Division of School Facilities

Ventilation Plan

Department of Education

HVAC Background

According to city and federal public health experts, a room is safe when air can flow in and out-whether through natural or mechanical means. Airflow can be achieved either through the use of heating Heating Ventilation and Air Conditioning (HVAC) equipment, an open window or air handlers. All rooms require adequate ventilation to be used.

Ventilation in buildings is provided by a combination of the following systems:

- supply and exhaust fans
- Windows and exhaust fans
- HVAC Systems: rooftop units, air handling units and dedicated outside air systems in newer buildings, and other unitary equipment such as Unitvents.

HVAC Background

- These systems are installed to meet the Building Code Requirements at the time of design and construction.
- Buildings that have supply and exhaust fans do not need operable windows to meet ventilation requirements. However, windows can be used for additional air dilution and supplemental ventilation, or if the mechanical system fails.
- Buildings that have operable windows and exhaust fans meet the requirements.
- Mechanical ventilation can be both supply and exhaust fans, or only exhaust fans and the use of windows for make-up air.
- Mechanical ventilation is provided by HVAC Units that supply fresh air into inner core rooms of buildings that do not have windows. Outside dampers should be opened (either manually or using the Building Management System), to between 75%-100% to maximize outside air supply and still maintain comfort levels.

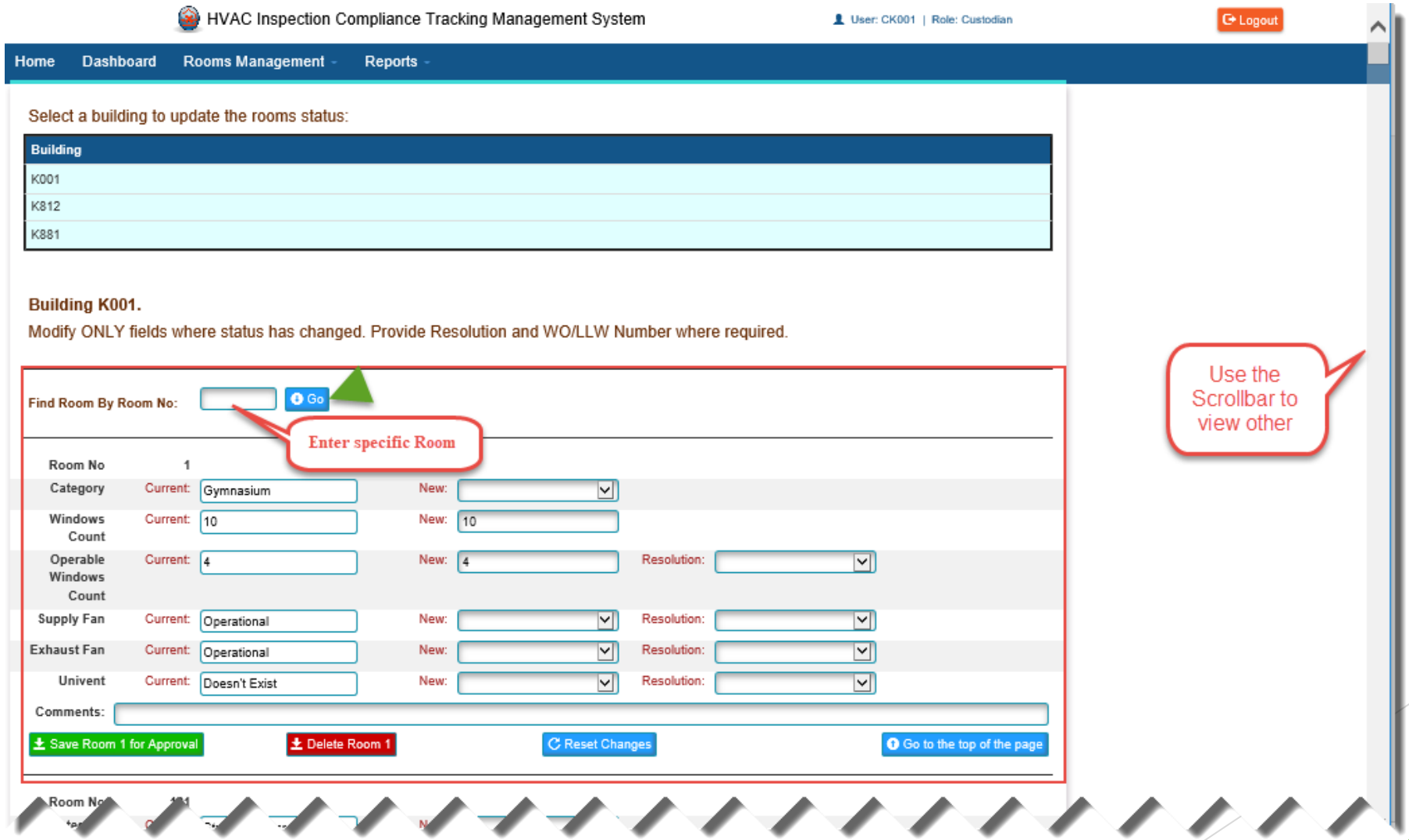
Approach

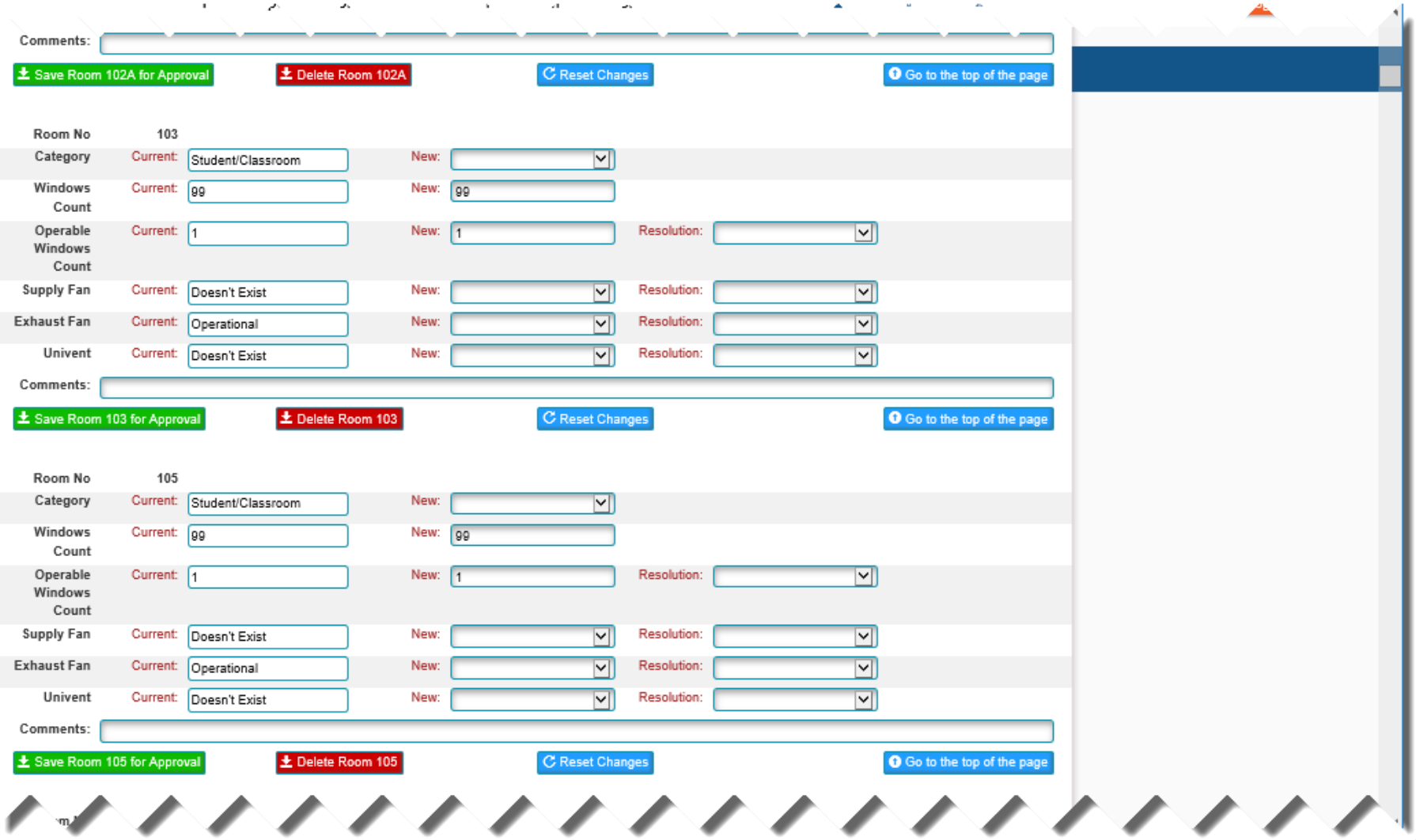
- Utilize the best available information and up-to date science.
- Rely on experts, outside agencies and partners with relative expertise. These experts include DOHMH, CDC, EPA, WHO, ASHREA with partnerships with SCA, UFT, CSA and CUNY.
- Focus on a multiple strategies to ensure health and safety.
  - Regular cleaning and disinfecting of spaces
  - Design the day to accommodate social distancing
  - Require the wearing of masks
  - Implementation of a strong test and trace program
  - Monitor and maintain adequate ventilation

Transparency- Creation and Implementation of the DSF HVAC application. With the goal of providing the most up to date and accurate ventilation status for each building.

- The DSF HVAC Ventilation application is a public facing tool to provide parents, teachers and administration the must up to date information regarding the ventilation of all spaces in our buildings.
- Assists the Borough Facility Teams to identify and track ventilation repairs.
- Strengthens the Custodian Engineers awareness of the buildings ventilation components.

HVAC APP Demonstration

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Save Room 102A for Approval
Delete Room 102A
Reset Changes
Go to the top of the page
Room No 103
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Windows Count Current: 99 New: 99
Operable Windows Count Current: 1 New: 1 Resolution:
Supply Fan Current: Doesn't Exist New: Resolution:
Exhaust Fan Current: Operational New: Resolution:
Univent Current: Doesn't Exist New: Resolution:
Comments:
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Delete Room 103
Reset Changes
Go to the top of the page
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Windows Count Current: 99 New: 99
Operable Windows Count Current: 1 New: 1 Resolution:
Supply Fan Current: Doesn't Exist New: Resolution:
Exhaust Fan Current: Operational New: Resolution:
Univent Current: Doesn't Exist New: Resolution:
Comments:
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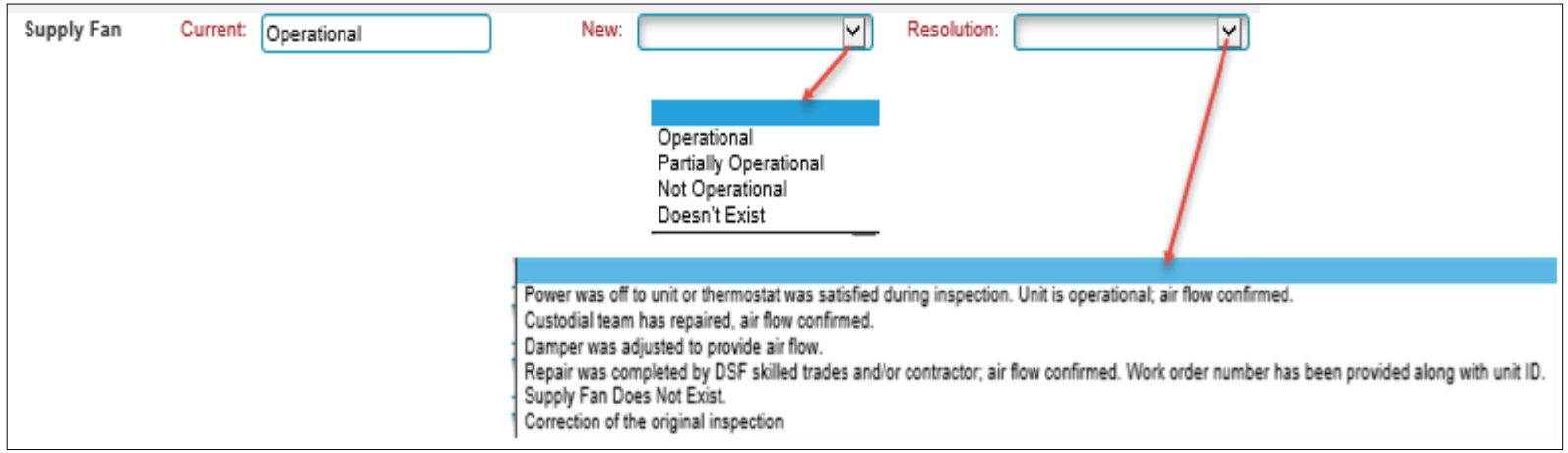
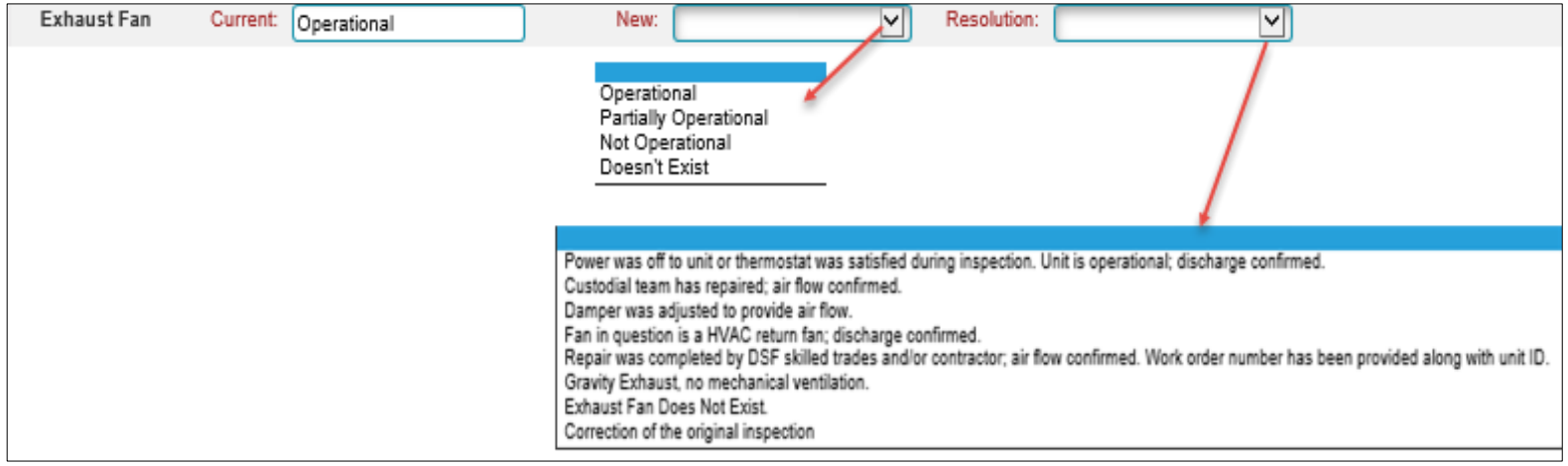
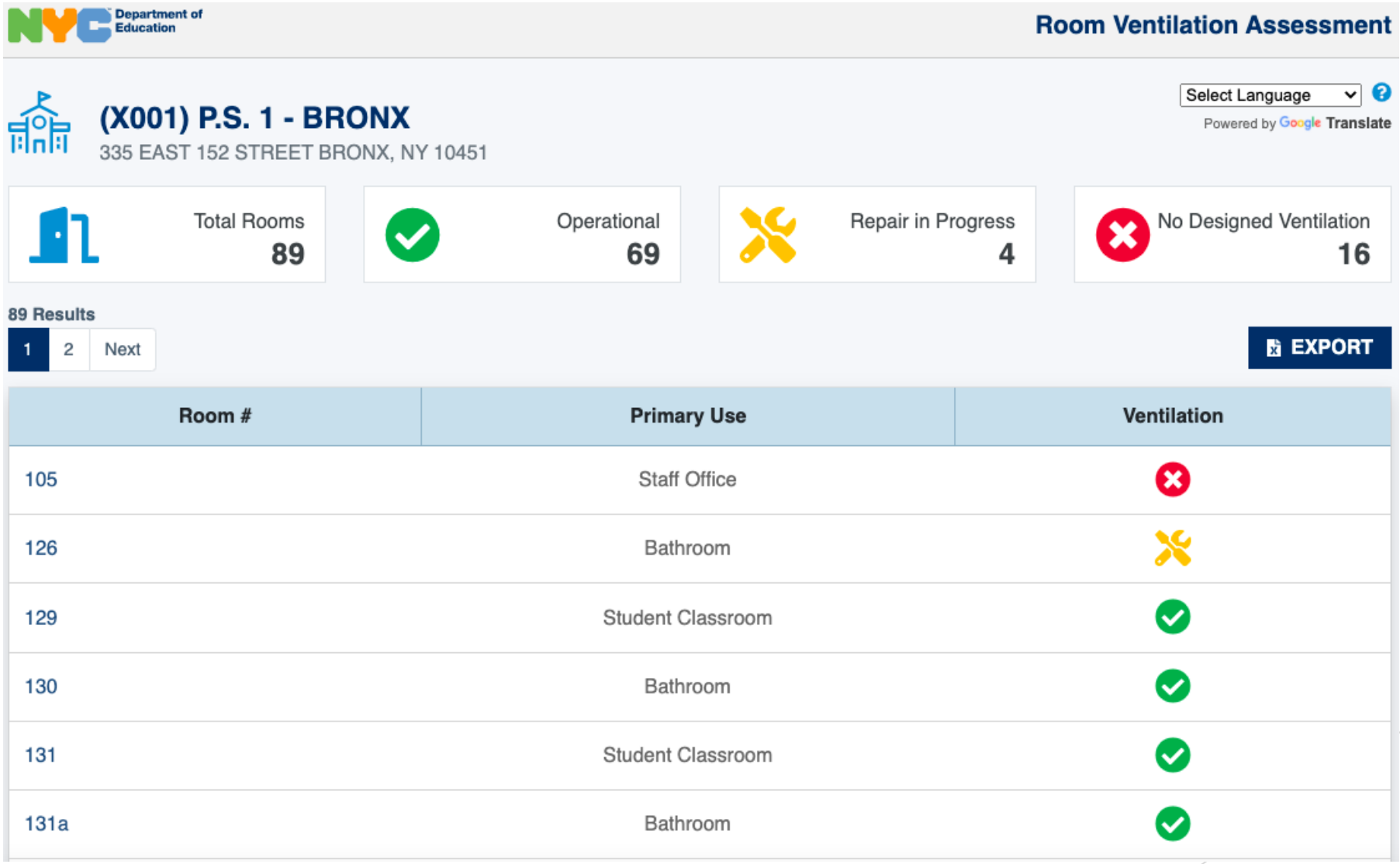
Delete Room 105
Reset Changes
Go to the top of the page

Supply/Exhaust

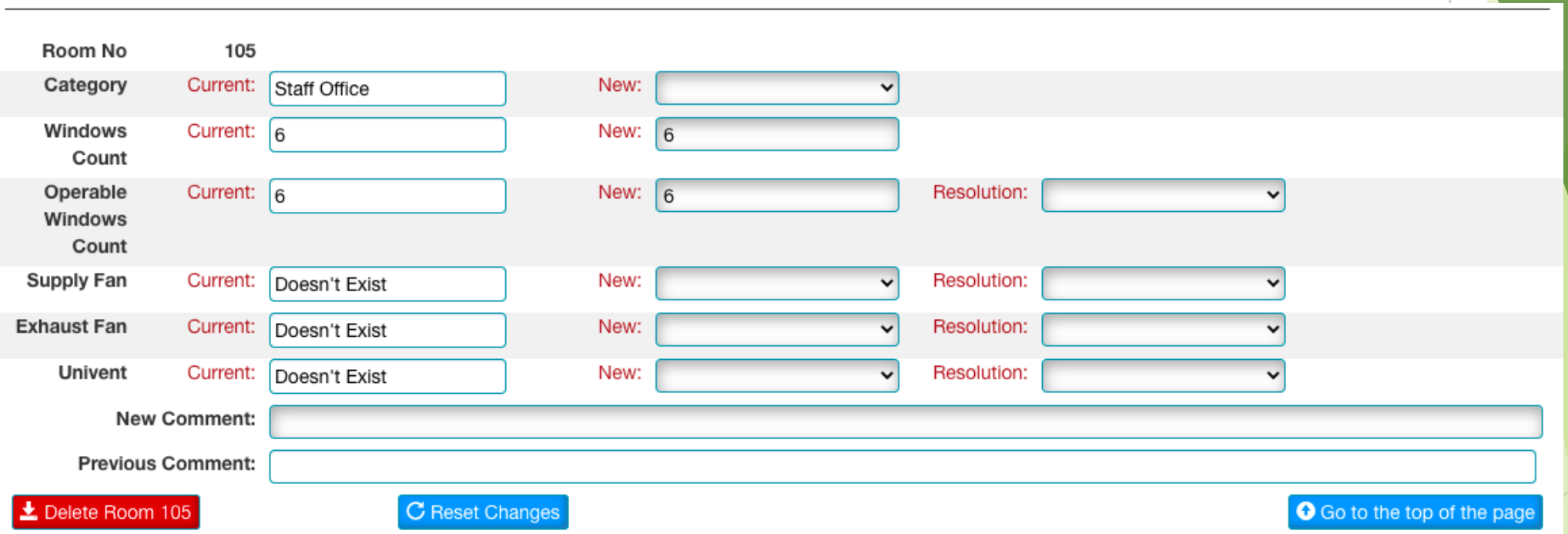




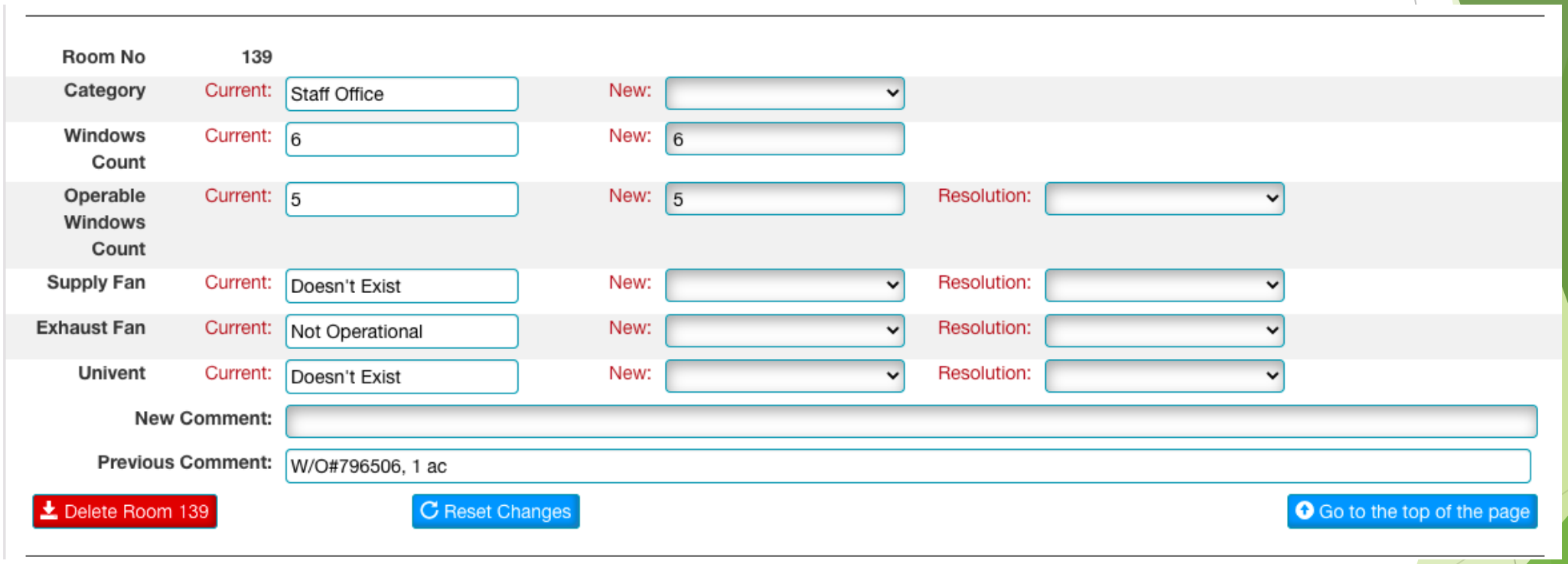
School Ventilation Page



X001 No Designed Ventilation Example



X001 Repair in Progress Example



Anemometer – Used BY DDF's top confirm air flow

- Note: There are 8 available slots where you can save calculations

1) Turn on Unit. 

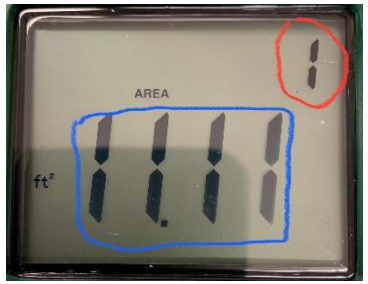
2) Press the Units Button 

until CFM appears on the left side of the screen.

3) Press & Hold the Green Area Button 

until it Beeps.

4) SqFt (ft2) Area Screen will appear:
   1) The Red circled area represents the slot that can be saved
   2) The Blue circled area represents where the calculations are entered



5) To enter a calculations, the following buttons control the changes
   1) Units: 

Controls the Number 0 though 9.
   2) Max Min: 

Moves the decimal point where needed.
   3) Hold: 

Moves over to the next number.
   4) Next: 

Moves over to the next Slot to preset a new calculation.

Anemometer

6) It is recommended that you enter the follow calculations per slot:

   1) Slot # 1: This calculation is for a standard window (Double Hung or Hopper) opening of 3” x 36”: Enter 00.75

   2) Slot # 2: This calculation is for a 12” x 12” Diffuser : Enter 1.000

   3) Slot # 3: This calculation is for a 12” Diameter Supply Vent: Enter 0.785

7) Once you enter your 1st calculation, press the next button to set the next calculation.

8) Once all calculations have been entered, press and hold the Area button to back out to the main CFM screen.

9) If you wish to enter more preset calculations, you can visit the following calculator to get the exact SqFt (ft2) needed to enter per slot:

   https://www.squarefootagearea.com/calculator/square-inches-calculator/

Anemometer

Now that your Anemometer is set, in order to use the pre populated calculations:

1. Press and Hold the Area Button 

until it beeps.
2. Press the Next Button 

until you get to the calculation slot you require 

3. Press and Hold the Area Button and start to use.

Remember: The Minimum CFM's per person it 15CFM's.

As an example: If you have 15 people in 1 room your reading should be greater than 225CFM's

(That's 15 people x 15 CFM's = 225 CFM's required)

If you are reading less that 225 at a single window opening, to resolve this issue would be to open another window

Indoor Air Quality Meters

- IAQ meters have been provided to all Custodian Engineers to perform routine inspections of carbon dioxide levels. These levels can assist in confirming there is adequate outside air being delivered to the space.

- IAQ meters are also equipped to provide room temperatures.

Minimum Efficiency Reporting Value (MERV) 13 Filters

In accordance with the recommendations of the Center of Disease Control (CDC) and the American Society of Heating, Refrigeration and Air-Conditioning (ASHRAE), the NYCDOE has taken several steps to reduce the risk of COVID-19 transmission within school buildings and classrooms. In anticipation of extreme temperature conditions, Merv 13's filters will be installed to keep classroom temperatures appropriate while ensuring proper ventilation.

- MERV 13 filters are to be installed for central HVAC systems that utilize return air.
- Purchased for applicable Friedrichs window AC models.
- Filters must be properly installed, with no air gaps.
- Once filters are installed, dampers can be adjusted below the 75-100% threshold.
- It is recommended to operate at 100% outside air if the temperature allows.

HEPA Rated Air Purifiers

- Originally installed one per classroom, with schools receiving a delivery of an additional device.
- Custodians must report an **accurate** amount of air purifiers on the weekly PPE survey.
- 4 speeds -low, med, high and turbo. Turbo is the recommended setting.
- Electrical draw is less then 1 amp.
- Main filters are to be replaced annually.
- 99.9% efficiency

Deputy Director of Facilities Role

- Understanding the operation of each buildings ventilation system.
- Supporting Custodian Engineers
- Strong focus on occupied windowless space in buildings.
- Reviewing each schools HVAC application submission for accuracy.
- Meetings with Superintendents, Principals and school leadership to speak to ventilation operations and DSF's ventilation plan. As well as perform anemometer readings.
- All issues regarding the closure of a classrooms due to inadequate ventilation must be immediately flagged to DSF leadership.
- All work orders for ventilation repairs must be called in to the borough teams emergency desk as priority emergency work order.
- If there are any questions or concerns regarding any school's ventilation system or DSF's ventilation plan, please contact your director for assistance.