

**COMMITTEE OF
THE WHOLE**

Monday, January 25, 2021

5:00 PM

McFarland Municipal Center
Community Room

AGENDA

You are invited to this meeting through a Zoom webinar. The Public is strongly encouraged to watch and participate in these meetings remotely through either the webinar or telephone options listed below.

PLEASE CLICK THE LINK BELOW TO JOIN THE ZOOM WEBINAR:

Or by Telephone: +1 (312) 626-6799
Webinar ID:

1. CALL TO ORDER.
2. ATTENDANCE/ROLL CALL.
3. PUBLIC APPEARANCES.
 - a. This is an opportunity for members of the public to address the Village Board. Please remember this is a virtual meeting conducted through the Zoom online meeting platform. Zoom meeting attendees wishing to address the board may do so using the Question and Answer feature within the Zoom online meeting platform. You may state your name, address, and provide your comments to the board for their consideration. Members of the public who are present in person and wish to address the board should fill out a public comment form and turn into the meeting chairperson. Members of the public may speak during public appearances or during their selected agenda item as they designate on the public comment form. Please adhere to the 3-minute time limit. Additionally, you may send your public comments to cassandra.suettinger@mcfarland.wi.us to be included as part of the meeting.
4. APPROVAL OF MINUTES.
 - a. Discussion and action regarding minutes of the meeting held on January 11, 2021.
5. BUSINESS.
 - a. Presentation and discussion regarding Phase 2 Design Development for the Public Safety Center.
 - b. Discussion and action to set schedule for public information meeting on Phase 2 Design

Development for Public Safety Center.

6. SCHEDULE NEXT MEETING DATE.

- a. To be determined as needed.

7. ADJOURNMENT.

This meeting notice constitutes an official meeting of the above referenced group and was posted in accordance with all applicable laws related to Open Meetings Law. It is possible that members of and possibly a quorum of members of other governmental bodies of the municipality may be in attendance at the above stated meeting to gather information. No action will be taken by any governmental body at the above stated meeting other than the governmental body specifically referred to above in this notice. Upon reasonable notice, efforts will be made to accommodate the needs of disabled individuals. For additional information or to request this service, contact the McFarland Municipal Center at (608) 838-3153 or cassandra.suettinger@mcfarland.wi.us.

VILLAGE OF MCFARLAND
Committee of the Whole Minutes

Monday, January 11, 2021 - 5:30 PM

1. CALL TO ORDER.

Village President Czebotar called the regular meeting of the McFarland Committee of the Whole to order at 5:30 pm in the Community Room of the McFarland Municipal Center.

2. ATTENDANCE/ROLL CALL.

Village Board members present: Village President Brad Czebotar; Village Trustee Stephanie Brassington, Carolyn Clow, Michael Flaherty, Eric Kryzenske, Justin Rupert, and Clair Utter (arrived at 5:32 pm).

Village Board members not present: None.

Staff Present: Administrator Matt Schuenke.

3. PUBLIC APPEARANCES.

- a. This is an opportunity for members of the public to address the Village Board. Please remember this is a virtual meeting conducted through the Zoom online meeting platform. Zoom meeting attendees wishing to address the board may do so using the Question and Answer feature within the Zoom online meeting platform. You may state your name, address, and provide your comments to the board for their consideration. Members of the public who are present in person and wish to address the board should fill out a public comment form and turn into the meeting chairperson. Members of the public may speak during public appearances or during their selected agenda item as they designate on the public comment form. Please adhere to the 3-minute time limit. Additionally, you may send your public comments to cassandra.suettinger@mcfarland.wi.us to be included as part of the meeting.*
- None.

4. APPROVAL OF MINUTES.

- a. Discussion and action regarding minutes of the meeting held November 23, 2020.*
- Motion by Trustee Clow, second by Trustee Rupert, to adopt the minutes of the meeting held November 23, 2020. Motion carries 6 - 0 - 0 by acclamation.

5. BUSINESS.

- a. Conduct listening session with the recruiter for the Police Chief position.*
- The Committee of the Whole met with the Recruiter for the Police Chief position. Several questions were posed to gather input and evaluate the position as part of the recruitment. Several different groups will be engaged as part of this effort to seek/gain a broad range of input on the position. No action was taken on this item as it was presented for discussion only.

6. SCHEDULE NEXT MEETING DATE.

- a. Monday, January 25, 2021 at 5:00 pm.*

7. ADJOURNMENT.

Motion by Trustee Brassington, second by Trustee Clow, to adjourn at 6:20 pm.

Pursuant to law, written notice of this meeting was given to the public and posted on the public bulletin boards in accordance with Open Meetings Law.

Respectfully submitted,
Matthew G. Schuenke
Village Administrator

McFarland
SUMMARY SHEET

MEETING DATE: Monday, January 25, 2021

SECTION: Business

DEPARTMENT: Administration

CONTACT: Matt Schuenke, Village Administrator

AGENDA ITEM: Presentation and discussion regarding Phase 2 Design Development for the Public Safety Center.

PREVIOUS ACTION:

The Village Board approved the proposal with Bray Architects to plan, design, and bid the project at their meeting on February 10, 2020. This was done following an RFP process that was initiated in December of 2019.

The Village Board accepted the plan for the project as part of Phase 1 at its meeting on September 28, 2020 and also authorized proceeding to Phase 2 to design the facility.

ISSUE SUMMARY:

Progress continues on the development of a new Public Safety Center in McFarland to support our Fire and Rescue, Municipal Court, and Police departments. Last year we accepted a plan for this development and began the design process. Enclosed within your packet is a first look at that work including information on the site plan, elevations, and floor plan for the site.

Additionally, since the plan presentation we have been working on sustainable elements of the project and to that end completed a study of the facility to achieve net zero energy usage. This takes into account the results of the geothermal study as well as looks at the addition of solar power to support the mechanical needs of the facility. Geothermal tested very well for the site and is recommended for inclusion while solar offers significant potential as noted within the report. As before, Staff has been working with the Architect and a growing list of engineers to bring the design together so that we can begin construction this Summer. We remain on track to do so and our schedule is presented as follows:

- **January 25th - Committee of the Whole:** Our plan for this meeting will be as follows:
 - Site Plan - We'll revisit the plan from the planning phase to go over any material changes. Most of what is now designed on the site plan is the same except for the adjustment to some driveways.
 - Elevations – This will provide a view point of what the exterior of the building will look like and a better picture of its overall aesthetics.
 - Floor Plan – After reviewing the exterior, we can take a deeper dive into the interior of the facility and how the floor plan has been established to support each of the Departments.
 - Department(s) Feedback – As we had done previously, within this process we'll provide the Departments a chance to discuss specifically now how the floor plan



aids in their ability to provide service both now and in the future as well as why it alleviates current issues with their existing facility space.

- Sustainability Recommendations – As was desired at the last meeting on this, we wanted to advance elements of sustainability within the project. Enclosed is a report from HGA that studies the feasibility of achieving Net Zero Energy usage for the facility. This will go over what is recommended to reach this level and certainly we can discuss to what extent the board is comfortable with. Costing of these elements in the grand scheme of the project will be discussed under the last item.
- Cost Updates – We will present an update on the costs and its financial implications on the project as presently designed. A summary of which is included within this memorandum. There are multiple design considerations to discuss and how they might affect cost.
- **February 18th - Public Information Meeting:** Similar to what was done in September of last year we will advertise an opportunity for the Public to hear the same information as what is presented on January 25th. This will be advertised through the newspaper, social media, website, e-newsletter, and direct mailings to those in near proximity. This will also include time for questions from the public and answers from Staff or Consultants as is appropriate.
- **March 8th - Village Board:** Assuming there is nothing further to address with what has been presented, then we would ask for the design to be accepted as thus far presented in order to complete Phase 2 and authorize approval to move to Phase 3 for bidding. This is the same progression and timeline we used last year to transition between phases while leaving time between meetings if something comes up that we need to address yet.
- **May/June** - Tentative time frame for project award in order to complete Phase 3 (Bidding) and transition into Phase 4 (Construction).
- **June/July** - Project Construction Begins
- **Summer 2022** - Project Construction Ends

A combination of Bray Architects and Village Staff will provide this presentation and information as well as answer questions from Committee members. As always, as part of your review if you see something that is missing or have further questions on please let us know.

FINANCIAL/BUDGET IMPACT:

Total cost presented in August of 2020 with Phase 1 was \$16,973,371.41 and the base construction costs as presented in January of 2021 is \$16,906,356.63 which shows a slight reduction. The building size is also slightly smaller from 57,657 square feet down to 57,367 square feet accounting for some of that decrease. These represent the first two columns within the budget enclosure. There are several design considerations to take into account though and costs for sustainability features to factor in as potential options for the project. The remaining three columns outline those options or factors to consider. They are as follows:

- Phase II Base Project with Alternates - This brings into play several alternates for the project that were discussed by the Team as part of the design process. They are considered now as alternates for discussion purposes on if they should be pursued.



Three of these are relatively small in the overall project, but one is quite large. The large alternate is to construct this facility to allow for a second floor to be added over the Police Department in the future. The cost for this could potentially run around \$1,044,035.38 and is less interchangeable within the design, essentially have to create two designs to bid. The remaining alternates are more interchangeable and you either do them or you don't, more flexibility within the project and they also represent about 1% of the project cost where the other larger alternate is over 6%. We considered this alternate to give the Police Department space to grow into in 30 years, but this is something we should discuss as there are potentially other options that could be considered in the future.

- Phase II Geothermal Project - Costs within the table are compounding or growing on one another. This option adds Geothermal to the equation and adds an additional \$361,878.93 to the project. Mainly this cost is associated with the bore field which was found to be compatible for our needs to pursue. Internal mechanicals for the systems whether traditional HVAC or geothermal are roughly the same cost. The benefit of this is that it lowers our reliance on natural gas and helps to lower expected operating costs of course with the up front investment as indicated.
- Phase II NZE Project - This last option goes the distance to bring the building consistent with net zero energy meaning that it creates as much energy as it consumes. This is not inexpensive and is achieved through the use of a substantial solar panel system on the roof, side of building, and ground. The added cost of this is \$1,258,678.47. The up front cost is substantial but the operating costs would also be reduced based on the lack of need for electricity from the utility paying for itself prior to the 20 years taken out on the loan and well before the 30 years as the planned space of the building.

The totality of all of this is presented for our discussion and consideration on the alternates and sustainable elements that are recommended for this project or at least are feasible. These again are presented for discussion as to whether or not they should be pursued with the construction of the facility, and whether they are included or excluded it helps us better project and manage the financial performance of the project. The following is presented to show the complete picture of all the costs associated with the project shown in the enclosed table. First we begin to look at the revenues thus far established for the project (using rounded numbers):

Revenues

\$550,000	(2020 Borrowing - Notes)
\$450,000	(2021 Borrowing - Notes)
\$328,000	(OEI Grant - Geothermal)
\$22,000	(Incentives - Focus on Energy)
\$14,000,000	(2021 Borrowing - Bonds)
<u>\$4,500,000</u>	<u>(2022 Borrowing - Bonds)</u>
\$19,850,000	Total Revenue

This is the total amount that could be committed to the project as is needed to support the below listed expenses. There remains some fluctuation in costs as a result of incentives and grants that



Staff is applying for that are related to the proposed sustainability enhancements. The projected amounts are shown, but it should be noted that this is not a commitment yet. The final number for borrowing will be reconciled against all of these sources including the final bid amount in order to complete the bonds in 2022. Ideally the total amount needed to borrow next year is less than what's presented here which would be a reflection of successful grant applications and good bid pricing. The number shown for 2022 is the maximum presently authorized. The expenses are presented as follows in order to be offset with the above revenues (using rounded numbers):

Expenses

\$15,656,700	(Base Construction Cost)
\$518,700	(Estimating Contingency - 4%)
\$731,000	(Construction Contingency - 5%)
\$1,044,000	(Second Floor Planning)
\$180,700	(Other Alternates)
\$361,900	(Geothermal)
\$1,258,000	(Net Zero/Solar)
\$19,751,00	Total Expenses

\$99,000 Variance

The project as we sit here today shows a budget surplus with all options considered. Of course though there are many things to consider and complete yet to finalize these expenses in order to apply against the revenues. Certainly if some options were desirable to pursue and others not...for instance, if we didn't want to plan for the second floor but did want to move forward with sustainability then that variance would grow and be well within our ability to do so.

VILLAGE PLAN REFERENCE:

The project as designed thus far is included and supported by the following plans previously referenced:

- 2020-2024 Capital Improvement Plan
- 2021-2025 Capital Improvement Plan (Draft)
- 2021 Budget
- 2020-2030 Strategic Plan
- 2020-2021 Strategic Plan Annex
- 2017 Facilities Master Plan
- 2019 Public Safety Analysis

ORDINANCE REFERENCE:

Section 23-94 - Referendum for Large Capital Construction Projects

Binding referendums are required for large capital construction projects when the net cost is expected to exceed 1% of our equalized value. The preliminary estimate for January 1, 2020 on



the Village's equalized value is \$1.127 billion generating a threshold of around \$11.3 million.

However, Section 23-94(b) notes exceptions to this requirement and specifically sub (6) refers to this requirement not apply to "public safety facilities, limited to fire, police, EMS, and municipal court." Even though the anticipated cost exceeds the threshold in our code, a binding referendum is not required for such things.

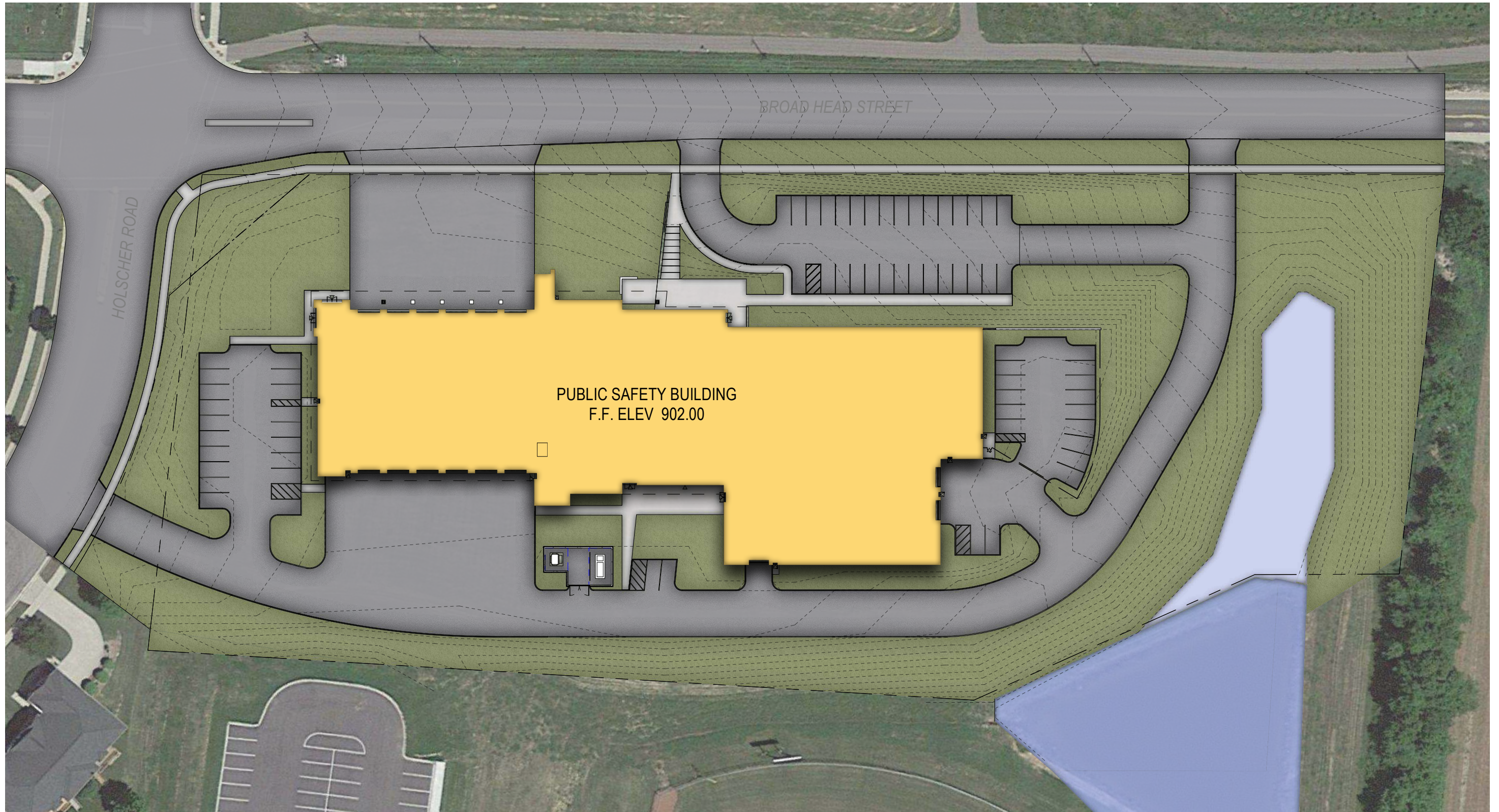
BOARD, COMMISSION OR COMMITTEE RECOMMENDATION:

This item is a presentation by the Architect and discussion between the Board, Architect, and Staff on the project plan thus far prepared. No action is intended to be taken with this item.

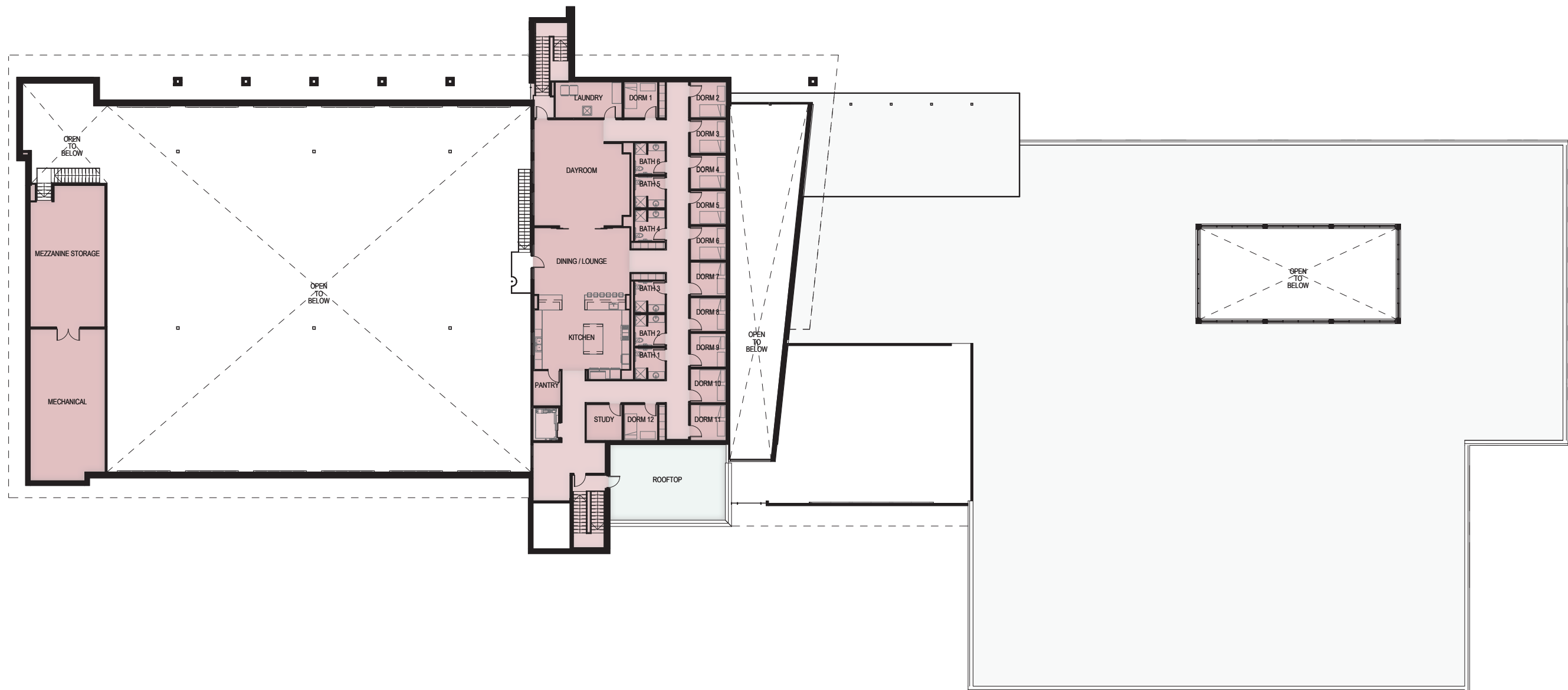
ATTACHMENTS:

1. 3488_McFarlandPublicSafety_Combined Plans - Reduced 2
2. NZE Feasibility Study McFarland PSB_1_8_2021
3. 2021-01-20_3488 McFarland PSB_Project Option Tracker_8x11_1page













North Elevation

Scale: 1" = 30'-0"



South Elevation

Scale: 1" = 30'-0"



Project #: 3488

McFarland Public Safety Building
xxx Broadhead Street

01/22/21

SK400 - Unnamed
© 2021 Bray Associates Architects, Inc

Page 15 of 38



NET ZERO ENERGY FEASIBILITY STUDY
VILLAGE OF MCFARLAND
NEW PUBLIC SAFETY BUILDING

January 8, 2021

INTRODUCTION

This study explores the options for achieving net zero energy for the new Public Safety Building project for the Village of McFarland. This building is going to include a fire station, police station and courthouse with an area of 55,325 ft².

The U.S. Department of Energy defines net zero energy as the following: "An energy-efficient building where, on a source energy basis, the actual annual delivered energy is less than or equal to the on-site renewable exported energy".

$$\frac{\text{Building Energy Consumed}}{\text{year}} = \frac{\text{Renewable Energy Produced}}{\text{year}}$$

Building Energy Consumed = energy used as recorded by the electric and natural gas meters that are connected to the grid through the local utility (Alliant Energy). This energy is used to heat, cool, light and power the building loads.

Renewable Energy Produced = energy produced onsite (at the building) or offsite from renewable resources (Solar Photovoltaic for example). Over the course of a year, this renewable energy must offset the energy consumption of the building to reach the net zero energy goal.

In this study we explore each piece of the net zero equation for the new Public Safety Building and provide budget level costs to carry for the project.

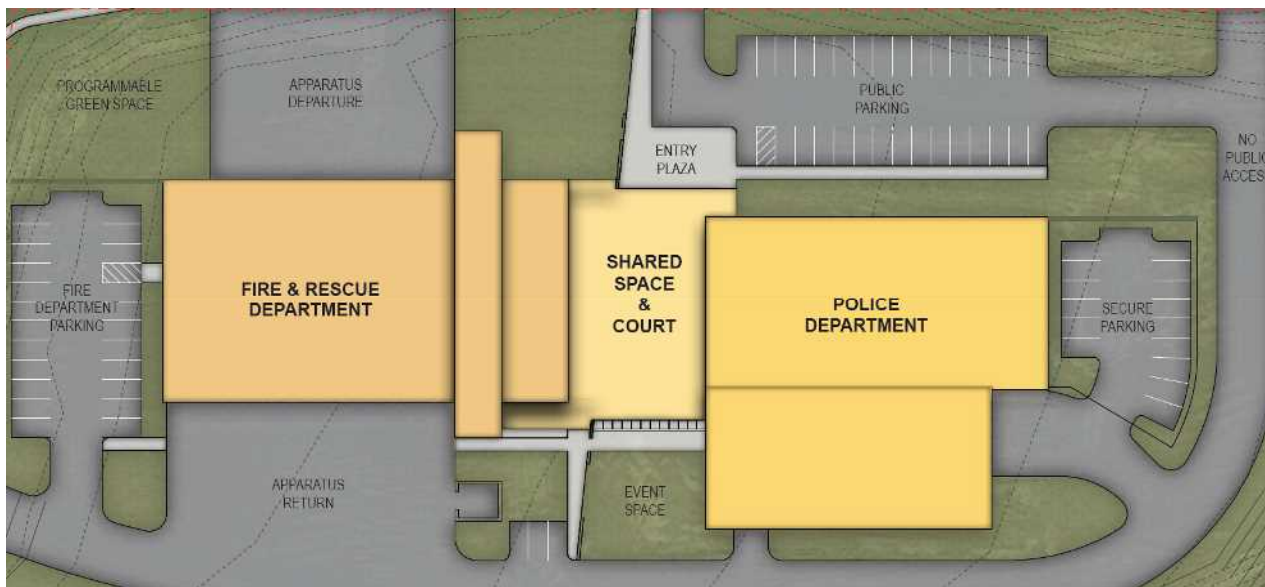


Figure 1- Current project site plan

Building Energy Consumed

The first step in determining the net zero energy feasibility is to predict the energy use of the proposed building. There are various ways of doing this, including benchmarking, baseline comparisons, and energy modeling. HGA has used a combination of these techniques to predict the energy use of McFarland's new Public Safety Building (PSB), helping the team set an energy utilization intensity goal for the project. Energy use intensity (EUI) is the metric used for describing the building energy use per area. The following energy star article has more background information on this energy metric:

<https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/use-portfolio-manager/understand-metrics/what-energy>

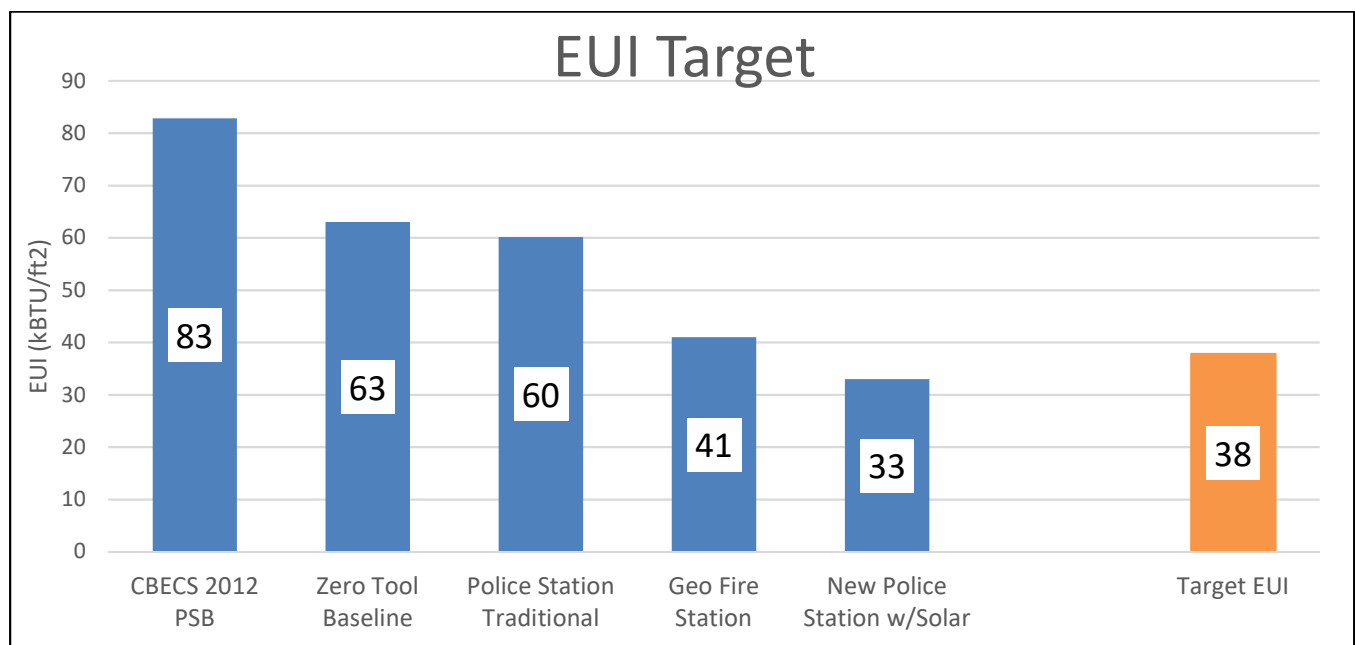


Figure 2: Target energy use intensity (site energy) comparisons and the proposed PSB project

Based on existing police/fire/public safety building performance, as well as other net zero energy building usage, we have set the project target EUI at 38 kBTU/SF/Yr site energy. This target will be updated throughout the design process, but it will give us an idea of what the net zero equation looks like for budgeting purposes. The current design, with the help of HGA design consulting and commissioning, is well positioned to achieve the 38 EUI goal at this time.

The goal of setting the energy use target as low as possible is to be able to offset 100% of that energy usage with energy generation.

Renewable Energy Produced

Making the building net zero energy involves offsetting building energy used with energy produced through onsite renewable generation. The most cost effective method for producing renewable energy onsite is solar photovoltaic (PV) systems. Rooftop mounted, ground mounted, wall mounted and carport solar PV are strategies that we will look at for the new Public Safety Building project.

Rooftop Mounted Solar Photovoltaic Systems

HGA reviewed the roof plan and design documents to see what size of solar PV system was feasible at the new Public Safety Building. Based on the 25% design documents, the roof can support a maximum of 350 kW DC of solar PV.

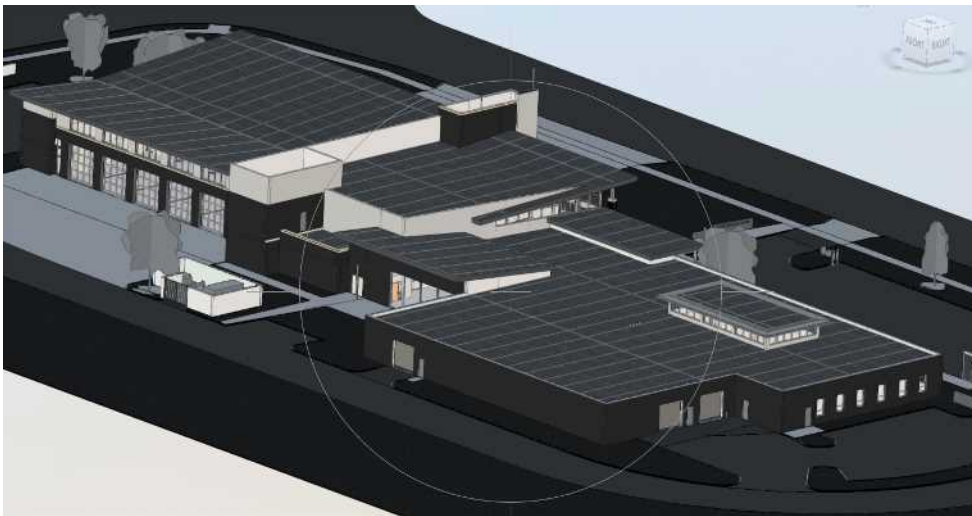


Figure 3- Current roof plan view

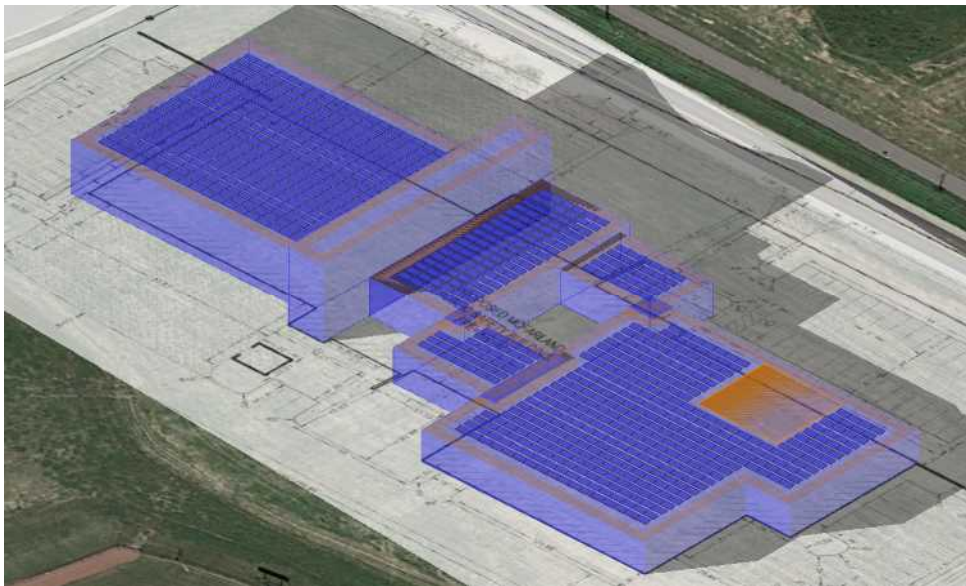


Figure 4- Helioscope solar PV modeling helps estimate the size and production of a proposed system, model shown here for the new PSB

Based on the roof arrangement and elevations, we estimate that a roof mounted 350 kW solar system would produce around 450,000 kWh/yr on an average solar year. This would offset about 28 kBTU/SF/yr of energy usage from the building.

Table 1- Design assumptions made for the solar PV system proposed for the new PSB project

PV System Parameter	Modeled Assumption
Array Tilt Angle	10°
Array Orientation	175°
Panel Wattage	385 W (72M)
Roof Setback	6 ft
Cost	\$1.8/W
PV Inverters	100 kW, 480V



Figure 5- Example solar PV installation at Oregon Forest Edge Elementary School - a similar PV system is proposed for the new PSB project



Figure 6- Closer image of solar PV panel and racking arrangement - similar design assumptions have been made for the new PSB project

Additional Renewable Energy Needed

Since the largest rooftop solar PV system that can fit in the current roof design is predicted to offset only 28 kBTU/SF/yr, we have a gap in the net zero equation of 10 kBTU/SF/yr.

$$\frac{\text{Building Energy Consumed}}{\text{year}} = \frac{\text{Rooftop Solar PV Energy}}{\text{year}} + \frac{\text{Additional Energy Needed}}{\text{year}}$$
$$\frac{38 \text{ kBTU}}{\text{ft}^2} = \frac{28 \text{ kBTU}}{\text{ft}^2} + \frac{10 \text{ kBTU}}{\text{ft}^2}$$

To reach our net zero energy goal we predict needing additional renewable energy to offset this 10 kBTU/SF of building usage. This additional energy could come from a variety of sources described below.

Ground Mount Solar PV Systems

In addition to roof mounted solar PV systems, ground mount solar PV systems have come down in price in recent years. Because these panels do not have to comply with the rooftop code requirements, costs should be only slightly higher than the rooftop PV systems.



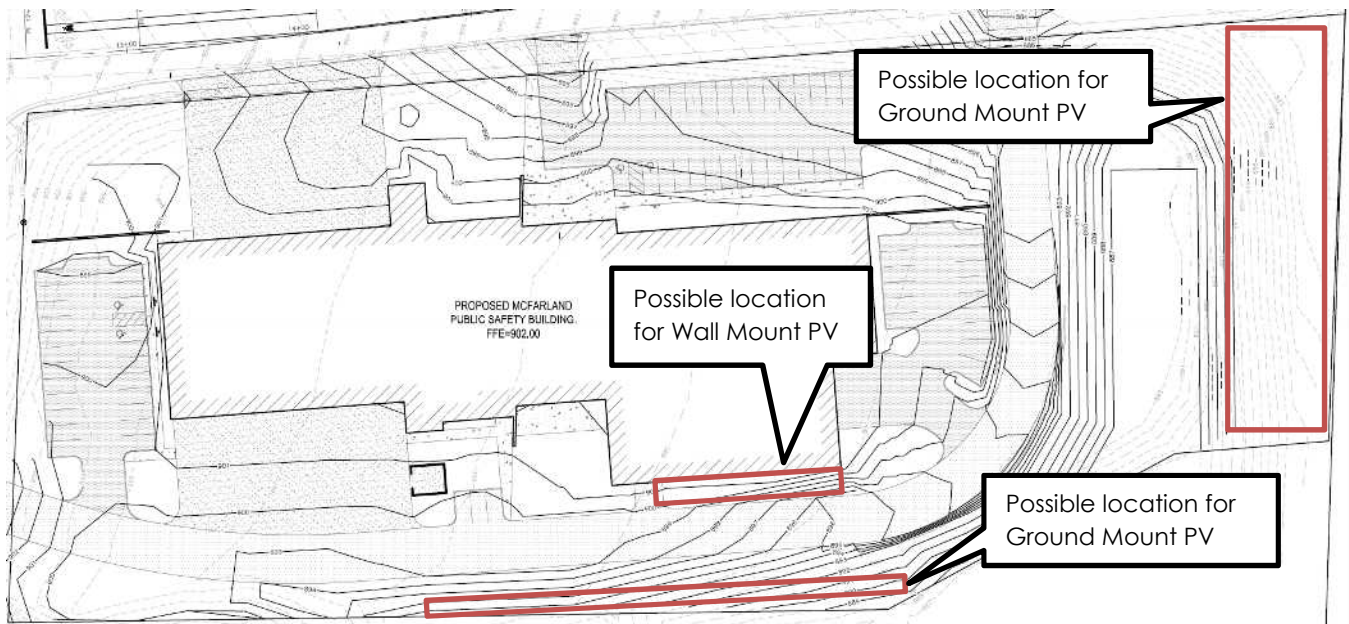
Figure 7- Example of ground mounted solar PV system

There are several areas on the site that could support a ground mounted system to supply the additional needed



Figure 8- Example of south-facing exterior wall mounted panels

Another alternative is to mount panels to south facing walls - the south side of the police garage would be a good place to explore.



An additional 126 kW DC of ground/wall mounted panels would be needed to offset all of the energy usage at the net zero building. This amount of ground mounted solar would require roughly 10,000 – 15,000 SF of land area, depending on racking and mounting arrangements. The cost of this additional solar PV system has been included in the budget numbers for achieving the net zero energy goal.



Figure 9- A more decorative example of ground mounted solar

Third Party Ownership

Another way to install additional onsite renewable energy is to have a Third-party solar developer install the system. In this method a solar developer would finance the installation of the solar PV system and either lease the solar system for use over a period of time, or use a power purchase agreement (PPA) where McFarland would buy the energy produced from the solar developer.

This model is legal to use in some areas depending on the financial arrangements. There may be additional requirements and legal road-blocks that McFarland would need to work through if third-party financing was pursued, but it is possible in Wisconsin.

Renewable Energy Credits

Renewable energy certificates (also known as renewable energy credits, or RECs) represent the energy generated by renewable energy sources from a 3rd party, such as solar or wind power facilities. Buying RECs is not equivalent to buying electricity. Instead, RECs represent the clean energy attributes of renewable electricity.

RECs in Wisconsin have more recently been offered for between \$5.00-\$10.00/MW-hour. Typically, these RECs are unbundled, meaning that the new Public Safety Building would claim the attributes of the REC without using the direct electricity produced by the actual solar panels at a given location.

The Village of McFarland may choose to make up the difference in energy usage and energy produced with RECs or another method described later in the report (such as carport solar PV).

However, buying RECs does not meet the definition of a net zero building by the U.S. Department of Energy. In that case all renewable energy used to offset usage must be produced on-site.

Incentive Programs

Focus on Energy New Construction Program

The new Public Safety Building would likely qualify for the Focus on Energy New Construction program. This program incentivizes the owner and design team for choosing energy efficiency measures to be part of the new building design. For a building the size of the new PSB, the incentive will range from \$15,000 to \$30,000 depending on strategies selected.

Focus on Energy Renewable Energy Program

The solar PV system would likely qualify for the Focus on Energy Renewable Energy program. A PV system of 476 kW (350 kW rooftop mounted, 126 kW ground mounted) would qualify for the 300kW to 500kW tier of incentives, valued at \$48,000 in 2021 rates. This incentive must be applied for in advance, during the year of project completion. There is a reservation code and incentive budget.

Energy Innovation Grant Program

The Public Service Commission Office of Energy Innovation has a grant program to support geothermal, solar PV and battery storage technologies. The Energy Innovation Grant Program (EIGP) covers a wide variety of energy related projects that reduce energy consumption and support renewable energy and energy storage, energy efficiency and demand response, electric and renewable natural gas (RNG) vehicles and infrastructure, or comprehensive energy planning. HGA feels McFarland is well placed to take advantage of this program with an application for either the geothermal costs, solar PV costs, or battery (Tier 2) costs depending on program advantage. Since only one project can be submitted on in this round of the program, HGA can work with Village to determine the best fit. Estimated incentives range from \$200,000 to \$500,000 based on what is included in the application.

Design Team Assistance

Based on the design team's and HGA's past project experience with net zero energy building projects, a few key additional services are needed to ensure a successful implementation of these strategies and goals.

Net Zero Energy Consulting Services

This would include design team guidance on achieving net zero energy goals. Tools and strategies used would include energy modeling, optimization of MEP systems, envelope analysis, and incentive program support. This would ensure that the design seamlessly incorporates the NZE technologies, takes full advantage of all grant program opportunities and is able to achieve the EUI/NZE goals.

Solar PV Design Services

The solar PV system needed to make the building NZE would be designed and integrated into the electrical systems of the building. This includes working with the electrical, structural, and mechanical engineers to coordinate the solar PV system into the documents and specifications. A performance specification is created for the solar PV contractor to bid on and support is given to the construction team as they work through the solar PV installation.

Commissioning

Commissioning of the building is a critical step in ensuring the net zero energy goals are carried through design, construction and operational phases. With the additional systems needed for the net zero energy goals, commissioning ensures that the construction team is supported in installing and controlling the systems that both use energy and produce energy onsite.

Measurement and verification of the net zero energy goals is also a key element of the commissioning after construction. The commissioning group tracks the building energy performance against goals and projections as well as trouble shooting system performance during the warranty phase.



Tier 1 Net Zero Energy Budget

We have termed 'tier 1' net zero energy as those systems and requirements needed in the project to make the building net zero energy as defined in the introduction. The list of items in this table represent the most cost effective way to accomplish that goal.

Table 2- Budget costs for accomplishing net zero energy goals

Budget Item	Budget
Solar PV System (Rooftop)	\$630,000
Solar PV System (Ground Mount)	\$260,000
Electrical System Upgrades	\$50,000
Battery Ready Design*	-
Solar Design and Energy Modeling	\$60,000
Commissioning	\$70,000
Total First Cost	\$1,070,000
Possible Incentives	
Focus on Energy New Construction	\$22,000
Focus on Energy Solar PV	\$48,000
PSC Energy Innovation Office Grant**	\$300,000
Total Incentives	\$370,000
Net First Cost	\$750,000

*Including provisions for a battery in the future(battery ready) would be included in the solar and electrical design, accounted for in the table.

**only one energy innovation grant can be submitted, the value here is subject to which technology is submitted for and the program structure.

Estimated Payback of Net Zero Energy Tier 1

Table 3- Budget costs for accomplishing net zero energy goals

Estimated Utility Costs	\$/yr
PSB traditional utilities	\$74,000/yr
PSB with Solar PV and NZE	\$31,000/yr
Savings	\$43,000/yr
Simple Payback	16.3 years

The simple payback is useful to compare against the useful life of the NZE equipment and systems. In this case the useful life of most NZE equipment (solar, geothermal, etc.) is estimated at 20 years. Over these 20 years two options are presented:

1. Pay \$70,000 each year to the utility = \$1,400,000 total
2. Pay \$27,000 each year to the utility with a net \$750,000 upfront cost = \$1,290,000 total

This scenario is simplified (no inflation of energy rates, equipment maintenance, etc.), but it demonstrates that the NZE design has reached cost effectiveness compared to traditional utility rates.

Tier 2 Net Zero Energy Ideas

There are several other technologies available on today's market that help to accomplish the net zero energy goals. These technologies can help make net zero energy buildings payback more quickly or provide additional onsite renewable energy generation and building resilience. We will explore these technologies as optional or additional items for the new public safety building.

Battery Storage

Lithium ion battery storage systems are becoming more popular as prices drop, due in part to improved manufacturing and increased competition. There are numerous ways a battery storage system can be used at a facility; to increase electric reliability, generate utility grid revenue, store excess renewable energy, and lower utility demand charges.

Store Excess Solar Energy

During a sunny day, the battery system can be used to store excess solar energy production that would normally be sold back to the utility at a reduced rate. This stored energy could be used later during night or peak utility cost times.

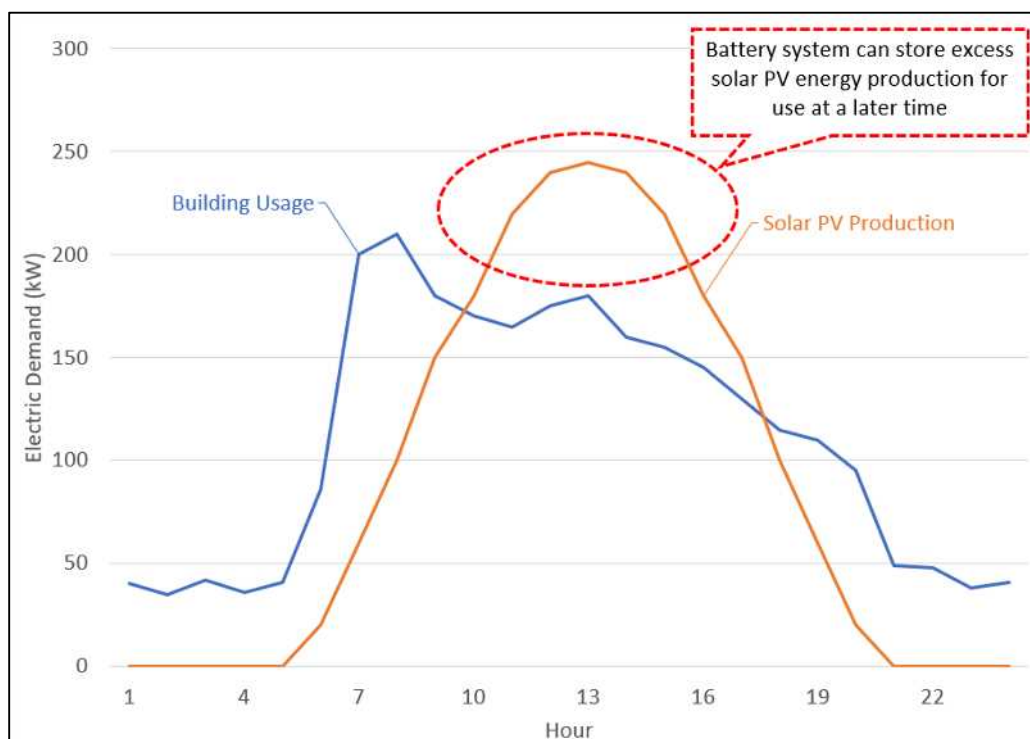


Figure 10- Example building usage and solar production graph during a typical sunny day

Peak Shaving

During a cloudy day the battery system can be used to shave a utility peak that would increase demand costs. The battery can use stored solar energy or off peak energy to be used when electric utility costs are at their highest, and manage the demand charges that a facility will incur.

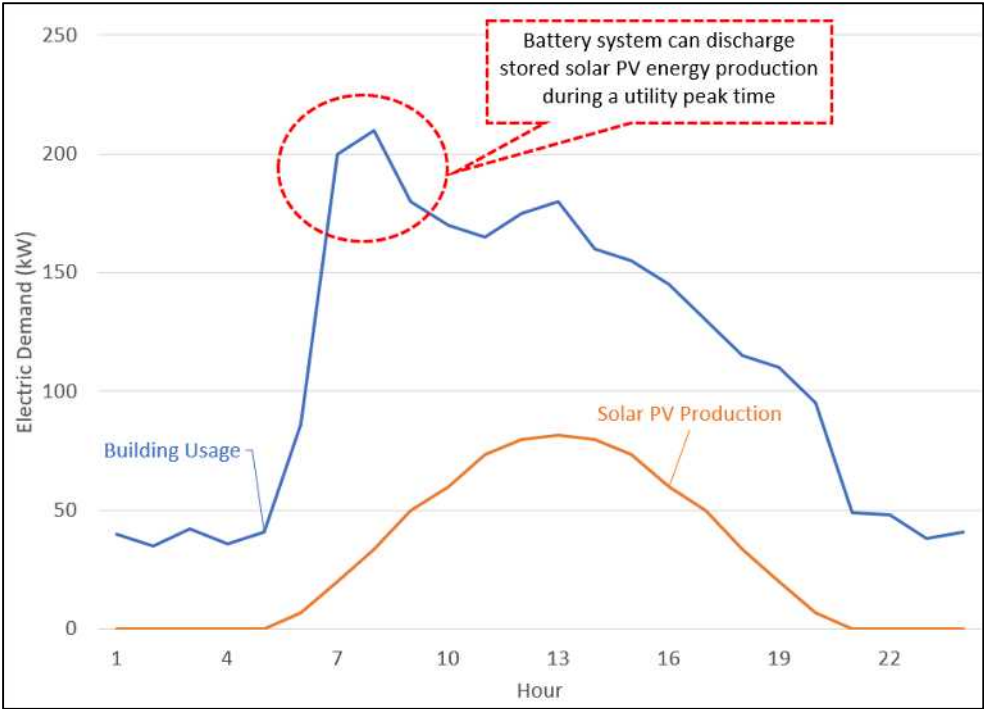


Figure 11 – Example building usage and solar production graph during a typical cloudy day

Battery Power Backup

Batteries can increase electric resiliency by providing back-up electric power during loss of building utility connection. These battery systems can be used in tandem with a conventional dual fuel gas generator, or as a standalone means of providing emergency power in an electric utility outage.

Depending on the emergency backup requirements of the new PSB and the electrical design of the system, a battery storage system could be incorporated to provide back-up power or the ability to generate solar energy during utility outages. If a battery system is selected to be implemented as part of this project, further investigation and coordination is needed with the electrical design team on whether this can be done.



Figure 12- Example of a building battery storage system

Battery Ready Design

If a battery is not chosen to be part of the project, the project can still be ready for a battery installation in the future with a few simple provisions. These include:

- Picking an outdoor location for the future battery and concrete pad
- Running cable conduit to locations during construction for the future battery
- Including a spot for the battery system to land on the Solar PV electrical subpanel
- Configuring the 1-line electrical design for the batteries future use

These provisions would add minimal extra cost in the current design package (similar provisions to getting the design ready for solar PV) but may save considerable of money in the future if a battery is later integrated into the building electrical systems.

Carport Solar PV System

A covered parking structure can be used to house additional solar panels needed to meet the net zero energy goals of the project (in place of the additional ground mount solar PV system previously discussed).

Arrays installed over parking lots are often referred to as carport solar. Experience with carport solar in Wisconsin has shown that building users typically prefer parking under these arrays due to the shading they offer. Consideration must be taken to handle snow melt and to allow plowing around carport solar arrays. There are several successful examples of where these systems have been done successfully in Wisconsin.

Because of the structure, design and labor needed to construct covered parking solar PV, these systems are more expensive than a rooftop or ground mounted solar system. The additional benefit of covered parking spots onsite is worth the premium price for some project teams.

Solar PV System	Typical Costs
Flat Roof Mounted	\$1.8/W
Ground Mount	\$2.0/W
Carport Mounted	\$4.0/W



Figure 13- Example solar carport in Wisconsin



Figure 14-Example structure detail and lighting concept, similar layout to what is being proposed

Tier 2 Net Zero Energy Budget

We have termed 'Tier 2' net zero energy strategies as those that can provide additional onsite renewable energy generation benefits. The list of items in this table represent the budget costs associated with these strategies.

Table 4- Budget costs for Tier 2 equipment

Budget Item	Budget
Solar Carport PV System*	\$240,000
Battery Storage System	\$450,000
Solar and Battery Design	\$30,000
Total First Cost	\$720,000
Possible Incentives**	\$500,000
Net First Cost	\$220,000

*The cost for the solar carport PV system here is the difference between this option and the ground mount system shown in the Tier 1 budget (total cost for the option is \$480,000).

**This incentive is the OEIGP 2020 maximum incentive based on the incurred cost of both the battery and solar PV systems. Only one incentive may be applied for in the 2020 program, see tier 1 strategies for other OEIGP 2020 options. Future battery systems may be able to take advantage of the OEIGP in future years.



HGA

7475 Hubbard Avenue, Suite 201
Middleton, WI 53562

608.554.5333
HGA.COM



72^M

72-CELL MONOCRYSTALLINE MODULE

385 Wp

MAX POWER OUTPUT

20.01%

MAX EFFICIENCY

10 YEAR

PRODUCT WARRANTY

25 YEAR

LINEAR PERFORMANCE GUARANTEE

HELIONE IS A PREMIER SOLAR MODULE MANUFACTURER, SERVICING THE GROWING SOLAR ENERGY MARKETS OF NORTH AMERICA.

COMBINING PROVEN EUROPEAN TECHNOLOGY WITH NORTH AMERICAN INGENUITY ALLOWS HELIONE TO MAKE A REAL COMMITMENT IN PROVIDING SMARTER ENERGY CHOICES FOR THE FUTURE.

HELIONE
www.helione.com



GUARANTEED POSITIVE POWER SORTING:
[-0 : +4.99 WP]



AVAILABLE IN 1000V OR 1500V SYSTEM VOLTAGE RATING



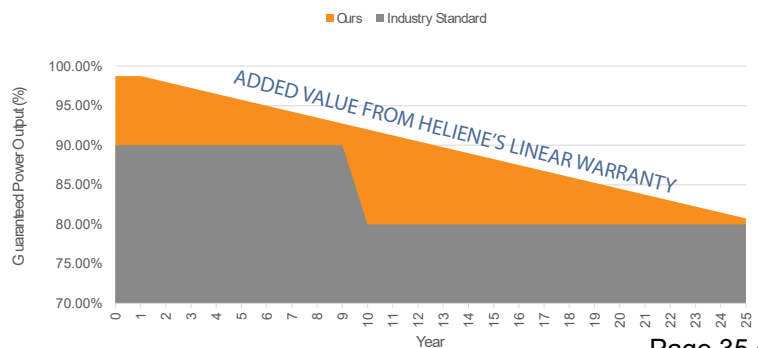
QUALITY MANAGEMENT SYSTEM FOLLOWING INTERNATIONAL STANDARD: ISO9001



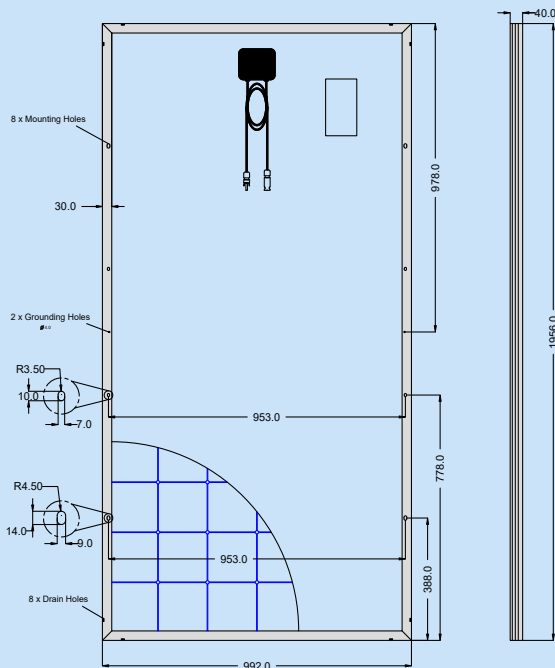
H-BLACK INTEGRATION AVAILABLE (ALL-BLACK MODULE)

LINEAR PERFORMANCE GUARANTEE

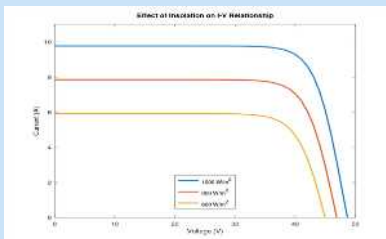
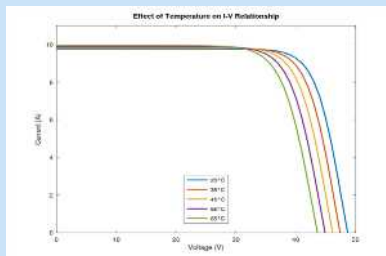
10 YEAR WORKMANSHIP WARRANTY • 25 YEAR LINEAR PERFORMANCE GUARANTEE



DIMENSIONS FOR HELIENE 72M SERIES MODULES



I-V CURVE FOR HELIENE 72M SERIES



CERTIFICATIONS



ELECTRICAL DATA (STC)

Peak Rated Power	P _{mpp} (W)	385	380	375	370	365
Maximum Power Voltage	V _{mpp} (V)	41.76	41.20	40.67	40.23	39.90
Maximum Power Current	I _{mpp} (A)	9.24	9.23	9.22	9.21	9.20
Open Circuit Voltage	V _{oc} (V)	49.70	49.55	48.96	48.66	48.50
Short Circuit Current	I _{sc} (A)	10.06	9.98	9.90	9.77	9.75
Module Efficiency *	Eff (%)	20.01	19.65	19.34	19.09	18.82
Maximum Series Fuse Rating	MF (A)	20	20	20	20	20
Power Output Tolerance		[- 0 , + 4.99] Wp				

STC - Standard Test Conditions: Irradiation 1000 W/m² - Air mass AM 1.5 - Cell temperature 25 °C

* Calculated using maximum power based on full positive output tolerance [-0 , +4.99] Wp

MECHANICAL DATA

Dimensions (L x W x D)	1956 x 992 x 40 mm (77 x 39 x 1.6 inch)
Weight	22 kg (48.5 lbs)
Output Cables	1.2 m (47.2 inch) symmetrical cables with MC4 type connectors
Junction Box	IP-67 rated with 3 bypass diodes
Frame	Double webbed 15 micron anodized aluminum alloy
Front Glass	Low-iron content, high-transmission PV solar glass
Solar Cells	72 Monocrystalline cells (156.75 x 156.75 mm)

CERTIFICATIONS

UL Certification	ULC/ORD-C1703-1, UL1703 UL61215 & UL61730
IEC Certification	Optional

Heliene modules are certified under the California Energy Commission (CEC) Listing Report

TEMPERATURE RATINGS

Nominal Operating Cell Temperature (NOCT)	+45°C (±2°C)
Temperature Coefficient of P _{max}	-0.39%/°C
Temperature Coefficient of V _{oc}	-0.31%/°C
Temperature Coefficient of I _{sc}	0.06%/°C

MAXIMUM RATINGS

Operational Temperature	-40°C - +85°C
Max System Voltage	1000V (*1500V) *Optional

WARRANTY

10 Year Manufacturer's Workmanship Warranty
25 Year Linear Power Guarantee
(Refer to product warranty page for details)

PACKAGING CONFIGURATION

Modules per box:	26 pieces
Modules per 53' trailer:	780 pieces



McFarland Public Safety Building

McFarland, WI
Bray Project No. 3488



Project Budget Option Tracker

	Phase I Estimate	Phase II Base Project	Phase II Base Project with Alternates	Phase II Geothermal Project	Phase II NZE Project
	9/10/2020	1/19/2021	1/19/2021	1/19/2021	1/19/2021
Building Square Footage	57657	57367	57367	57367	57367
Construction Budget Items	\$13,041,500.00	\$12,967,215.00	\$12,967,215.00	\$13,254,015.00	\$14,235,615.00
Site Improvements	\$1,383,800.00	\$1,442,100.00	\$1,442,100.00	\$1,442,100.00	\$1,442,100.00
Architectural General Construction	\$7,424,700.00	\$6,938,200.00	\$6,938,200.00	\$6,938,200.00	\$6,938,200.00
Architectural Fixed Equipment	\$74,900.00	\$140,900.00	\$140,900.00	\$140,900.00	\$140,900.00
Architectural Specialty Equipment	\$106,000.00	\$133,000.00	\$133,000.00	\$133,000.00	\$133,000.00
Electrical	\$1,841,600.00	\$1,834,100.00	\$1,834,100.00	\$1,834,100.00	\$2,774,100.00
Plumbing	\$440,400.00	\$648,140.00	\$648,140.00	\$648,140.00	\$648,140.00
Fire Protection	\$144,100.00	\$253,575.00	\$253,575.00	\$253,575.00	\$253,575.00
Mechanical HVAC	\$1,626,000.00	\$1,577,200.00	\$1,577,200.00	\$1,864,000.00	\$1,905,600.00
General Construction Items	\$1,662,838.75	\$1,653,367.39	\$1,653,367.39	\$1,689,896.39	\$1,814,994.39
General Conditions	\$749,933.75	\$745,662.34	\$745,662.34	\$762,115.34	\$818,501.34
Contractor's Fees	\$391,245.00	\$389,016.45	\$389,016.45	\$397,620.45	\$427,068.45
Estimating Contingency (4%)	\$521,660.00	\$518,688.60	\$518,688.60	\$530,160.60	\$569,424.60
Construction Cost Estimate	\$14,704,338.75	\$14,620,582.39	\$14,620,582.39	\$14,943,911.39	\$16,050,609.39
Construction Alternates	\$0.00	\$0.00	\$1,224,740.38	\$1,224,740.38	\$1,174,820.38
In-Floor Heat: Police Garage			\$49,920.00	\$49,920.00	N/A
Epoxy Floor: Police Garage (Sealed Base Bid)			\$94,905.00	\$94,905.00	\$94,905.00
Terrazzo Floor: Lobby (Polish Concrete Base Bid)			\$35,880.00	\$35,880.00	\$35,880.00
Future Second Floor at Police Department			\$1,044,035.38	\$1,044,035.38	\$1,044,035.38
Soft Costs	\$2,269,032.66	\$2,285,774.24	\$2,285,774.24	\$2,324,324.17	\$2,526,224.64
Construction Contingency (5%)	\$735,200.00	\$731,000.00	\$731,000.00	\$747,200.00	\$802,500.00
Furniture, Fixtures, Equipment	\$449,767.58	\$447,885.50	\$447,885.50	\$447,885.50	\$447,885.50
Services & Fees	\$1,084,065.08	\$1,106,888.74	\$1,106,888.74	\$1,129,238.67	\$1,275,839.14
Total Project Costs	\$16,973,371.41	\$16,906,356.63	\$18,131,097.01	\$18,492,975.94	\$19,751,654.41

Notes:

Construction Alternate Pricing is inclusive of General Conditions, Contractor's Fees, and Contingencies

Potential Energy Incentives: \$370,000.00 Based on information provided in the NZE Feasibility Study dated 2021-01-08

**VILLAGE OF
McFarland
SUMMARY SHEET**

MEETING DATE: Monday, January 25, 2021

SECTION: Business

DEPARTMENT: Administration

CONTACT: Matt Schuenke, Village Administrator

AGENDA ITEM: Discussion and action to set schedule for public information meeting on Phase 2 Design Development for Public Safety Center.

PREVIOUS ACTION:

None.

ISSUE SUMMARY:

We would like to share all of the information in the previous agenda item with the public as part of a special Public Information Meeting. This would be held on Thursday, February 18th at 7:00 pm and done in a similar virtual format as what was completed last September. Information to be provided will include site plan, elevations, floor plan, Department feedback, sustainability recommendations, timeline, and cost implications. We will also hold a Question and Answer session allowing members of the public to participate in the meeting to get additional information not already covered. The meeting will be advertised in the newspaper, social media, website, e-newsletter, and direct mailing to those in close proximity to the project. The meeting will also be recorded for those who can not attend the live portion and contact information will be provided to those that wish to comment outside of the meeting.

FINANCIAL/BUDGET IMPACT:

There is no material cost to host the public input session through an online forum.

VILLAGE PLAN REFERENCE:

None.

ORDINANCE REFERENCE:

None.

BOARD, COMMISSION OR COMMITTEE RECOMMENDATION:

Recommend the Committee of the Whole approve the schedule for public input in accordance with the enclosed format.

ATTACHMENTS:

None