

## Assess Ventilation

WELL Health-Safety Rating™

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### HOW TO USE THIS DOCUMENT:

This document is intended to serve as a guide on how to create a project **narrative** to **minimize indoor air quality issues through the provision of adequate ventilation**.

This document is meant to demonstrate an acceptable degree of detail for a documentation submission. The Feature cannot be demonstrated solely through a confirmation that the requirements have been or will be implemented. The level of detail is up to the discretion of the project team, but the documents must include specific details demonstrating that the actual policies/protocols have been enacted in the project boundary.

This document and similar tools are intended to assist projects in their pursuit of the WELL Health-Safety Rating but use of this document and/or similar tools are in no way a guarantee of achievement of any rating or designation, and no representation or warranty is made regarding the likelihood of achieving any rating or designation.

### FEATURE REQUIREMENTS:

*A qualified engineer provides the project with an assessment of the following:*

- a. The highest supply rate of outdoor air the current mechanical system can provide.*
- b. Potential modifications to system controls to increase supply of outdoor air (e.g., ventilating for longer hours, changing the setpoint for demand-controlled ventilation systems).*
- c. The extent to which the current mechanical system can operate without recirculating air.*
- d. How and if any of the potential HVAC system modifications would affect the following:*
  - 1. Energy consumption.*
  - 2. The ability to manage thermal comfort conditions (e.g., higher ventilation leading to draft, recirculation elimination straining conditioning capacity).*
  - 3. Maintenance processes.*

### WELL Core Guidance:

To earn this feature, the requirements should be met in the whole building.



The below sample documentation is intended to provide guidance for assessing the project's ventilation system. It is not a template. You may note included components that are not required to demonstrate compliance with this Feature.

## EXAMPLE DOCUMENT

### Example for Sections a, b, c and d

[Name of engineer with their qualifications] at [engineering firm] has assessed mechanical ventilation systems at [project] for opportunities to increase ventilation. See analysis below:

#### Assessment of Mechanical Unit Supply Rates:

1. **[List space]:** [e.g., Offices on floors 1-5] are served by [describe model] mechanical units that currently supply 15% outdoor air, meeting local city codes. It is possible to increase the typical supply air to [X]% by making the following adjustments to dampers and controls: [list adjustments].
2. **[List space]:** [e.g., Offices on floors 6-8] are served by [describe model] mechanical units that currently supply 15% outdoor air, meeting local city codes. It is possible to increase the typical supply air to [X]% by making the following adjustments to dampers and controls: [list adjustments]. Another possibility is to upgrade the aging mechanical systems to more efficient modern models such as [insert model] that have the capacity for up to 100% outdoor air.
3. **[List space]:** The [e.g., lobby] is served by [describe model] mechanical units that currently supply 15% outdoor air, meeting local city codes. It is possible to increase the typical supply air to [X]% by making the following adjustments to dampers and controls: [list adjustments].
4. **[List space]:** [e.g., The remaining core spaces] of the building is served by [describe model] mechanical units that currently supply 15% outdoor air, meeting local city codes. It is possible to increase the typical supply air to [X]% by making the following adjustments to dampers and controls: [list adjustments].

#### Assessment of Controls:

1. Current Control Settings:
  - a. Typical operating hours in the building are Monday-Friday, 9AM-6PM. Ventilation systems operate Monday-Friday, turning on one hour before opening (7AM) and turn off one hour after closing (7PM).
  - b. On floors 1-5, demand control ventilation is installed in all office conference rooms as an energy saving measure with set-points at 1,000ppm.
2. Opportunities for Control Settings in relation to increasing ventilation:
  - a. Controls could be adjusted to allow for more hours of ventilation. [Engineering firm] recommends increasing the hours by [number of hours] on weekdays.
  - b. Controls could be adjusted to increase the [# of air changes] occurring per hour.
  - c. If the space is going to be occupied outside of typical building hours, we would recommend running systems for at least [number of hours] before and after occupancy.
  - d. The setpoints on the demand control ventilation system on floors 1-5 could be lowered to 800ppm or 600ppm (more stringent) to ensure additional ventilation when people are present.

#### Assessment of Recirculating Air:

1. Assessment:
  - a. The current mechanical system was designed to rely on recirculating air. Above is an assessment of maximum amounts of outdoor air that the system can provide. The remainder of air supplied is currently recirculated air.
    - i. If the project adjusts controls to increase outdoor air, the recirculated air can be decreased accordingly.
  - b. The project is located in a region where more than 60% of the year, windows must be closed due to excessive heat, cold or inclement weather. Per our assessment, we do not believe that relying on natural ventilation primarily through opening windows is a consistent and reliable solution for decreasing the current amount of recirculating air.

### Anticipated Impact of System Adjustments to Increase Ventilation:

1. **Energy consumption:** Currently, all mechanical systems are optimized to use as little energy as possible. Most of the adjustments recommended above will increase energy consumption and impact the building's aggressive environmental goals.
    - Increased supply air: additional outdoor air will need to be conditioned. Given the local climate, conditioning of air for heat, cooling and/or dehumidification will be required at least [X]% of the year. This will result in an estimated additional:
      - i. With no upgrade to systems on floors [X]: *[quantity of energy]* used per year and approximately *[cost based on current market energy prices]*
      - ii. With upgrade to systems on floors [X]: *[quantity of energy]* used per year and approximately *[cost based on current market energy prices]*
    - Increasing hours ventilation system is running:
      - i. If the mechanical systems are run *[number of additional hours]* per week at their current outdoor air supply rates, that will result in an additional:
        1. With no upgrade to systems on floors [X]: *[quantity of energy]* used per year and approximately *[cost based on current market energy prices]*.
        2. With upgrade to systems on floors [X]: *[quantity of energy]* used per year and approximately *[cost based on current market energy prices]*.
      - ii. If the mechanical systems are run *[number of additional hours]* per week at their maximum outdoor air supply rates listed above, that will result in an additional:
        1. With no upgrade to systems on floors [X]: *[quantity of energy]* used per year and approximately *[cost based on current market energy prices]*.
        2. With upgrade to systems on floors [X]: *[quantity of energy]* used per year and approximately *[cost based on current market energy prices]*.
    - Adjusting demand control ventilation set points on floors [X]: Adjusting the demand control ventilation set points on floors 1-5 down, will result in additional ventilation of the space and therefore more energy usage. Assuming that conference rooms are occupied [X]% of total typical work hours, this equates to approximately:
      - i. If setpoint is adjusted to [X]ppm: *[quantity of energy]* used per year and approximately *[cost based on current market energy prices]*.
      - ii. If setpoint is adjusted to [X]ppm: *[quantity of energy]* used per year and approximately *[cost based on current market energy prices]*.
  - This equates to a total energy consumption adjustment of:
    - If all adjustments are made including upgrades to systems on floors 6-8 and adjusting setpoints on the demand control ventilation to [X]ppm: *[quantity of energy]* used per year and approximately *[cost based on current market energy prices]*.
    - If all adjustments are made except upgrading systems on floors [X]: *[quantity of energy]* used per year and approximately *[cost based on current market energy prices]*.
2. **Ability to manage thermal comfort conditions:** Overall, it is not anticipated that adjustments above will have significant impact on thermal comfort conditions.
    - Increased supply air: the conditioning systems have the capacity to condition the potential increases of supply air in *[e.g., core spaces, the lobby, floors XYZ]* (if the systems are not replaced with 100% outdoor air systems.) If the systems on floors [X] are replaced with 100% outdoor air systems, additional cooling and heating capacity may need to be added on those floors to accommodate depending on the systems selected. Given the current configuration of systems, it is not anticipated that any drafts will be introduced with the increased outdoor air supply.
    - Increasing hours ventilation system is running: the conditioning system can accommodate this adjustment.
    - Adjusting demand control ventilation setpoints: the condition system can accommodate this adjustment.

3. **Impact on maintenance processes:** overall, it is anticipated that the adjustments above will have a moderate impact on maintenance processes:
- Increased supply air: no significant impact is anticipated on maintenance of filters. However, the additional usage of cooling and heating systems will likely increase the amount of annual maintenance and repairs required.
  - Increased hours with the ventilation system running: with a significant increase in hours of usage, maintenance and repairs are expected to increase linearly.
  - Adjusting demand control ventilation setpoints: no significant impact is anticipated.

#### **TIPS FOR MULTIPLE LOCATIONS**

- The assessment must be completed for each individual project location.