >80% |
| Fully Utilized | 75%-95% | 60%-85% | 50%-80% |
| Under-utilized | <75% | 30%-60% | 10%-50% |
| Not Utilized | | <30% | <10% |

**Capabilities/Attributes** are assessed in the current state—only working/present capabilities/attributes are relevant to the space types.

**Hazard Category** – This field already exists at the asset level within FIMS, but additional hazard entries affecting the use of the space are being added addressing "Nanoparticle," "BSL," or "Beryllium."

**Security** – This field will be new in FIMS and addresses the condition in which an asset or an element thereof is subject to security measures beyond property projection and/or the asset is included in an area subject to protection beyond property protection. Entries are binary Property Protection or Beyond Property Protection (as defined by DOE O 473.3).

**Space-type Usable Square Footage and Utilization** – The amount of usable square footage of a space (e.g., a room) and all the associated square footage necessary for meeting the function for the space (e.g., a control room for a facility in a high bay). For each asset, enter the amount of usable square footage associated with each space type. The sum of the usable area of the identified space types will never exceed the asset level usable space.

**Space-types** - *High Bay, Ventilation Intensive, Power Intensive, General-Wet, General-Dry, Office,* or *Storage*. The type of space is based on the key physical attributes. Most assets encompass more than a

single space type. Table 6 describes the space types and the differentiating criteria for each space type in functionality terms. Select the first space type that matches a space under evaluation such that the "highest use" is captured; the hierarchical selection is notionally illustrated in Figure 2.

Table 6. Space Hierarchy

| Space Type | Functional Performance Criteria (in hierarchical order of evaluation) |
|---|---|
| High Bay | Laboratory, manufacturing, assembly/disassembly, production, pilot testing, R&D, space with at least 12-foot ceilings and one or more of the following typical attributes: large doors, cranes, and high-floor loading. Could include hot cells, pilot plants, large-scale process operations/processing (including waste management), specialty shops, service facilities, and vehicle maintenance bays. Differentiable from storage by its height and research, development, or production attributes. |
| Ventilation Intensive | Facility space with substantive hood use or ventilation-intensive environmental controls, typically with at least six air changes per hour and averaging at least approximately one hood per 150 $ft^2$ at the room level. Includes spaces requiring negative pressure such as hot cells, high performance chemistry or biology, vivarium, medical research, specialized manufacturing/shops, and high performance cleanrooms , Nanoparticle labs, BSL, wet labs or research space with high-air change coupled with once-through air requirements also align to this space type. |
| Power Intensive | Includes high-power computational/data center, accelerator labs, physics labs, and high-power laser labs, voltages above 480V, are typical. May include raised flooring and environmental controls. Differentiable from multipurpose control rooms and other spaces without the special environmental requirements, and other power intensive capabilities. |
| General (Wet): | Wet laboratory, chemistry, biology, light process, waste management, or multipurpose space, and may have fume hood space. Examples include greenhouses, gas-processes, and occupational medical. |
| General (Dry): | Dry space without hoods or a minimal amount compared to room size. Differentiable as dry lab or similar space not meeting the Power Intensive standard. This includes dry laboratories, laboratory or production support spaces, instrument laboratories, assembly, electronic shops, manufacturing, visualization suites, etc. |
| Office | Design Capacity is defined by the site (policy, true design capacity, qualitative judgment). Typical design characteristics could include compliance with the existing site standard with normal office amenities, (120V power, communications, lighting, comfort cooling/heating, etc.). Excludes common, conference, and classroom space. |
| Storage | Lowest capable space, not generally occupied; used for programmatic, general or other storage; Typically dry and/or controlled space. May be suited to hazardous or nonhazardous items. |

BSL = biosafety level
R&D =research and development

**Utilization Notes** – Optional brief explanation to justify entries or capture rationale.

Space types are based on current use/purpose/configuration, not the historic or design basis at the time of construction (e.g., if an old laboratory no longer can function as a laboratory and is now used as an office space, apply the office space standard).

## 4.2 Process

- For all assets, use the expanded Hazard Category field and new Security field in FIMS to ascribe bounding attributes at the asset level. For site services, utilities, and other infrastructure, the remaining steps are optional.
- For each asset, develop a space-by-space listing. Development of a site-specific "Flat File" drawn from FIMS is one method for beginning the assessment (and later populating FIMS).
- Categorize each space by space type to the highest intended use, per the hierarchy shown in Figure 2

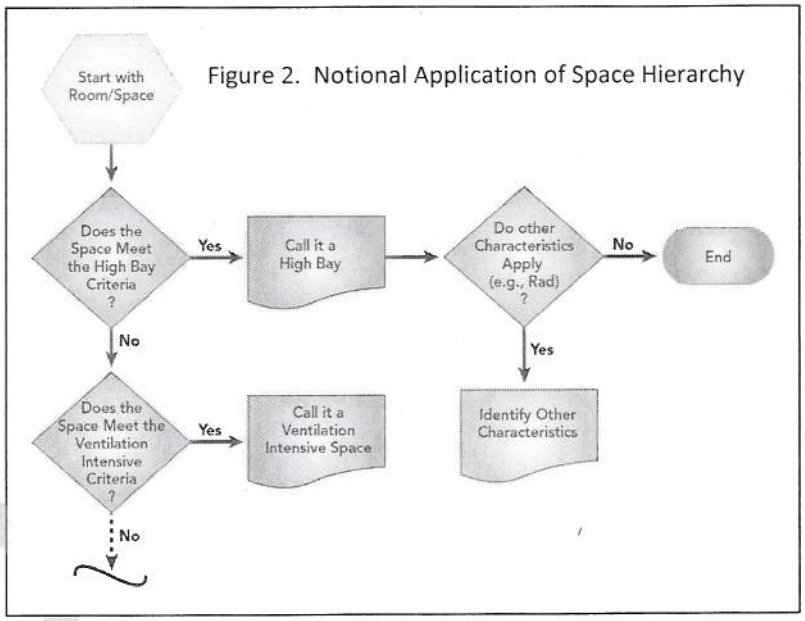


Figure 2. Notional Application of Space Hierarchy

- Estimate utilization for each space by computing a ratio of the use to available/design capacity. The available/design capacity is the square footage available for the function, and the use is the amount of space associated with the highest intended use (e.g., percent of floor space in a high bay being used for work needing high bay space, full-time equivalent [FTE] average over year in an office, etc.). If not the highest use, activity is not counted (helps to identify available capacity at highest use). In the Utilization Notes, provide information on the basis for the use determination. Examples and further guidance is provided below.
- Calculate the overall ratios by space type for a building (sum the total Use divided by the total Available/Design Capacity). Table 7 shows the summary data to be collected for an asset.
- Using a weighted average, determine the asset utilization from the space type utilization definitions.

Table 7. Space Type Data to be Collected

| Space Type | Useable Building Area | Utilization Percentage | Space Alternatively Used? (Yes/No) |
|---|---|---|---|
| High Bay | -- | -- | |
| Ventilation Intensive | -- | -- | |
| Power Intensive | -- | -- | |
| General (Wet) | -- | -- | |
| General (Dry) | -- | -- | |

| | | |
|---|---|---|
| Office | -- | -- |
| Storage | -- | -- |

- Enter the percent utilization for the asset into FIMS. Space type data by asset may be entered and used to calculate the asset level utilization. When automated upload into FIMS is employed for other data collected as part of this assessment, sites should also upload space type data.

When assessing buildings, it is suggested that the site give initial priority to the following assets for the sake of efficiency. 1) Assets that have the strongest correlation to the space types. Seek to address the suboptimal assets first (oldest first may be a good rule-of-thumb approach). Defer any end-of-life assets. 2) Predominant use offices, industrial buildings, laboratories, and "other." Then proceed to other predominant usages. 3) Buildings greater than 5,000 square feet then review smaller buildings, trailers, etc. 4) Federally owned and operated space before assessing leased space.

Table 8. Guidelines by Space Type

| Space Type | Guidelines for Determining Use and Availability |
|---|---|
| High Bay | • Determine square feet of high bay available by defining the total net usable square feet of floor space available for activities, excluding aisles, etc.<br>• Include non-high bay space required to "control and monitor" high bay work.<br>• Include space associated with connected activities that require a high bay (averaged over a year).<br>• Ignore activities that are not dependent on the high bay capability(ies) as the activity does not take advantage of the highest and best use. |
| Ventilation Intensive, Power Intensive, and General | • Determine the total floor space (square feet of floor available for activities), including space associated with connected activities that require that specific capability (e.g., ventilation, power) averaged over a year.<br>• Ignore activities that are not dependent on that specific capability as the activity does not take advantage of the highest and best use. |
| Office | • Design capacity is defined at the site level (policy, true design capacity, qualitative judgment).<br>• Use is FTE averaged over a year and should account for students, collaborators, part-time workers, and people with multiple offices.<br>• Exclude conference rooms, libraries, document centers, and other common space.<br>• Sum all the ratios of offices for a building divided by the total number of offices (or sum the total use divided by the total design capacity). |
| Storage | • Include storage rooms, warehouses, containers, anything designated for storage.<br>• Design capacity is defined at the site level (square feet of floor available for storage).<br>• Use is how much of the floor space is utilized for storage (averaged over a year).<br>• If already have volume information (storage capacity vs. current storage, can ratio those as an alternate). |

For **site services, utilities and other infrastructure**, at this time only the condition data are required. At the discretion of the site, utilization may be calculated as the ratio the use to operational capacity.

- Operational capacity is the maximum amount of utility that can be generated or distributed based on the limitations of the system configuration. Less than the maximum-engineered capacity of a system as individual components may become less efficient when included in an interconnected system of production units and distribution piping.

- For a facility which receives its utility directly from a third-party source at the facility, operational capacity is calculated by determining the maximum volume the third-party can supply and the maximum volume that the facility's system can distribute and selecting the lesser of the two values as operational capacity.

- Use is the amount of a utility used as determined by averaging the three highest-use months of the last 36-month period.

- At a minimum, include natural gas distribution, steam generation and distribution, electrical power distribution, potable water distribution, chilled water production and distribution, and sewage collection and treatment.

Table 9 shows examples of functionality and utilization assessments that follow these guidelines.

Table 9. Examples of Functionality/Utilization Assessments

| Asset Description | Assessment |
|---|---|
| A facility has 20,000 square feet of design capacity as a high bay | The space currently has no activity of any sort (although there are some materials haphazardly stored in the space).<br>(0 / 20,000) x 100 = 0% and would be described as "Not Utilized." |
| A facility has 10,000 square feet of design capacity laboratory space | The aggregate utilized laboratory space totals 9500 square feet. (9,500/10,000) x 100 = 95%. Considering the same facility, if 2,000 square feet is used for storage without removal of laboratory equipment, the utilization would equal 75% (7,500/10,000) x 100. |
| A facility has 20,000 square feet of design capacity as a high bay | The space currently houses general dry activity limited to 10 feet in height and does not require a crane. (0 / 20,000) x 100 = 0% but would be described as "alternatively utilized." |
| Office building | The office building has design capacity of 100 workspaces but only houses 85 FTEs (which includes 80 full-time personnel and 10 half-time personnel). (85/100) x 100 = 85% utilization rate. |
| Office building | An office building has design capacity of 100 work spaces but only houses 85 FTEs of which 20 telework one day a week. 20 x (4 days per week / 5 day work week) = 16. 16 + 65 = 81. (81/100) x 100 = 81% utilization rate. |

| | |
|---|---|
| Storage building | A building has 25,000 usable (net) square feet of storage or warehouse area design capacity where 24,000 usable (net) square feet are being used for storage. (24,000/25,000) x 100 = 96% utilization rate. |
| Temporary storage facility | If an additional 3000 square feet of temporary storage is also being used, the total utilization is [(24,000+ 3000)/25,000] x 100 = 108% |
| Warehouse | A warehouse with four levels of racks totaling 10,000 square feet each = 40,000 square feet. If two levels of racks are in use, totaling 20,000 sq. ft., the total utilization would be (20,000/40,000) x 100 = 50% |
| Warehouse | A warehouse with four levels of racks totaling 1,000 cubic feet each = 4,000 cubic feet. If two levels of racks are in use, totaling 2,000 cubic feet, the total utilization would be (2,000/4,000) x 100 = 50% |

### 4.3 Points of contact

- Adam Cohen, PPPL, acohen@pppl.gov, 609-243-3555 (for Utilization)
- Roger Snyder, PNSO, roger.snyder@pnso.science.doe.gov, 509-372-4519 (for Functionality)
- Randy Parks, LANL, rparks@lanl.gov, (for Functionality)
- Ivan Graff, MA, ivan.graff@hq.doe.gov, 202-586-8120, (for FIMS)

## Appendix: Optional Facility Evaluation Worksheet for Buildings, Trailers, and OSF

| | | | |
|---|---|---|---|
| **Property ID** | | **Usage Code Desc** | |
| Property | | Real Property | |
| **Type** | | **FIMS Site Number** | |
| **Ownership** | | **FIMS Area Number** | |
| **Repair** | | **RPV** | |

**Summary Rating**

□ Adequate

□ Substandard

□ Inadequate

**Notes:** Enter Explanation of Basis for Overall Rating

| SYSTEM CONDITION EVALUATIONS | ADEQUATE | SUBSTANDARD | INADEQUATE | NA |
|---|---|---|---|---|
| A10 Foundations | □ | □ | □ | □ |
| A20 Basement Construction | □ | □ | □ | □ |
| B10 Superstructure | □ | □ | □ | □ |
| B20 Exterior Enclosure | □ | □ | □ | □ |
| B30 Roofing | □ | □ | □ | □ |
| C10 Interior Construction | □ | □ | □ | □ |
| C20 Stairs | □ | □ | □ | □ |
| C30 Interior | □ | □ | □ | □ |
| D10 Conveying | □ | □ | □ | □ |
| D20 Plumbing | □ | □ | □ | □ |
| D30 HVAC | □ | □ | □ | □ |
| D40 Fire Protection | □ | □ | □ | □ |
| D50 Electrical | □ | □ | □ | □ |
| E10 Equipment | □ | □ | □ | □ |
| E20 Furnishings | □ | □ | □ | □ |
| F10 Special Construction | □ | □ | □ | □ |
| G10 Site Prep | □ | □ | □ | □ |
| G20 Site Improvement | □ | □ | □ | □ |
| G30 Site Mechanical Utilities | □ | □ | □ | □ |
| G40 Site Electrical Utilities | □ | □ | □ | □ |
| G90 Other Site Construction | □ | □ | □ | □ |

FIMS Data – Two Fields in red above

1. Pick Box for Overall Condition Rating
2. Text Box for Narrative basis for rating