

KITTCOM Administrative Board Meeting Minutes

March 12, 2020

1:30 pm, 700 Elmview Rd, Ellensburg

(Meeting conducted by phone conference during COVID-19 Crisis)

Attendance

By phone: Darren Higashiyama & Cory Wright (at 1:41 pm); Kittitas County; Mary Morgan & John Akers, City of Ellensburg; Geoff Scherer, Hospital District 2 and Bill Dickinson, Kittitas County Fire District 7.

Present at KITTCOM: Glenn Huffman, Kittitas Valley Fire & Rescue, Bob Johnson & Darlene Mainwaring, KITTCOM.

Rob Omans was not able to attend due to a meeting conflict.

Meeting Called to Order at: 1:31 pm

Approval of the Meeting Agenda

Mary Morgan moved to approve the agenda as presented, Bill Dickinson seconded, motion carried.

Approval of the February Meeting Minutes

Mary Morgan moved to approve the February 2020 meeting minutes as presented, Glenn Huffman seconded, motion carried.

Approval of the March 2020 Blanket Vouchers

Darlene Mainwaring led discussion regarding the March 2020 Vouchers. Payroll Benefit & Deduction in the amount of \$54,903.43 (check numbers 025591 through 025599 and 025618 through 025632; Payroll Direct Deposit in the amount of \$67,131.59 (check numbers 025574 through 025590 and 025600 through 025617); Claims fund in the amount of \$29,590.78 (check numbers 025633 through 025664). Bill Dickinson moved to approve the vouchers, Mary Morgan seconded, motion carried.

Engineers Report

Bob Johnson reported the following:

1. Assisting the Kittitas County Corrections Center with a radio project to provide a means to call for help if something abhorrent occurs;
2. Snoqualmie Pass Fire & Rescue (SPFR) requested a review of radio traffic in regards to a specific call. The issue isn't a need for technical improvements, but is a cultural problem. Crews operate on a "typical" channel rather than the channel the incident is on, staff has had an open discussion with SPFR Chief Wiseman. Staff would like to consider re-opening discussion with Norcom as there has been changes with administrative staff. Geoff Scherer suggested reopening the discussion, if they are not receptive, we at least

KITTCOM Administrative Board Meeting

March 12, 2020

Page 2

- made a good faith effort. Bill Dickinson requested staff speak with Chief Sinclair as there has been discussion regarding an RFA including SPFR & FD7.
3. In regards to the radio equipment KITTCOM purchased from Whitman County at the end of 2020, Walla Walla has requested to purchase 1-2 of our spares. We could offer to Walla Walla if it doesn't impact our needs.
 4. Our Part-time Communications Techs don't own their own newer generation radio equipment, staff would like to reach out to one of the Fire Districts for extras and it can be covered with existing budget.
 5. Working with Chief Sinclair (KVFR & FD7) regarding the KVFR Station 21 alerting as well as discussion regarding the Fire District 7 Station 73 radio issues;
 6. Assisting Kittitas County Public Works with an FCC letter of concurrence with City of Enumclaw. This will allow KCPW to license their radio coverage over a broader area.
 7. Staff is working on replacing the second UPS; a revenue neutral project.

HVAC Discussion/Update

Bob Johnson reported, staff has only used half of the funding authorized for the HVAC study. The system status update document was sent via email to the Board members prior to the meeting. Bob reviewed the document (attached with minutes) with the Board. During the review, Bob (staff) recommends KITTCOM embark on an HVAC controls system "upgrade" in the near term and begin a longer term "like for like" maintenance replacement of the worn aged mechanical equipment. The "like for like" maintenance replacement of the mechanical equipment will require a permit from the county but will not invoke the existing newer energy code. This was determined during a recent face to face discussion with the county's code official. Staff recommends that KITTCOM target upgrading the HVAC control system early fall 2020, apply for a mechanical permit to replace all four zones of mechanical equipment, and replace the mechanical equipment in the "server room" zone late-fall 2020. This will imply that come the end of 2020, we will have replaced only one of the four zones' mechanical equipment and we will likely need to renew the permit in 2021, this is intentional. Bob (staff) recommends budgeting \$65,000 for the following: \$30,000 for upgrade of HVAC Control System; \$25,000 to replace "server room" mechanical equipment; \$5,000 for contingency & \$5,000 to investigate with heat recovery. Bill Dickinson asked if we had the budget for this project. Darlene Mainwaring reported, we have set aside \$180,000.00 for Equipment Replacement which this falls under. John Akers asked what the cost would be for additional zones, Bob Johnson stated it would cost 25K per heat pump. After further discussion, John Akers moved to accept staff recommendation to fund the project using Equipment Replacement funds in the amount of \$65,000 for the HVAC mechanical replacements and HVAC controls upgrade plan, Glenn Huffman seconded, during discussion, Bill Dickinson suggested we replace everything and spread it out, this will allow any failures to occur in stages, motion approved.

Puget Sound Emergency Radio Network (PSERN) Memorandum of Sub-Lease

This is regarding the Radio Site Sublease & Access Agreement with PSERN at our Stampede Radio Site which was approved in 2019. The document was reviewed by legal and approved as to form

KITTCOM Administrative Board Meeting

March 12, 2020

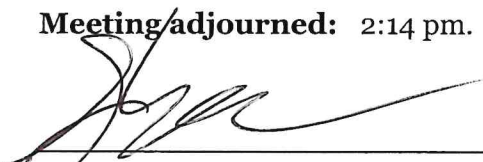
Page 3

with no issues. Mary moved for the Board Chair to sign the memorandum, Cory Wright seconded, motion carried.

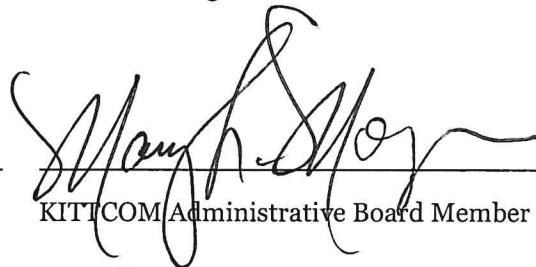
Director's Report

1. The 911 Public Education Coordinator's Statewide, which includes KITTCOM, is recommending Facebook pages for agencies to provide 911 education information to the public. Staff would like the Board to consider a KITTCOM Facebook page and will provide a policy/procedure modeled after another agency at a future meeting. The intent is not to provide information about incidents, but to use for public education only.
2. Credit Card limit has been \$5,000.00 since 2000, since then, online purchases have increased. Staff would like to propose by resolution to increase to \$10,000.00. John Akers stated it is an administrative task which doesn't need to be changed by resolution and staff could increase, if budget allows. Mary Morgan suggested having 2 cards, staff will review and consider.
3. Director will be on vacation March 26-March 31, 2020. A supervisor will be in charge during her absence.
4. The COVID-19 crisis could affect all staff if one of us is infected causing all of us to have possibly been exposed. At KITTCOM we already have in place cleaning work stations at least twice a day, the staff wipe down their work area at the end of each shift and some staff at beginning & end of shift.
5. The Director submitted her resignation letter, with the last work day as October 31, 2020 and last day employed with KITTCOM as November 30, 2020 (November will be covered by vacation & holidays). Discussion regarding the process to hire the next Director ensued. A committee was formed including Geoff Scherer, Mary Morgan & Bill Dickinson with a plan to meet (conference call) before the next meeting.

Meeting/adjourned: 2:14 pm.



KITTCOM Administrative Board Member



KITTCOM Administrative Board Member

KITTCOM Administrative Board Member



ATTEST: Board Secretary Darlene Mainwaring

HVAC Mechanical Replacements and HVAC Controls Upgrade Plan

Prepared for the:

March 2020 KITTCOM Board Meeting

By: Bob Johnson

Version 03.11.2020

Background

In November 2019 the heat pump serving the KITTCOM dispatch room suffered a compressor failure for which the replacement and/or repair cost was to be significant. This event spawned a wider review of the aging mechanical systems at KITTCOM. Staff determined that the needs of the building, expected costs, available funding, current technology, desired efficiency, and existing energy code were divergent. Accordingly, during the KITTCOM December 2019 board meeting the Board authorized funding that allowed staff to contract for outside technical assistance. Staff subsequently engaged the service of a HVAC professional to assist in developing a plan going forward.

Staff, with the assistance outside technical support and board input, investigated options and scenarios that could be employed to deal with the aged mechanical systems. The options were narrowed down and the following plan is offered for Board consideration.

System Status

As of now, the failed compressor serving the dispatch floor has been replaced, is again providing heat, and is ready for the coming "cooling" season. The PSAP building's HVAC systems are fully operating as designed. The long existing issue where we blow cold air on the dispatchers during the defrost cycle has not been addressed. None of the mechanical or control systems have been upgraded or refreshed. The system is just over 21 years old and has been in continuous operation since the late fall of 1999.

Plan Narrative

Staff recommends that the agency embark on a HVAC controls system "upgrade" in the near term and begin a longer term "like for like" maintenance replacement of the worn aged mechanical equipment.

The County will not require a permit for the controls system upgrade given that there are no changes proposed for the "mechanical" portions of the HVAC systems.

The "like for like" maintenance replacement of the mechanical equipment will require a permit from the county but will not invoke the existing newer energy code. This was determined during a recent face to face discussion with the county's code official.

Staff recommends that KITTCOM target upgrading the HVAC control system early fall 2020, apply for a mechanical permit to replace all four zones of mechanical equipment, and replace the mechanical equipment in the "server room" zone late-fall 2020. This implies that come the end of 2020, we will have replaced only one of the four zones' mechanical equipment and we will likely need to renew the permit in 2021. This is intentional.

Today both the “server room” and “dispatch room” HVAC mechanical systems are identical. The aged equipment slated for removal during “server room” replacement should yield a complete set of replacement parts that we can set aside for the “dispatch room” zone as “just in case” spares to bridge KITTCOM into 2021.

Comment Only: Some of the parts removed from the “server room” zone, subject to discussion with the code official and perhaps a permit, may be used to experiment with heat recovery from the server room zone during defrost of the dispatch room’s heat pump.

Staff Recommendations and Budget Requests

Upgrade HVAC Control System	NTE \$30,000
Replace “server room” Mechanical Equipment	NTE \$25,000
Contingency	NTE \$5,000
Investigate with Heat Recovery	<u>NTE \$5,000</u>
New Budget Request for 2020	NTE \$65,000

Motion for consideration: Staff recommends that the Board

.....“move to proceed with an upgrade to the HVAC control system, maintenance replacement of one HVAC zone’s of mechanical equipment, and proceed with a limited investigation into heat recovery; all of the proceeding not to exceed \$65,000 total cost.

Board Options

Board options at this juncture include but are not limited to:

- Accept staff recommendations and fund associated budget requests for 2020.
- Scale back staff recommendations to only 1 zone and/or controls in 2020.
- Scale up staff recommendations to include additional zones in 2020.
- Request additional research and/or information from Staff.
- Do Nothing

February 12, 2020

Attn: Bob Johnson, Communications Engineer

Re: HVAC Project and Energy Analysis of KITTCOM (Kittitas County 911) Facility

Bob,

As per your request, I spent several hours today rewriting the document to emphasize key options that you mentioned in your email. I also created a Priorities, Specifications and Important Principles section. (see below) to ensure that you get quality work and equipment during the bid and installation process.

I am still not a strong supporter of a ductless VRF system unless it is integrated into the existing HVAC fire damper control system and can implement a Dedicated Outside Air Supply (DOAS) and Demand Controlled Ventilation (DCV) controls for optimum indoor air quality conditions for the employees, especially those that work in the 24/7 call center area. It is also important to remember a redundancy approach must be adopted in all zones that provide emergency services.

Contact me any time to discuss this report or if my services are still needed for your organization.

Respectfully,

Greg Jourdan



Emphasizing Education and Energy Conservation
for Residences, Commercial Buildings
and Industrial Facilities Including
Energy Audits, Applied Research,
Thermal Analysis, and Energy Code Compliance
Level I Certified Thermographer
4425 #2 Canyon Road
Wenatchee, Washington 98801
Email gjourdan@jmsn.com

Priorities, Specifications and Important Principles for the HVAC upgrade at KITTCOM Call Center

1. The building's existing fire smoke control dampers must continue to operate during and after the HVAC upgrade. This includes fan shutdown, zone isolation, flushing smoke generated by fire, flushing the dispatch area, and a control method to lockout the Outside Air (OSA).
2. HVAC systems serving Zone 1 and Zone 3 (see building map) should have redundancy, including backup mechanical equipment, to ensure that the mission critical 911 service will not be incapacitated by typical HVAC mechanical failures. Mechanical heat pumps must have backup electric resistive heat with controls to modulate and maintain indoor controls at +/- of 1°F from the customer's setpoint. Cooling dominant zones such as the computer room should have the capacity to operate in a free cooling economizer mode or from mechanical compressor cooling. If outside air temperature rise above a predetermined ambient temperature, the compressor(s) will be allowed to cool the zone. Furthermore, these mission critical zones must have their associated electrical switch gear powered from the building's "G2" emergency power panel.
3. The replacement HVAC systems must be commercial grade equipment, with fully integrated economizers and BACNet control capability. Residential grade equipment should not be allowed.
4. All replacement HVAC systems and sub-systems must meet or exceed the current Washington State Non-residential Energy Code (NREC), as determined by the AHJ, and the National Electric Code (NEC). This includes any required economizers, dedicated outside air systems (DOAS), and demand-controlled ventilation (DCV) systems that monitor and control optimum indoor CO2 conditions for all employees within the building. Note-commissioning is now part of the NREC code to verify that all systems are installed and operating per the requirements upon completion of the project.
5. The supply air that serves the 911 dispatcher zone, must provide consistent room temperature control within approximately +/- 1°F of setpoint. This can be accomplished with methods such as fully electronic heating or by modulating fan and heat pump compressor controls. Short cycling of compressor equipment of either on or off to maintain temperature should be considered an unacceptable approach.
6. The HVAC systems and sub-systems should meet or exceed the temperature criteria used when creating the original building specification. This includes unimpaired operations during extreme conditions such as high ambient temperature during summers of up to 105°F and during winters when temperatures are as low as a sustained 0° F. ambient outside air temperature.

7. The system(s) Energy Management Control System (EMCS) must automatically control and shed electrical kW load as necessary, based upon a predetermined kW setpoint by the owner's representative to stay within the facility's generator capacity. If the kW demand must be increased by more than 5KW in the next generation of HVAC, the controls must automatically shed less-essential electrical loads within the facility to stay within specified KW capability. Note-the backup generator must have enough capacity to operate the entire building during a loss of power, or during any extreme ambient conditions. This may require upgrading the existing generator from a 100 kW to a 150 kW if load shedding is not viable or undesired.
8. All HVAC heat pump equipment must meet or exceed performance as needed for extreme cold temperatures as found in the Kittitas valley.

27K

Scenario/ Options	Description	Pro's	Con's	Cost Estimate	Energy Issues	Controls & Automation
<p>Baseline "MUST DOs" to make building work properly</p>	<p>Repair and make function all outside air damper controls, including per zone to fully modulate. Today they are held in one position by the DDC control system.</p>	<p>Allows control system to utilize economizer function.</p>	<p>May require new modulating dampers at some locations</p>	<p>Need quote from vendor. Recommend an initial "place holder" budget of approximately \$20,000 for this "must do" work; subject to revision once scoped and quoted by control's contractor.</p>	<p>Will save energy costs, and improve indoor air comfort.</p>	<p>Can be easily completed. Allows customer to see entire building operation remotely.</p>
<p>Baseline "Must Do"</p>	<p>Install CO2 Monitoring and Demand Control Ventilation (DCV) with associated economizers, if applicable. Upgrade and expand controls including temp sensors, CO2, BACNet. Install temperature sensors in return air, mixed air, and supply air for remote monitoring and likely control.</p>	<p>Provided optimum indoor air quality to employees. Allows system to monitor various air temps and communicate to all equipment via BACNet.</p>	<p>Adds cost to job. Adds cost to job</p>	<p>Customer can purchase CO2 sensors to avoid markup.</p>		<p>Minimum and maximum CO2 levels can be obtained and used to control HVAC logic</p>

Scenario/ Options	Description	Pro's	Con's	Cost Estimate	Energy Issues	Controls and Automation
<p>Scenario #1 Mini-Splits</p> <p>I do not recommend this for a governmental mission critical 24/7 building.</p>	<p>Replace the existing heat pump units with 1:1 mini-splits or multiple mini-splits per zone.</p>	<p>Simple, lowest price of the ductless system options.</p>	<p>More of a residential solution to a commercial building problem.</p> <p>Redundant outdoor condensing units are required for Dispatch and Equipment room areas.</p> <p>Will require installing multiple ductless units on walls of building, plus installing copper refrigeration piping and new electrical power to each unit throughout. Expect extensive concrete coring and electrical work. Will also require modifying control system.</p> <p>Electrical conduits and/or refrigerant piping will be visible on interior and/or exterior walls, or ceiling mount cassettes should be considered to hide new conduit and piping.</p>	<p>TBD</p> <p><i>May have lowest cost</i></p>	<p>TBD</p>	<p>Does not integrate into control system.</p> <p>Expect that this will have the least reliability; consistent with residential use.</p>

Scenario/ Options	Description	Pro's	Con's	Cost Estimate	Energy Issues	Controls and Automation
<p>Scenario #2</p> <p>Replace existing systems with new similar systems.</p>	<p>Utilizing contractor grade equipment, with high efficiency. Install four (4) new air source heat pumps to replace all existing heat pumps.</p> <p>Note: this does not meet the current energy code requirements unless a fully functioning economizer mode with DOAS functionality is implemented by controls contractor.</p>	<p>This will not require changing anything except the indoor and outdoor units.</p>	<p>This may not totally fix the heat pump short cycling problem.</p> <p>Does not have redundant systems.</p> <p>* Cold air may occasionally blow on customers during defrost cycle. <i>BJ: Controls may be able to solve most of ongoing this issue.</i></p>	<p>\$20,000 /zone x 4 zones. \$ (need firm quote from mechanical contractors)</p> <p>Add two "zones" (total 40K more) for redundancy.</p> <p><i>120K</i></p>	<p>Minimum improvement in energy efficiency, newer units use variable speed modulated compressors and fan speeds, more efficient and reduces short cycling.</p>	<p>This system will need to be integrated into the control system to minimize or reduce cold air complaints.</p> <p>10 to 15 year equipment life expectancy</p>

Scenario/ Options	Description	Pro's	Con's	Cost Estimate	Energy Issues	Controls and Automation
<p>Scenario #3</p> <p>VRF</p> <p>Multi-Head</p>	<p>Install four (4) new commercial grade (not residential) low temperature rated ductless air source (VRF) Variable Refrigerant Flow heat pumps with BacNet capability to replace all existing heat pumps, utilizing high efficiency equipment which exceeds the current energy code requirements.</p> <p>1 (or 2?) non-redundant unit(s) serve offices in administrative portions of the building. The dispatch and equipment areas require redundancy of 2 large units serving both zones or 2 smaller units in each of the 2 zones to meet the need for emergency services reliability. Requires a fully functioning economizer mode with DOAS functionality be implemented by controls contractor.</p>	<p>Very energy efficient, and will move heat from server room to heat the call center room or other zones as needed. Single zone indoor heads will not be adequate to properly distribute the air throughout the zone.</p>	<p>Redundant outdoor condensing units are required for the Dispatch and Equipment room areas.</p> <p>Will also require modifying control system.</p> <p>Electrical conduits and/or refrigerant piping must be provisioned to each room/space for the installation of wall mount units or ceiling grid "cassettes".</p> <p>Note cassette style units put piping above the ceiling spaces which was minimized in the original building design to limit the effects of piping leaks.</p>	<p>Need firm quote from mechanical contractor(s) and controls contractor.</p> <p>Estimate \$25,000 /zone for 4 zones, plus two zones for redundancy.</p> <p>Plus controls upgrade.</p> <p>Requires substantial costly additional wiring and copper piping be installed within the building.</p>	<p>Improves energy efficiency to maximum possible with ductless heat pump technology.</p>	<p>Can be integrated with existing controls assuming BACNet upgrade is implemented.</p> <p>10 to 15 year equipment life expectancy.</p>

Scenario/ Options	Description	Pro's	Con's	Cost Estimate	Energy Issues	Controls and Automation
<p>Scenario #4</p> <p>Water Source Heat Pumps</p> <p>(Best long term solution with lowest operating costs and best ROI--Return on Investment.)</p>	<p>Install four (4) new commercial grade geothermal (water source) heat pumps with BacNet capability to replace all existing heat pumps, utilizing equipment with highest efficiency possible, exceeding the current energy code requirements.</p> <p>Requires a fully functioning economizer mode with DOAS functionality is implemented by controls contractor.</p>	<p>Most energy efficient option available on the HVAC market.</p>	<p>Equipment replacement costs may exceed other solutions due to higher efficiency of equipment</p> <p>and</p> <p>the additional upfront costs to install a geothermal water source (if allowed)</p>	<p>Need firm quote from well driller, mechanical contractor(s) and controls contractor.</p> <p>Estimate \$20,000 per plus well and feed water unit cost for up to \$100,000 total costs. Will need backup system for zones 1 and 3, (mission critical zones) in case of equipment failure.</p>	<p>Improves energy efficiency to maximum amount possible with geothermal (water source) heat pump technology.</p>	<p>Will require BACNet integration between the equipment and the controls vendor.</p> <p>20-30 year life expectancy with proper water treatment and/or cleaning</p>

BobJ Comment:

Washington State Energy Code changes to become more complex, more restrictive, and of course more costly on July 1, 2020. If KITTCOM is planning to implement changes to the HVAC systems, getting into permitting ahead of that date would be prudent. If we're planning to enter permitting after that date, we will need to design and fund to meet the upcoming version of energy code.

Useful links Related to Project

Washington State Commercial Energy Code
<https://fortress.wa.gov/ga/apps/SBCC/File.ashx?cid=6195>

Heat pump options

<https://www.consumerreports.org/cro/heat-pumps/buying-guide/index.htm>
https://www.youtube.com/watch?v=y_ZGBhy48YI
<https://www.youtube.com/watch?v=DAjr04G1ssQ>
<https://www.youtube.com/watch?v=4YKrGEPg-Oo>
<https://www.youtube.com/watch?v=DAjr04G1ssQ>

Demand Controlled Ventilation and Dedicated Outside Air Systems (DOAS)

https://www.krueger-hvac.com/files/white%20papers/article_demand_control_ventilation.pdf
https://www.energycodes.gov/sites/default/files/documents/cn_demand_control_ventilation.pdf
<https://www.youtube.com/watch?v=NJDKZ197rul>

