

GRAFTON COUNTY COMMISSIONERS' MEETING
3855 Dartmouth College Highway
North Haverhill, NH 03774
March 19th, 2019

PRESENT: Commissioners Lauer, Piper and Morris, County Administrator Libby and Administrative Assistant Norcross

OTHERS PRESENT: Maintenance Supt. Oakes

Commissioner Lauer called the meeting to order at 9:00am and began with the Pledge of Allegiance.

Supt. Oakes arrived and gave the following report:

COMPLEX

Generator Feasibility Study – Lee Carroll completed the requested feasibility study (see attached report). I reviewed it yesterday afternoon and sent him several questions and comments. What I asked or pointed out will not likely change any of his conclusions or the potential costs that he said we would incur if we implement his suggestions. The major issues he confirmed are as follows:

Alternative Sentencing Building: Generator is undersized for its average load and is old (1970's vintage)...advises replacing with new 25KW unit at approximately \$54,450 in cost.

Farm / M/F Bldg. / Sewage Pump Station: Generator is 55-years old and well past its service life. Suggests replacing soon since it supports complex main sewage pump station. Determined Courthouse generator is well sized for this location and concurs with my plan to transfer it to this location if Courthouse load is put on DOC generator. Potential cost to transfer is \$45,450

DOC: The generator is grossly oversized and is very capable of picking up the entire courthouse electrical load. If done, then the annual cost of load banking goes away. Of greater significance, the entire courthouse would enjoy full generator coverage, whereas right now only the bare essentials are covered, thus precipitating closure of most offices during an extended outage. Implementing this plan would be complicated and expensive. The cost estimates Lee provided do not cover design and administrative costs. Option 1: \$270,000 / Option 2: \$201,425. One of my questions to Lee asks for estimated design and administrative costs.

Fire Alarm – Alarmco completed the secondary inspections of all our building fire alarm systems. We had to replace several backup batteries in various alarm systems due to low amp hour readings.

Elevators – Alarmco and Stanley Elevator completed the annual safety and fire recall features on all our elevators through the complex, with the exception of the courthouse elevator; it doesn't have these features due to its age and is grandfathered by the State of NH. All those tested passed inspection.

COURTHOUSE

Preventative Maintenance (PM) – Performed various PM tasks throughout.

Exterior Façade - Large 10x13 plate glass window in front of building by bailiff counter cracked. My dept. temporarily secured the window by shoring it up by taping both sides of the crack and placing a wooden barrier on the inside plain. I've placed an order for the replacement glass. At this juncture it looks positive that Primex may cover the cost of the repair, minus our deductible. More to follow once we know more.

Hydronic Pump 2 - Love joy coupling hub fingers on pump side broke...replaced hub and love joy coupling

Sheriff Dept. – Sheriff Stiegler requested my dept. eliminate the glass curtain wall service area that separates his receptionist area from the basement corridor and replace it with a more secure replacement. I've requested funding in my FY20 Capital Outlay request

Recommendation to Rehabilitate Building (based upon accumulation of significant concerns)

1. Glazing issues (degradation of glass and fiberglass panels, proliferation of repair costs, heat loss, etc.)
2. Key mechanical components are original (50-years old) and in many instances not supportable due to obsolescence
 - a. Elevator (key parts are no longer supportable and unit has no fire safety features of modern day elevators)
 - b. Boilers
 - c. Air handlers
 - d. Ductwork (fiberglass coated interior/cleaning concerns)
 - e. Pneumatic controls
 - f. Sewage pump system
3. Generator covers absolute basics (Dispatch, egress lighting, fire panel, boilers and pumps)
4. Asbestos coated ceilings and asbestos coated pipe fittings
5. No sprinkler system
6. Building security (U.S. Marshal Report)
7. Need for more office and storage space

NURSING HOME

Preventative Maintenance (PM) – Performed various PM tasks throughout

Kitchen – Meadow food warming cart wells not heating up...*discovered circuit was improperly wired. Had Royal Electric fix it.*

Kitchen – Upper steamer not filling up with water fast enough and periodically the water does not shut off when it's supposed to...parts ordered

Kitchenettes – Residents are making unauthorized entries into the Maple, Profile and Granite kitchenettes and helping themselves to food and drinks during non-meal times. Installed locks on doors to prevent unauthorized access

Sprinkler System - Short section of 4" main in HRU room on West elevation leaks air near coupling closest to the wall...Hampshire Fire Protection will replace at next scheduled visit.

Security – Granite entry door maglock egress function stopped working. Discovered on monthly test. Due to obsolescence, a contractor had to replace the lock assembly with a different make and model lock.

Plumbing – Domestic water Pressure Regulating Valve (PRV) was not regulating pressure of water entering the 69 building...installed PRV rebuild kit to correct issue.

Plumbing – Maple Penner tub mixing valve cartridge bad...won't work to bring temp up high enough...replaced mixing valve.

Plumbing - Cold water line above Health Information Manager's office ceiling was leaking from a fitting with a pin hole. Replaced fitting.

ADMINISTRATIVE BUILDING

Preventative Maintenance (PM) – Performed various PM tasks throughout.

Fuel Monitoring System – the underground fuel tank monitoring system had a faulty interstitial space sensor...replaced sensor.

HVAC - Heat not working in 1st floor women's room...replaced zone valve actuator.

Dept. of Corrections

Preventative Maintenance (PM) – Performed various PM tasks throughout

Elevator – The elevator doors at the J-connector kept hanging up and not closing when anyone entered the elevator and tried going to the next floor. Stanley Elevator replaced the door screens, which are an infrared sensor that detects the presence of something in the doorway.

Elevator – Stanley Elevator performed the 5-year full load CAT 5 over-speed valve test and the elevator passed.

Kitchen – Dishwasher rinse temperature low...troubleshoot to a bad thermometer...part ordered

Kitchen – Steam table LH well not heating up...troubleshoot to bad thermostat.

Cameras – DOC security staff requested relocation of various cameras...we are in the process of working this request. At the moment we are awaiting certain parts to finish the job.

HVAC – Air handler AHU-B1 has a cooling coil leak. Need to fix it in between the heat and cooling season.

HVAC – Heat pump WHP-H3 Module 2, circuit A has bad compressor (sounds like jack hammer). North Country Mechanical (NCM) replaced the compressor and serviced the system back up with Freon.

HVAC – Heat pump WHP-H3 Module 2, Circuit B is leaking Freon at heat exchanger pressed in fitting. My staff brazed the leaking area and NCM serviced the system back up with Freon.

MAINT/FARM BUILDING

Preventative Maintenance (PM) – Performed various PM tasks throughout

FARM

Dairy Barn - South section of Barn, West high drive area beams and bracing smashed by sawdust delivery truck. *Groton Timberworks, a local timber framing company, removed damaged 8x8x16 hemlock post and support timbers, repaired existing tie with rough sawn hemlock, jack tied beam, placed new hemlock support post and angle brace and installed new steel gussets, bolted and secure all new timbers. PRIMEX is chasing Sawdust Company's insurer to get reimbursement.*

Dairy Barn - Rinnai DHW heaters shut down on code 12...bad fan on unit 1...replaced fan assembly.

Dairy Barn - Milk cooler RH condenser unit contactor chattering a lot and night watchman reported milk in cooler looks like it is starting to freeze. Replaced contactor for condenser and bad thermostat on bulk tank.

Equipment - Large JD tractor with cab has worn bucket bushings. Needs old ones cut out and new ones welded in...*completed LH side. Still need to complete RH side.*

BIOMASS PLANT

Preventative Maintenance (PM) – Performed various PM tasks throughout.

Boiler – Under-fire fan actuator starting fail...replaced actuator.

ALTERNATIVE SENTENCING BUILDING

Preventative Maintenance (PM) – Performed various PM tasks throughout

VEHICLES & EQUIPMENT

Preventative Maintenance (PM) – Performed various PM tasks

¾ Ton Truck – Steering has a lot of slop and heat not working. Replaced steering linkage, replaced thermostat and flushed heater core.

OTHER

Commissioner Lauer asked if everyone had a chance to read the minutes from the March 7th Budget meeting and the March 12th meeting. There were a couple of edits in each set.

MOTION: Commissioner Morris moved to approve minutes from March 07th Budget as amended. Commissioner Piper seconded the motion and all were in favor.

MOTION: Commissioner Piper moved to approve minutes from March 12th meeting as amended. Commissioner Morris seconded the motion.

Discussion: Commissioner Lauer stated that the minutes from the March 12 Commissioners' meeting accurately reflects the report given by the Register of Deeds. That report, however, inaccurately states that she "repeatedly stated that elected officials are no different than department heads and are considered employees of the County." While it is true that she does not believe that elected officials are inherently superior to the Department Heads, and she would hope that elected officials would follow the same County policies and procedures as Department Heads, she does recognize that elected officials are in a separate category from employees. In addition, the Register of Deeds report makes a reference to a lawsuit in Belknap County. She would like to make it clear that lawsuit was brought about by specific actions by the Belknap Board of Commissioners and similar actions have not been proposed in Grafton County.

The Commissioners voted on the motion and all were in favor.

The Commissioners signed check registers 41; 1132-1134; 1136-1137.

CA Libby submitted a Letter of Authority for the DMV Lease for Commissioner Lauer to sign.

CA Libby noted that the Grafton County Senior Citizens Council Meeting will be on April 1st in Lebanon.

Overnight Travel Request – CA Libby stated that the Treasurer has submitted an overnight travel request to attend New Hampshire Government Finance Officers Association Annual Conference at the North Conway Grand Hotel from May 2nd -3rd. She is requesting overnight accommodations May 1st and May 2nd. The second night is paid for in the conference registration and the first night the county will pay for as she is going up the night before. CA Libby stated that Treasurer Hill attended this conference last year and feels it is very beneficial for her to attend. The conference registration is \$215 and the hotel is \$107.91 and then there will be mileage.

MOTION: Commissioner Piper moved to approve the overnight travel request. Commissioner Morris seconded the motion and all were in favor.

CA Libby stated that she wanted to let the Commissioners know she will be on vacation from March 29th – April 8th.

CA Libby stated that yesterday at the Executive Committee meeting they had discussed posting a notice on the website regarding draft minutes. She read the following notice and asked the Commissioner for their input:

Please be advised that minutes are not posted on the website until they have been approved. However, pursuant to RSA 91-A: 2 II, draft minutes are available for public inspection upon request within 5 business day of the meeting. If you would like a copy please email: snorcross@co.grafton.nh.us or call (603) 787-6941.

The Commissioners agreed with posting the notice regarding draft minutes on the website.

CA Libby stated that another issue that was brought up was posting the budget meeting schedule in all Grafton County newspapers. CA Libby stated that she does not agree with this. She stated that it would be very expensive to run an ad that size. She noted that to run the public hearing ad which is required costs roughly \$800. She stated that the budget meetings are posted on the website and in the administration building. The Commissioners were in agreement that they will not be running the budget meeting schedule in the newspapers.

CA Libby requested to go into nonpublic session.

MOTION: * 9:48 AM Commissioner Piper moved to enter into non-public session for the purposes of the dismissal, promotion, or compensation of any public employee or the disciplining of such employee, or the investigation of any charges against him or her, unless the employee affected (1) has a right to a meeting and (2) requests that the meeting be open, in which case the request shall be granted according to RSA 91-A: 3, II (a) Commissioner Morris seconded the motion. This motion requires a roll call vote, Commissioner Lauer called the roll. Commissioner Lauer “yes”; Commissioner Piper “yes” Commissioner Morris “yes” Commissioner Lauer stated that a majority of the board voted “yes” and would now go into non-public session.

* 10:15 AM Commissioner Lauer declared the meeting back in public session.

MOTION: Commissioner Piper moved to permanently seal the minutes from the just completed non-public session because they could affect the reputation of someone other than those of the Board of Commissioners. Commissioner Morris seconded the motion and all were in favor.

MOTION: * 10:15 AM Commissioner Piper moved to enter into non-public session for the purposes of the dismissal, promotion, or compensation of any public employee or the disciplining of such employee, or the investigation of any charges against him or her, unless the employee affected (1) has a right to a meeting and (2) requests that the meeting be open, in which case the request shall be granted according to RSA 91-A: 3, II (a) and matters which, if discussed in public, would likely affect adversely the reputation of any

person, other than a member of the public body itself, unless such person requests an open meeting. This exemption shall extend to any application for assistance or tax abatement or waiver of a fee, fine, or other levy, if based on inability to pay or poverty of the applicant according to RSA 91-A: 3, II (c) Commissioner Morris seconded the motion. This motion requires a roll call vote, Commissioner Lauer called the roll. Commissioner Lauer "yes"; Commissioner Piper "yes" Commissioner Morris "yes" Commissioner Lauer stated that a majority of the board voted "yes" and would now go into non-public session.

* 10:42 AM Commissioner Lauer declared the meeting back in public session.

MOTION: Commissioner Piper moved to permanently seal the minutes from the just completed non-public session because they could affect the reputation of someone other than those of the Board of Commissioners. Commissioner Morris seconded the motion and all were in favor.

Commissioner Issues:

Commissioner Morris judged at the 4H fair on Saturday.

The Commissioners went to the Courthouse to tour the County Attorney's Office with Attorney Hornick and the Sheriff's Department with Sheriff Stiegler. Sheriff Stiegler gave the Commissioners his regular report as follows:

February - 2019

Prisoner Transports: 61

Involuntary emergency Admissions (I.E.A.): 10

Criminal cases received and under investigation: 11
(Investigation requires more than a onetime contact and report)

Arrest: 30
(Warrant served or on sight arrest of a law violation for a person who will be summoned to a court of competent jurisdiction)

Service of Civil Process: 235
106 - Abode
104 - In Hand
22 - Unable to locate at this time

Total Number of Active Warrants 484 (this number will change daily depending upon court process and deputies ability to serve)
Criminal Warrants - 376
Civil Warrants - 108

Total Miles Driven: 21009

** Total number of motor vehicle stops for law violations in January and February of 2019: 28

Notes of Interest:

Sheriff Stiegler stated that the Sheriff's Department assisted Lincoln Police with patrol and communication service coverage for a memorial service in the Lincoln community. They also assisted Haverhill Police with traffic control for a memorial service in the Haverhill community.

Sheriff Stiegler noted that the cruiser involved in a traffic crash has been repaired and is back in service.

The two (2) new cruisers are being prepared for assembly of equipment and should be in service before the end of March. The final cruiser being phased out of service had all G.C.S.O. property removed from it on March 4th.

Sheriff Stiegler stated that he is looking into changing the contract rates for special detail work. He is looking to change it as follows:

- A) Non-Profit \$40.00 hourly with a three hour minimum.
- B) All other entities at \$75.00 hourly with \$45.00 paid to the deputy with a four hour minimum.

He stated that right now there are some nonprofits that do not get charged where others do. He does not believe this is fair and is looking to implement a new contract that has one rate for nonprofit organizations and one rate for everything else. The Commissioners discussed this topic with Sheriff Stiegler and stated that they understand why he would like to implement this change and they support it. They asked CA Libby to look into the rates and see what the best option would be for them.

Sheriff Stiegler stated that he is looking to transfer \$3,000 from the Cruiser Gas & Oil line item and \$3,000.00 from the Cruiser Repair & Maintenance line to his new equipment line. The purpose of these two transfers would be to initiate the process sooner for the replacement of issued service pistols for all full time deputies, special deputies and court security officers. The transfer approval of line items 01-4140-720 and 01-4140-712 would reduce the G.C.S.O. 2020 F.Y. Capital Outlay request from \$10,000.00 to \$6,000.00. He stated that they need to relinquish military surplus firearms and purchase county owned patrol rifles. He noted that this issue/request was not identified in the initial Capital outlay request with the Commissioners. Sheriff Stiegler answered questions from the Commissioners.

MOTION: Commissioner Morris moved to transfer \$3,000 from the Cruiser Gas and Oil and \$3,000 from the Cruiser Repair and Maintenance line to the New Equipment line as requested. Commissioner Piper seconded the motion and all were in favor.

Sheriff Stiegler stated that he is also looking to transfer \$1,500.00 from the Out of State &

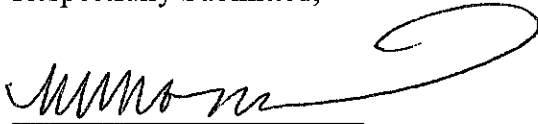
Mileage line item account to his Education and Conference Line. The purpose of this transfer is to enable supervisors to attend supervision training closer to Grafton County in April of 2019 rather than extended travel cost associated with overnight accommodations in the FY 2020 budget. FBI LEEDA training held in the N.H. Lakes Region (2 employees would attend). The transfer approval of line item 01-4140-701 would represent a reduction from \$18,000.00 to \$16,500.00 in the Education & Conference line item in the FY20.

MOTION: Commissioner Morris moved to approve the transfer of \$1,500 from the Out of State Travel & Mileage line to the Education and Conference line. Commissioner Piper seconded the motion and all were in favor.

Sheriff Stiegler stated that he is requesting Commissioner approval for submitting an application with the N.H. Highway Safety efforts for grant award consideration. These grants (DUI enforcement, Occupant Protection and Speed patrols) would augment Grafton County Law Enforcement around the county during peak tourism periods and better promote public safety efforts in our region. The Commissioners discussed this further with Sheriff Stiegler and were in agreement to have him submit the grant application.

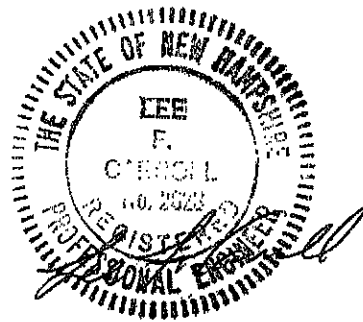
12:25 PM With no further business the meeting adjourned.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read 'Marcia Morris', with a large, decorative flourish extending to the right.

Marcia Morris,
Clerk

Review
of
Existing Standby Power Systems Installations
and Suggested Modifications
for the
Grafton County Complex
North Haverhill, NH



As provided for
Mr. Jim Oakes
Maintenance Department Superintendent
Grafton County Complex
3855 Dartmouth College Highway
North Haverhill, NH 03774

by
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March 12, 2019

Grafton County Complex
3855 Dartmouth College Highway
North Haverhill, NH 03774

Attn: Mr. Jim Oakes; Maintenance Department Superintendent

Review and Report of Standby Power System and Options to Modify

Dear Sir:

In accordance with your request I am providing herewith my report submission for the referenced project for your use. Please let me know of any areas within this document that you need modified/expanded.

Awaiting your communication on this, I remain

Very truly yours,



Lee F. Carroll, PE

Purpose:

This report is being prepared at the request of ^{the Grafton County Commissioners} ~~Mr. Jim Oakes, Maintenance Department~~ Superintendent, Grafton County Complex, 3855 Dartmouth College Highway, North Haverhill, NH 03774. This report is to document existing standby power electrical installations for the previous facilities located at the Grafton County Complex. It is to indicate apparent existing operating conditions of the various standby power arrangements and indicate initial recommendations for addressing existing equipment conditions and their possible replacement by interconnections to other existing standby power installations for other facilities at the complex or their direct replacement.

Proposed Project Scope:

Based on discussions at the site during my visit on 6 February 2019 and based on prior emails, it is my understanding that the present Correctional Facility (Jail) standby power unit it appears to possibly be grossly underutilized, that the Courthouse generator is provided solely to maintain facility heat and life safety egress operations and not permit continued facility use on a power failure, The Alternative Sentencing Building is under capacity, the nursing home generator is apparently adequate and has had the heating plant added to its loads, and the Barns, Maintenance Shop, and Pump Station generator is at an age where repair parts are increasingly less likely to be available if needed. The project is to review the data from the field and indicate recommended methods of addressing these situations in the near and on an ongoing basis.

Existing Systems Review:

The existing Correctional Facility (Jail) has a 2000 KW, 2500 KVA, 480/277 Volt, 3 phase diesel fuelled standby generator with two (2) output circuit breakers and according to design drawings space for a third output breaker. The existing breakers are a 150 Ampere trip unit that powers the Life Safety automatic transfer switch and a 2500 Ampere breaker that feeds a 2500 Ampere automatic transfer switch which powers the remainder of loads in the facility. The original design drawings indicate the unit is supposed to have provisions to add up to another 200 Ampere breaker in the future. Review of utility billing data indicates this is account # 530 and the utility indicates the reading has a multiplier of 300. The peak billing demand between the billing dates of 2/22/2018 and 1/25/2019 was 396 KW in February of 2018. The lowest billing demand for that period was 303 KW in May 2018, and the average billing demand was 332.75 KW. Design drawings indicate the facility has a 3000 Ampere main utility breaker, which the utility indicates has a 2500 KVA transformer that was purchased by the County for the project when the facility was constructed.

The existing Court House has a 105 KW, 131.25 KVA, 208/120 Volt, 3 phase diesel fuelled standby generator that appears to have feeders to two disconnects, one rated 100 Amperes that powers the automatic transfer switch #2 for the radio room and one rated 200 Amperes that feeds automatic transfer switch #1 for life safety loads and other items that may have been connected over time. The original design drawings do not indicate a standby generator for this building, so documentation is poor on actual loads when

reviewing solely the one line diagram. Review of utility billing data indicates this is account # 800 and the utility indicates the reading has a multiplier of 300. The peak billing demand between the billing dates of 2/22/2018 and 1/25/2019 was 218.4 KW in August of 2018. The lowest billing demand for that period was 123 KW in January 2019, and the average billing demand was 169.05 KW. The facility main service panel has a 1600 Ampere rating and is an old Federal Pacific installation. The utility indicates that the existing transformer for this facility is rated 300 KVA (which would have a full load rating of approximately 833 Amperes at 208 Volts, 3 phase).

The existing Nursing Home has a 500 KW, 625 KVA, 120/208 Volt, 3 phase diesel fuelled standby generator that has three output breakers, one rated 200 Amperes to a life safety automatic transfer switch, one rated 400 Amperes to a critical power automatic transfer switch, and one rated 1600 Amperes that feeds a 1200 Ampere equipment automatic transfer switch. All these transfer switches are physically located in the generator outdoor, walk-in weather enclosure and they feed to distribution in the Nursing Home. There is also a 400 Ampere protected disconnect that has been added and tapped to the load side of the 1600 Ampere output breaker. It appears that no 1200 Ampere protective device was installed ahead to that transfer switch when the generator output breaker was up-rated from 1200 Amperes to 1600 Amperes. If that is so, there needs to be a 1200 Ampere protective device installed ahead of that transfer switch to conform to Code. This modification was made in conjunction with the construction of the new heating plant for the complex. Review of utility billing indicates this is account # 080 and the utility indicates the reading has a multiplier of 300. The peak billing demand between the billing dates of 2/22/2018 and 1/25/2019 was 417 KW in July of 2018. The lowest billing demand for that period was 267 KW in November 2018, and the average billing demand was 326 KW. The utility indicates that the existing transformer for this facility is rated 750 KVA (which would have a full load rating of approximately 2082 Amperes at 208 Volts, 3 phase).

No mention of Biomass AT.

The existing Administration Building (AKA 1930 Building) has a 75 KW, 93.75 KVA, 120/208 Volt, 3 phase, diesel fuelled standby generator that has breakers that feed a 100 Ampere life safety automatic transfer switch and a 260 Ampere automatic transfer switch for equipment loads. The utility indicates that this utility meter has no multiplier to apply to its readings. The peak billing demand between the billing dates of 2/22/2018 and 1/25/2019 was 16.44 KW in August of 2018. The utility indicated that the bills indicating Administration would be the bills for this building as it originally was an administrative office use. On that basis this report indicates this, and there are no apparent separate bills for the present Administrative Office installation. The utility indicates that the existing transformer for this facility is rated 300 KVA (which would have a full load rating of approximately 833 Amperes at 208 Volts, 3 phase).

wrong bill should be part of NH Bill

The existing Alternate Sentencing Building has a 6.5 KW, 120/240 Volt, single phase, propane fuelled standby generator located in the building mechanical room in the basement. It has what appears to be a 60 Ampere two pole automatic transfer switch that powers a separate distribution panel with selected loads. The building main electric service panel is rated 200 Amperes, and the utility has indicated that it is served through a three phase 45 KVA utility transformer bank consisting of 3 - 15 KVA transformer (

which would have a full load rating of approximately 125 Amperes at 208 volts 3 phase. There are no apparent demand billings for this building based on the bills provided. It was noted during my site visit that the existing generator was transferred to this facility when the present generator was installed at the Court House, and that there are issues regarding its capability to adequately accommodate even the small loads presently connected while there are more loads that have been indicated as needing to be added to standby power at this facility. It also indicates an issue of the facility being served at 120/208 volts, but the standby power installation operating at 240 volts instead of 208 volts. The peak billing demand between the billing dates of 2/22/2018 and 1/25/2019 was 16.44 KW in August of 2018. The lowest billing demand for that period was 7.94 KW in March 2018, and the average billing demand was 12.19 KW (There was no indicated demand for January 2019 on the bill copies provided). The utility provided an email with these confirmed but identify the facility as the Community Correction Building, correct

validates last comment on pg 2.

The existing Barns, Maintenance Facility, and Waste Water Pumping Station has a 125 KW, 156.25 KVA, 120/208 Volt, 3 phase diesel fuelled standby generator located in a separate generator building adjacent to the Maintenance Facility. It feeds a distribution panel that powers the various load locations with separate feeders. It originally also powered the "Old Correctional Facility" that has since been demolished. There are no apparent demand billings based on the bills provided. This is an old generator that has lasted well beyond an expected operating number of years (being in the order of 55 years old) and replacement/repair parts, if available would be long lead time and expensive. This powers the critical waste water pumps for the complex and serious consideration is needed for its replacement. The utility indicates that the existing transformer for this facility is rated 225 KVA (which would have a full load rating of approximately 625 Amperes at 208 Volts, 3 phase).

Review of the present standby power unit at the Senior Center was not indicated as part of the considerations for this review and report, so other than indicating it apparently has a 70 KW propane fuelled unit associated with it (based on data provided), no further comment will be made in this report.

Summary of Existing Conditions and Comments:

The following summary and conclusions are based on the demand billing data provided, and any errors in meter multipliers by the utility could result in the conclusions reached being incorrect.

Based on the foregoing it is obvious that the Correctional Facility (Jail) standby generator and service are significantly oversized and that would explain the reason for the added annual costs to load bank test the generator installation to clean out the accumulation of wet stacking byproducts. It is likewise obvious that the present standby power installation at the Alternative Sentencing Facility needs an upgrade in rating plus a unit with the proper voltage for the facility. The present installed generator at the Barns, Maintenance Building, and Waste Water Pumping distribution has also obviously nearly reached the end of its life and should be considered less reliable on that basis.

In looking at the proximity of the various facilities in the complex, the obvious potential candidate to be considered as added load for the Correctional Facility standby generator is the Court House. It will, however, require transformation of the system voltage on the Correctional Facility generator from its 277/480 volts to the Court House's 120/208 Volt system.

It is also noted that the billing demands are based on power use during a 15 minute period, thus they do not indicate the greatest momentary power peak requirements. Different engineers and manufacturers utilize the "rules of thumb" (to provide an estimate likely peak load) that they have developed based on past experience, and the multipliers of utility peak demand vary from 1.2 to up to 1.6, and with some in specific cases exceeding the 1.6 level of multiplication.

In this instance we have some circuit load data based on field instrument recordings provided to the complex by Royal Electric. they indicate that the present loads on the the circuits checked are as follows:

Barns, Maintenance Facility, Waste Water Pumps: Peak momentary current with the new soft starts on the Waste Water pumps: 344.5 Amperes or approximately 125 KVA at 208 volts, 3 phase. Average load appears to be less than 200 Amperes, or less than 75 KVA. If the existing Court House Generator were to become available, it appears to be adequate for this location without carrying out a detailed generator sizing calculation.

Alternative Sentencing Building : Peak readings way in excess of the generator rating and average readings appear to be at or slightly above full load, confirming that the present unit is undersized, in addition to it being a 1970's vintage unit. A new unit, likely exterior mounted in a weather enclosure is the requirement for this location.

Proposed

The foregoing would appear to confirm that the Alternative Sentencing Building needs an new standby generator to accommodate the needed operations and to provide a generator with the appropriate voltage to match the building utility service voltage. The existing billing peak demand appears to be 16.44 KW. Allowing for an 80% power factor would result in a peak KVA of 20.55 (or approximately 57 Amperes at 208 Volts, 3 phase).. Applying a peaking factor of 1.4 would indicate a generator with an approximate full load rating of 80 Amperes would be suggested, which would calculate to a generator rated 25 KW, 31.25 KVA, or approximately 86 amperes full load. IF the decision were to provide a generator rated for the full load capability of the utility transformers, that would calculate to $45 \text{ KVA} / 208 \text{ V} \times 1.732 =$ approximately 125 Amperes, and the generator would be 36 KW. Then neither the utility of the generator would be sized for the ultimate building utility service capacity of 200 Amperes. The suggested rating, for your consideration, at this time is 25 KW, 120/208 Volts, 3 phase with a new 100 Ampere automatic transfer switch and a new 3 phase generator distribution panel.

Potential cost

The existing Correctional Facility (Jail) peak demand noted above is 396 KW at 480 volts, 3 phase, or, allowing for an 80 % power factor, 495 KVA and an operating current

of approximately 595 Amperes. Applying a 1.4 peak multiplier factor would indicate an expected peak load current of 833 amperes, or a calculated peak of approximately 692 KVA. Considering adding the present Court House load to the Correctional Facility generator would add the Court House peak billing demand of 218.4 KW, which at 80 % power factor would calculate to 273 KVA and an operating current of approximately 328 Amperes at 480 volts. Applying a 1.4 peak multiplier factor would indicate an expected peak load current of approximately 459 Amperes, or a calculated peak of approximately 381 KVA. These values would indicate the peak load projected for the existing generator serving both the Correctional Facility and the Court House (as 1073 KVA. Even if actual operations were to double the calculated values, the Correctional Facility generator does appear to be adequately sized to serve as the back-up power source for both the Correctional facility and the Court House.

43%
load on
Doc gen.?

The generator presently at the Court House could , on the basis of implementing this change, be relocated to replace the existing unit at the Barn, Maintenance Facility, and Waste Water Pumping distribution location.

Implementation Considerations:

Implementation of the up-rated generator at the Alternative Sentencing Building is relatively straight forward and this report will be based on the rating being 25 KW, propane fuelled. It will more likely than not require a new, larger propane tank due to its greater fuel consumption rate, and it will require a new outdoor concrete pad for the new generator to be installed on, and conduits and wiring from the generator to the new transfer switch (for power and controls) and to the building utility power distribution panel (to power generator auxiliaries such as heaters and battery charger). The breaker in the existing building service panelboard that provides utility power through the transfer switch will need to be upgraded to 100 A, 3 pole, with new wire and conduit to the new automatic transfer switch location, and from that to a new 3 phase standby power distribution panelboard. Other work will be the removal of the existing propane tank and existing generator, transfer switch and distribution panel. Coordination of spaces for new components and scheduling of cut-overs will also be needed.

1,000
gallon
tank
- inadequate?

If the Court House is modified to receive standby power from the Correctional Facility (Jail), the installation of the present Court House generator to replace the present Barn, Maintenance Facility, Waste Water Pumps should be relatively straight forward and will somewhat depend on whether the relocated generator is to be physically located in place of the unit to be removed or at a new location. If in the same location there will be a period of time with no fixed standby power for these loads, and temporary connection of a leased unit during the cut-over would be recommended. The balance of this report, however, will assume the generator will be located in a new location close to the present unit (as it has an outdoor weather housing and would not require an indoor installation as now exists for the present generator) The existing automatic transfer switch should likely also be replaced due to age in this part of the project.

The ASCO
ATS is newer than generator?

The most complex part of the project will be the provision of a power connection from the Correctional Facility to the Court House, and two will be required. One will be the

life Safety circuits in the existing Court House and the other will be for the balance of the Court House facility. The present generator powers one 100 A and 1 200 A circuit in the Court House at 208 Volts, 3 phase. Actual load on the present unit is not known, but the Court House utility transformer is rated 300 KVA (per utility) and the above peak load for the Court House based on peak billing demand with adjustments is 381 KVA, so it is unlikely the present generator load is 80% of the 300 A circuiting in place (calculated approximately 87 KVA, or approximately 30% of the utility service transformer rating or 22% of the calculated peak load rating, especially when the 300 A standby power distribution rating is also nearly 20 % of the building's 1600 ampere total installed service capacity. The "real" requirement will need review to determine what will be on the Life Safety distribution when the change is made. For estimating purposes in this report, I have allowed for 75 KVA, or approximately 208 Amperes at 208 Volts, 3 phase. At that rating a new 125 Ampere breaker will need to be added to the existing generator with conduit and wire to the new 75 KVA 480 Volt to 120/208 Volt, 3 phase transformer at the Court house, with control connections between the new automatic transfer switch and the generator controls to start the generator on loss of power on the utility side of the new transfer switch. The existing utility transformer powering the Court House is 300 KVA as noted above. Whether the transformer to step the Correctional Facility's 480 Volts down to the Court House's 120/208 volt can be rated the same as the present utility transformer or needs to be increased to the next larger rating (500 KVA) will be a function of how much capacity (to absorb motor starting loads) the generator has compared to the capacity of the utility circuit as much as it is on the loads involved. This transformer, however, will have to be powered from the Correctional Facility generator 2500 Ampere distribution and connected ahead of the existing Correction Facility 2500 Ampere transfer switch with a breakers rated 500 or 800 ampere rated breaker depending on whether a 300 KVA or 500 KVA transformer is installed. To be conservative in estimating at this time a 500 KVA transformer will be assumed. The next issue to determine is whether the 480 volts at the Correctional Facility should be stepped up to 12,470 volts and that tied to a similar transformer at the Court House end that would step the voltage back down to the 120/208 Volts required at the Court House, OR whether the 480 Volt circuit should be run to the Court House new transformer that would step the voltage down to the 120/208 Voltage of the Court House. Both options will be noted in this report. Either way, based on the present Correctional Facility electrical arrangement, the construction is not going to be simple and straight forward in the writer's opinion. It is also noted that this location estimates do not consider the replacement of the present Court House main distribution switchgear as part of the project.

Preliminary Electrical Costs:

All costs depend on the final configurations selected for the installations, potentially discussions and agreement with the Authority Having Jurisdiction, and final field conditions identified during design. Preliminary cost estimates provided herein are based on information in the R S Means 2019 Electrical Cost Manual where cost data for items is included therein, with the writer's best estimate of items not in that reference, or where modifications are required to the components in that reference.

Based on all the foregoing, the following are the preliminary costs arrived at by the writer:

1) Alternative Sentencing Building: Basis, new 25 KW propane fuelled installation. Estimate does NOT include costs of increased/new propane storage capacity. \$ 54,450.00

2) Barn, Maintenance Facility, Waste Water Pumps: Basis transfer of existing Court House 105 KW generator to new location to replace existing unit. \$45,450.00

3) Court House: Basis, 480 V feeders from Correctional Facility to Court House, New 1600 and 200 A automatic transfer switches, etc. \$ 270,000.00

4) Court House: Basis, step up 480 V to 12.47 KV to Court house and install a step down transformer (similar to the present utility transformer) to step it back down to 120/208 volts for the standby major load circuit.. Life Safety to be 480 Volt feed to transformer to 208/120 V at Court House. \$201,425

The above estimates do not include any contingency amounts, escalation amounts for later implementation, nor do they include any design and administrative costs that will become part of the ultimate scope of work that is decided upon. At this level of detail available I would suggest a contingency added no less than 15% of the noted amounts for the Alternative Sentencing and Barns/Maintenance Building/Waste Water Pumps locations and not less that 20% for the Court House Options..

The estimates noted are based on 2019 construction and do not include costs for electrical design and/or construction administration services (as stated above). Suitable escalation should be allowed for construction after 2019, with it being noted that the National Electrical Code will be updated in 2020 and new/modified requirements in that new edition may adversely affect the project costs that will be incurred.

