

# L01.1 Option 1: Daylight simulation

## Technical Document

WELL Building Standard™ version 2 (WELL v2™), Q1-Q2 2023 addenda



### HOW TO USE THIS DOCUMENT:

This document is intended to serve as a guide on how to create a project **technical document** to provide **indoor light exposure through daylight and electric light strategies**.

This document is meant to demonstrate an acceptable degree of detail for:

- precertification documentation submission
- documentation submission

#### For precertification documentation submission:

To achieve WELL Precertification, project teams may submit intent-stage or implementation-stage documents for pursued features, or any combination of the two. An intent-stage document is typically a draft document that has not yet been implemented in the actual project, while implementation-stage documents describe final and implemented strategies. Intent and implementation-stage documents should be similar in terms of level of detail. For final WELL Certification documentation approval, all documents are required to be implementation-stage. To learn more about intent-stage vs. implementation-stage documentation, review the [precertification guide](#) in our knowledge base.

Intent-stage language is indicated in this sample document with **green text and in parentheses**. For an intent-stage Daylight Simulation document, the daylight modeling report does not need to be final. It can be submitted according to the design phase that the project is in. The documentation should include adequate detail such that a WELL Reviewer will be able to confirm the document complies with all of the WELL feature part requirements.

#### For documentation submission:

The level of detail is up to the discretion of the project team, but the documents must include specific details demonstrating that the actual requirements have been enacted in the project boundary. The Feature cannot be demonstrated solely through a confirmation that the requirements have been or will be implemented.

This document and similar tools are intended to assist projects in their pursuit of WELL v2 but use of this document and/or similar tools are in no way a guarantee of achievement of any rating, certification or other designation, and no representation or warranty is made regarding the likelihood of achieving any rating, certification or other designation and IWBI shall have no liability resulting from the use or content of this document or similar tools or resources or from any action taken or inaction occurring in reliance on this document or similar tools or resources.

Note: The below document is based on the Q1-Q2 2023 addenda of the WELL Building Standard™ version 2 (WELL v2™). Project teams are required to implement the feature requirements from the addenda version assigned to their project or any more recent addenda version.

## FEATURE PART REQUIREMENTS:

### Option 1: Daylight simulation

For All Spaces except Dwelling Units

The project demonstrates, through computer simulations, that one of the following conditions are achieved:

- a. Regularly occupied spaces achieve one of the following targets:

Calculations per IES LM-83-12		Calculations per Annex A of CEN 17037:2018
Average $sDA_{200,40\%}$ is achieved for > 30% of regularly occupied floor area	OR	Target illuminance 19 fc is achieved for >30% of floor area throughout 50% of daylit hours of the year

- b. Common spaces that have unassigned seating for at least 15% of regular occupants at any given time achieve one of the following targets:

Calculations per IES LM-83-12		Calculations per Annex A of CEN 17037:2018
Average $sDA_{300,50\%}$ is achieved for > 75% of floor area	OR	Target illuminance 28 fc is achieved for >30% of floor area and average illuminance 9 fc is achieved for >95% of floor area throughout 50% of daylit hours of the year

### Option 1: Daylight Simulation

For Dwelling Units

The project demonstrates, through computer simulations, that the following requirement is achieved:

- a. One of the following targets are met in each dwelling unit:

Calculations per IES LM-83-12		Calculations per Annex A of CEN 17037:2018
Average $sDA_{200,40\%}$ is achieved for > 30% of regularly occupied floor area	OR	Target illuminance 19 fc is achieved for >30% of individual unit area throughout 50% of daylit hours of the year

#### WELL Core Guidance:

Meet these requirements in the whole building. Projects pursuing Feature L03, Option 4 to achieve this feature are required to have access to at least 10% of leased spaces for testing (identified by the project). Projects pursuing daylighting options are required to meet the requirements in each floor or for each tenant, whichever is smaller. If finishes have not finalized, projects may use the following default surface reflectances:

Ceilings: 80%

Floors: 20%

Walls: 50%

If the layout of leased spaces is not yet known, the entire leased space is to be considered regularly occupied.



The below sample document is intended to provide guidance in creating a Daylight Simulation technical document. It is not a template. You may note included components that are not required to demonstrate compliance with this Feature.

### Example guidelines for Feature 1, Part 1, Option 1

## DAYLIGHT SIMULATION REPORT

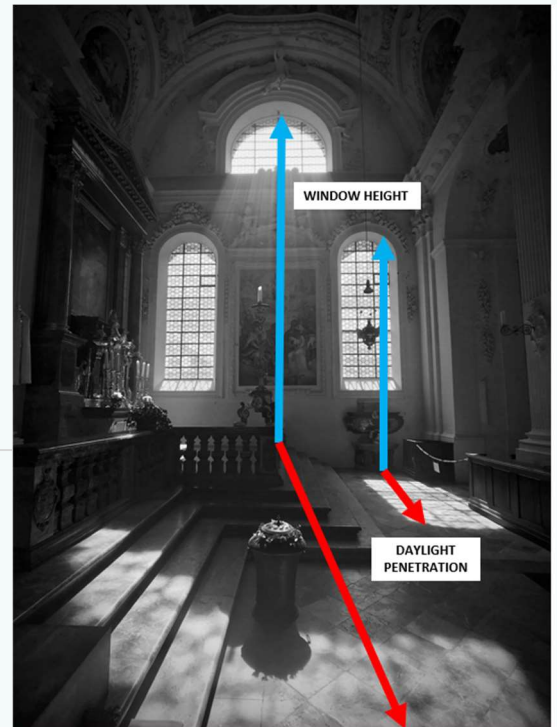
- A. Work with a daylight modeling expert or a lighting designer with the expertise to create a daylight model for the project using a modeling software that meets one of the following criteria:
- Can use IES LM-83-12 and can calculate either:
    - ✓ For regularly occupied spaces: If the average sDA<sub>200,40%</sub> (spatial daylight autonomy where at least 200 lux is achieved for 40% of annual occupied hours) is achieved for > 30% of regularly occupied floor area, OR
    - ✓ For common spaces that have unassigned seating for at least 15% of regular occupants at any given time: If the average sDA<sub>300,50%</sub> (spatial daylight autonomy where at least 300 lux is achieved for 50% of annual occupied hours) is achieved for > 75% of floor area.
  - Can use Annex A of CEN 17037:2018 and can calculate either:
    - ✓ For regularly occupied spaces: if the target illuminance 19 fc (foot candles) is achieved for >30% of individual unit area throughout 50% of daylit hours of the year (a), OR
    - ✓ For common spaces that have unassigned seating for at least 15% of regular occupants at any given time: If the target illuminance 28 fc is achieved for >30% of individual unit area and average illuminance 9 fc is achieved for >95% of individual unit area throughout 50% of daylit hours of the year (b).
- B. Provide the daylight modeling expert with details necessary for them to create the model:
- Provide architectural drawings for all spaces within the project boundary.
    - ✓ Drawings should ideally be from the final set of drawings for the project (e.g. as-built drawings, 100% construction drawings, etc.), or at minimum a set of drawings that indicates final glazing design, lighting design and room programming (e.g. a space is going to be a regularly occupied space vs. non-regularly occupied). *(Intent-stage - if the project is still in design, drawings do not have to be final)*
    - ✓ For projects with both “all spaces except dwelling units” and “dwelling units” located within the project boundary, make sure to indicate these areas clearly on the drawings and remind the modeler that they have different modeling requirements (see Feature Part Requirements section above.)
    - ✓ If the modeling option chosen depends on “regularly occupied floor area” (e.g. a.i above), ensure that the plans have the regularly occupied floor clearly indicated.
  - Provide additional details:
    - ✓ For projects using IES LM-83-12, provide the modeling expert with the typical annual occupied hours per year or typical occupied hours per week (eg: 9am – 5pm Monday to Friday).
    - ✓ Provide location of project.
    - ✓ For projects using Annex A of CEN 17037:2018, provide the modeling expert with the total daylight hours per year.
- C. If the initial report from the daylight modeling expert does not show that WELL requirements are met, talk to the daylight modeler and ask for suggestions on how to adjust the project design to meet requirements. Here are some ideas:
- Try a different modeling pathway, for example:
    - ✓ If the project is using the modeling path a.i, considering trying the path a.ii (or vice versa).
    - ✓ If the project is using the modeling path b.i, consider trying the path b.ii (or vice versa).
  - Consider increasing the amount of glazing in the project design (e.g. add more windows or increase the size of windows).

3. Consider adjusting the interior layout of the project to allow daylight to penetrate deeper into the project space. Here are examples of how to do that:

- ✓ If there is an office on the exterior of the building with an opaque office front, consider changing this to a transparent glass office front to allow daylight to enter the adjacent hallway.
- ✓ If the project is early enough in the design phase, consider raising the ceiling heights in areas that need more daylight and using tall windows. See photograph.

D. On the daylight modeling report that will be submitted for WELL documentation, have the daylight modeling expert indicate clearly:

1. The path of modeling that they used (e.g. IES LM-83-12, average sDA<sub>200,40%</sub> is achieved for > 30% of regularly occupied floor area).
2. Important assumptions relevant to the modeling path they selected (e.g. typical annual occupied hours per year.)
3. Whether the project meets the requirements or not.
4. Reports for each floor.



#### TIPS FOR MULTIPLE LOCATIONS

- Organizations participating in WELL at scale should indicate which locations are pursuing this feature, and then submit the specific details for the locations selected for an audit.