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Preliminary Findings Report #3 - 9/25/20

	North Colonie SD	Albany Medical Center
Work Plan Tasks Completed	• Collected utility data for each school and have calculated a pre-COVID baseline for electrical and thermal consumpion. • Surveys at greater depth are be ongoing throughout the duration of the study. • Comprehensive spreadsheet breaking down all heating and ventilation systems as well as our proposed IAQ recommendations has been created • IAQ technology vendors have been contacted in order to obtain budget pricing and other information. • Savings and Cost Analysis Models have been created. These models are being inputted with utility data and budget pricing and are equipped with Guth DeConzo's savings calculations and formulas. These models will produce initial costs to the district, the annual kWh and kW savings, the annual $ savings (per school) and the payback period. • **Shaker High School** - Inspection of the 'Wrestling Room' was conducted and we are working with the school and facility staff to create a Scope of Work for replacement/repair of unit serving this space. Facility has contractor in mind we are working closely with as well. • A lighting audit has been conducted using existing drawings and documents. We are exploring the use of upper room UV lighitng in certain areas of concern (nurse's offices, locker rooms, music rooms, lunch rooms)	• Collected utility data for Medical College and South Clinical Campus and have calculated a pre-COVID baseline for electrical and thermal consumpion. • Surveys at greater depth are to be ongoing throughout the duration of the study. • Comprehensive spreadsheet breaking down all heating and ventilation systems as well as our proposed IAQ recommendations has been created and is being filled out as field work continues (SCC field work has been completed). Refer to 'Existing Conditions' row below. • Guth DeConzo has initiated the process to be granted remote access to the AMC BMS • IAQ technology vendors have been contacted in order to obtain budget pricing and other information • Savings and Cost Analysis Models have been created. These models are being inputted with utility data and budget pricing and are equipped with Guth DeConzo's savings calculations and formulas. These models will produce initial costs to the district, the annual kWh and kW savings, the annual $ savings (per school) and the payback period. • A lighting audit is underway as we are looking at existing drawings and documents to determine where the various buildings could benefit from upper room UV. Was noted by staff that many rooms already utilize upper room UV lighting.
Study Findings	• Existing mechanical drawings and TAB Reports for all schools have been compiled and review of the drawings has started and is ongoing. Guth DeConzo has also obtained remote access to North Colonie SD BMS system. • Facility filter inventory log has been obtained. This documents the schedule and type of filter replacements around the facility. We are going to recommend a more structured and streamlined approach to compile this filter information to allow for a more clear and concise inventory. • There are opportunities throughout all the schools for short term strategies to increase the IAQ in rooms that utilize energy recovery units or return air units. In the short term, we are proposing an increase in outdoor air changes wherever possible. • Guth DeConzo has obtained the preliminary schedule for the schools (i.e. certain grades will have certain time frames they are in the schools) • Through our ability to access the district's BMS, we were able to determine the daily schedule of all units in all schools for last school year and compare it to the current unit schedule they are using this year thus far. They seem to be increasing the time period all of their units run (i.e. starting at 5am and running late after students leave in order to purge the schools and introduce more fresh air) • The schools are all currently implementing a daily purge cycle in order to introduce more fresh air. This was one of our proposed strategies. • Wrestling Room is served by a makeup air unit that supplies air to the space (outdoor air/return air). This unit does not contain a heating or cooling coil. Heating in the space is provided by cassette heating in the ceiling.	• Existing mechanical drawings and TAB Reports for all schools have been compiled and review of the drawings has started and is ongoing. • Facility regularly keeps up with filter replacement. Documentation of replacements are kept on notecards on units themselves. • We have been conducting more research into bi-polar ionization. Case studies and other literature has been passed along. O2 Prime (Siemens) claims to have a zero ozone producing needle point ionization technology. AMC staff have expressed interest.
Existing Conditions	• **Shaker Middle School** - utilizes heat recovery units to serve classrooms. Other spaces use return air units with outdoor air and return air mixing box. • Shaker Middle School - Some perimeter rooms use unit ventilators to condition the space. These unit ventilators take out outdoor air through the perimeter wall and mix with return air from the space. • **Shaker High School** - uses a combination of heat recovery units, return air units and unit ventilators around the perimeter. • **Shaker High School** - it was noted by staff that the 'Wrestling Room' (rooms A102A and A105A) was having trouble with space temperature and comfort. Appears as though a make-up air unit was installed in the ceiling with supplemental heat provided by cabinet unit heaters. Airflow measurements were taken and air change rates were calculated in order to further identify a possible solution (room experiences about 5.5 ACH). We are exploring options to increase IAQ in this unique space. • **Latham Ridge Elementary** - uses return air AHUs to provide ventilation to some pods of rooms. Rooms within those pods are then cooled using rooftop units. Other rooms are conditioned using unit ventilators or variable refrigerant flow units. Heat is provided through radiant floor heating. • **Blue Creek Elementary** - is served by a combination of return air AHUs, plate and frame heat recovery units and unit ventilators. Heat is provided by radiant floor heating. • **Boght Hills Elementary** - served by a combination of return air air handling units, energy wheel and plate and frame heat recovery units as well as unit ventilators or variable refrigerant flow units. • **Southgate Elementary** - served by a combination of return air air handling units, plate and frame energy recovery units (with VAV boxes) and unit ventilators.	• **South Clinical Campus** - the spaces in this building are served by a combination of return air AHUs and energy recovery units. All of the units in this building are on variable speed drives and are able to be ramped up or down depending on the need. • **South Clinical Campus** - Short Stay RTU-01 (serving the post op. short stay area of the campus) is already equipped with a steam humidifier manifold as well as UV lighting in the unit at the cooling coil. • **South Clinical Campus** - it was noted by the AMC staff that AHU-02 serving the radiology area could use a full replacement in the near future. • **Medical College** - Field work for this building has not yet commenced. We have obtained HVAC data from existing drawings but need to get on site for verification.
Proposed Strategies	• We are proposing increasing the outdoor air exchange rate wherever possible. In rooms/areas that are served by air handling units or heat recovery units, we are proposing that the facility either run the units at full capacity (if they are 100% outdoor air) or modulate the outdoor air damper to allow for more outdoor air (if the units are return air units). This is more of a short term strategy for the upcoming months when schools open. • Rooms that are served only by unit ventilators or VRF units, we are proposing opening the windows. This is more of a short term strategy for the upcoming months when school opens. • We are exploring an approach to use the facilty's BMS and CO2 sensors to control units based on occupant density (i.e. larger group of people gathered in the classroom = higher airflow). This also includes a daily purge cycle (running units before students arrive and after they leave) to purge the schools of stale air and introduce fresh air. • Filter upgrades are proposed across the board on all units in all schools. We have costs and savings breakdowns for both installation of MERV 13 filters as well as a new technology, the Dynamic V8 filter. The Dynamic V8 filter is a electrostatically charged filter that has the same rating as MERV 15 filters, but with less of a pressure drop. The Dynamic V8 filters are rather expensive. An in-depth cost analysis will be presented in final report. • UV-C is being explored as an option for units where possible (much more cost effective when UV light can be installed inside of unit and no extra duct work construction is required). • Stand alone combination HEPA/UV units are being explored as they have been brought up numerous times by facility staff. These units are plugged into a regular 120V wall outlet and are placed directly in the room. Sound criteria is a concern with these. • Upper room UV lighting is being looked into for special areas of concern such as nurse's offices, lunch rooms, locker rooms, and music rooms. These areas are especially important as disinfection of these high traffic common areas is vital.	• Upon further research into bi-polar ionization, and the expressed interest in this technology by the AMC staff, we have found a ionization technology that claims to produce no negative ozone effects (O2 Prime Bi-Polar Ionization). We intend to pass along case studies and other information on this product. This is a potential strategy to be used pending necessary research and approval. • UV-C is being explored as an option for units where possible (much more cost effective when UV light can be installed inside of unit and no extra duct work construction is required). • Daily purge cycles in areas that are not occupied 24/7 shall be recommended (office spaces in South Clinical Campus and classroom and office areas in Medical College) • Upper room UV lighting in rooms that do not currently have them implemented. Albany Med uses this technology in various rooms around the South Clinical Campus already. • Filter upgrades (where higher MERV rated or HEPA filters are not currently being used) is another proposed strategy. MERV 13 and Dynamic V8 savings and cost analyses models will be analyzed and put in front of staff.
Lessons Learned	• We encountered inconsistent filter names and types in North Colonie's filter lists. We are suggesting a new approach to the facility to inventory and monitor their filter inventory and maintenance schedule would be beneficial for all parties. The use of proper nomenclature and vocabulary when compiling a filter inventory is essential for proper documentation.	• Certain areas of the South Clinical Campus would be better accessed after hours (after 6pm) as stated by the staff. Operating and patient rooms are more easily surveyed when not in use.
Work Plan Adjustments	• Shaker Middle School existing drawings have inconsistent room names with what is actually being constructed/changed in the field. This is due to a change order that occurred during construction. We have obtained the 'as-built' room names and will adjust accordingly. • Ozone generation has been completely ruled out as an IAQ option. All clients have expressed no interest in this technology. • As stated in the 'Work Plan Tasks Completed' section, we have been focusing on working with the High School facility staff in order to create a Scope of Work for the Wrestling Room unit replacement. This was a specific area of concern to the school.	• We have not encountered any obstacles that render a need for any adjustments in our work plan. We will continue on with the proposed work plan. • Ozone generation has been completely ruled out as an IAQ option. All clients have expressed no interest in this technology. • Staff stated they have a satellite campus (office building) that would be another potential area of inspection if time and budget allow.
Next Steps	• Analysis of our savings and cost models will allow us to determine which IAQ strategy is most beneficial for each individual situation. This will aid the district in determining which IAQ path is most worthwhile and which are too costly to be implemented. • We intend to issue a draft report to the district on Friday 10/2 which will include our findings, our savings and cost breakdowns, and our recommendations of IAQ strategies based on the situation each school/air handling unit presents.	• Surveys of mechanical systems and existing drawings throughout Medical College shall continue. • Conduct lighting audit for UVGI purposes and pricing. • Detemine which IAQ technology and/or strategy will work best for the various spaces/schools. • Facility asked us to provide a progress report to them in 2 weeks. This report will include our findings, our recommendations and our preliminary cost and savings analyses.