UW-MILWAUKEE PANTHER ARENA 20-YEAR CAPITAL EXPENDITURE PLAN

Prepared for Wisconsin Center District

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PC SPORTS
A DIVISION OF PROJECT CONTROL
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Photo Courtesy of UWM Panther Arena

SECTION 01 EXECUTIVE SUMMARY AND COMPILED CAPITAL EXPENDITURE BUDGET

Executive Summary

The UWM Panther Arena 20-Year Capital Expenditure Plan presents a comprehensive, forward-looking roadmap to ensure the Arena's continued operational excellence, safety, compliance, and competitiveness. Developed by PC Sports in partnership with the Wisconsin Center District (WCD), through facility assessment, stakeholder input, industry benchmarking, and cost forecasting, the plan's strategic objective is to ensure the Arena remains safe, operationally sound, and competitive in an evolving technological and regulatory landscape. Spanning six primary focus areas, Structural/Architectural, Mechanical/Electrical/Plumbing/Fire (MEPF), ADA & Code Compliance, Audio/Video/Event Production (A/V Systems), Information Technology (IT) Systems, and Security Systems, the plan identifies major deficiencies, outlines targeted upgrade strategies, and delivers clear financial projections.

Purpose and Scope

The plan is designed to address critical lifecycle renewals, system upgrades, and facility enhancements, ensuring continued safety, accessibility, and operational excellence. It excludes routine maintenance and day-to-day operational costs, focusing exclusively on substantial capital investments that will shape the Arena's future over the next two decades.

Major Findings

Key deficiencies identified include extensive roof replacements, seating upgrades, and modernization of mechanical and electrical systems, many of which have surpassed their expected service lives and present risks of failure, inefficiency, and non-compliance. Aging roof segments prone to water infiltration, outdated MEPF equipment and insufficient fire protection, limited ADA accessibility, obsolete audio/visual hardware, bandwidth constraints in IT infrastructure, and legacy security cameras and cabling that restrict effective surveillance and analytics. Addressing these challenges through phased upgrades and targeted investments is essential to preserve operational reliability, safety, regulatory compliance, and the Arena's long-term competitiveness.

While the Arena has benefited from ongoing upgrades, maintenance, and a dedicated staff who have worked diligently to keep it in good operating condition, its age presents significant challenges for both general upkeep and performance. As an older facility, it requires considerable attention to remain functional and to adapt to modern standards and expectations. The venue's compact size and layout make it difficult to alleviate congestion, and the lack of ADA compliant amenities creates substantial operational challenges. The Arena does not offer the comforts or amenities found in newer venues, such as elevated hospitality spaces, which limits its ability to deliver a first class guest experience and compete for major events.

It is important to note that this capital plan will bring the Arena up to current standards in terms of fan experience, comfort, and technology. However, these investments are intended to maintain the status quo and do not generate new revenue streams. To truly increase revenue opportunities, a much larger investment and strategic planning would be required, such as expanding the facility, implementing conceptual improvements, and completely overhauling spaces to create hospitality areas and other enhancements.

Capital Expenditure Plans

Capital Expenditure Plans have been formulated through discussions with industry professionals and by leveraging recent project experience, as well as obtaining actual estimates from contractors and equipment suppliers. While these figures provide high-level assessments suitable for long-term capital planning, it is inherently challenging to account comprehensively for all related soft costs, such as architectural plans, permit fees, engineering reviews, and project management fees. This is primarily with any major renovations, including MEFP and ADA requirements, or significant structural enhancements. Developing a capital budget for ADA compliance presents additional complexities due to the likelihood of unforeseen issues and significant coordination efforts required to keep pace with evolving codes. Nevertheless, the costs presented here have been carefully considered and serve as a strong foundation for further discussion of these anticipated upgrades.

Year-by-Year Capital Expenditure Budget

The following table aggregates all major planned capital expenditures by year, across all facility systems and focus areas. Each figure represents the combined total of primary investments scheduled for that year, ensuring clarity for budget planning and oversight.

Year	Major Expenditures (Summary)	Estimated Annual Expenditure
2026	Multiple roof replacements; building repairs; major HVAC and plumbing; network and camera system upgrades	$8,605,303
2027	Roof replacements; accessibility and door upgrades; major HVAC motor and control center upgrades; exterior sign and WiFi replacements, production equipment upgrade, cabling upgrades, Zamboni purchase	$4,727,258
2028	Roof and HVAC upgrades; lighting and egress improvements; accessibility modernization, surveillance systems hardware upgrades, walk through metal detector purchase, A/V production recording system upgrade	$5,225,540
2029	HVAC, transformer, and lighting upgrades; accessibility and modernization; video board and cabling upgrades	$6,179,300
2030	Electrical systems, HVAC replacements; ADA restroom and seating renovations; UPS and WiFi improvements; system updates	$1,970,690
2031	Roof, HVAC, and ice floor and refrigeration system upgrades; hockey rink systems, accessibility and seating improvements; A/V control room and multiple security system and IT updates	$9,131,123
2032	HVAC and fire system upgrades; restroom improvements; locker room upgrades, general finish upgrades, signage, seating, stage, cameras, active cooling in IT Closets, wireless microphone system upgrade, and access control improvements	$8,295,866
2033	HVAC, accessibility, restroom, and drinking fountain upgrades; compliance reviews; network and UPS replacements; AI security integration, ice floor cover, window upgrades, IPTV update	$1,446,550
2034	HVAC replacements; compliance improvements; fiber maintenance	$247,550
2035	Plumbing, WiFi, and camera upgrades; surveillance components updates, basketball court and goals	$1,110,670
2036	Seating replacement; BAS technology and wayfinding signage enhancements; IPTV and analytics server replacements; A/V system updates	$3,941,100
2037	Roof replacement; BAS technology and digital signage upgrades; UPS battery replacement; new chiller VSD	$1,076,000
2038	BAS Technology and surveillance infrastructure upgrades; compliance reviews; UPS replacements; new chiller VSD	$1,514,000
2039	Surveillance analytics and control room technology upgrades	$233,000
2040	ADA compliance reviews; network switch replacements	$257,000
2041	Video distribution and WiFi upgrades	$428,000
2042	A/V equipment and infrastructure refresh	$75,000
2043	UPS replacements	$91,000
2044	Fiber infrastructure replacement; A/V system evaluation	$278,000
2026-2044 Total Expenditure		**$54,832,950**

SECTION 02

Introduction

SECTION 02 INTRODUCTION

The Wisconsin Center District (WCD) engaged PC Sports to develop a comprehensive 20-year capital expenditure plan for the UWM Panther Arena (Arena). The primary goals of this plan are to establish a clear, actionable roadmap that will ensure the continued operation, safety, and functionality of the facility, and to determine what capital improvements the Arena requires to get it on the level of other mid-level Division 1 NCAA basketball facilities in the United States. In an era when technology and fan experience expectations are rapidly evolving, the plan also addresses the critical need for the Arena to remain relevant and competitive for years to come.

To create a robust and realistic capital plan, a multi-faceted approach was employed. This included conducting interviews with current WCD facility staff, reviewing previously created capital budgets, analyzing accumulated cost estimates, and examining current budget forecasts. In addition, new estimates were gathered from contractors, and industry standards and insights from previous projects were incorporated, along with input from industry colleagues. Although the projected costs outlined in this report are budgetary estimates, the process employed ensures that the recommendations are supported by both historical data and forward-looking industry trends.

The resulting report is organized into six primary focus areas:

- Structural, Architectural, and General Building Conditions
- Mechanical, Electrical, Plumbing, and Fire (MEPF) Systems
- ADA and Code Compliance
- Audio, Video, and Event Production (A/V)
- Information Technology (IT) Systems
- Security Systems

This plan focuses exclusively on major capital expenditures and lifecycle renewals for the UWM Panther Arena. It does not include costs associated with day-to-day operations, routine maintenance, or ongoing service agreements, as these items will fluctuate significantly over the 20-year period due to changes in personnel, unit pricing, and service requirements. By focusing the scope of this forecast to substantial investments, such as structural replacements, system upgrades, and major facility enhancements, the plan offers a clear and concise projection, avoiding unnecessary complexity from additional data.

By following this strategic roadmap, the Arena will be well-positioned to maintain its operational integrity, enhance the experience for all users, and adapt to technological advancements and evolving industry standards over the next two decades.

Disclaimer

The cost estimates in this plan are budgetary projections developed using current data and industry expertise. While every effort has been made to provide accurate figures, actual costs over the next 20 years may vary significantly due to a wide range of unpredictable factors. Such as economic changes, inflation, technological advancements, market fluctuations, and regulatory updates. These estimates should be considered as a flexible planning framework to guide decision-making, not as guaranteed or fixed amounts.

It is also important to recognize that the majority of these projects are highly time-intensive and disruptive. Implementation will require significant periods during which the venue cannot host events, resulting in unforeseen losses of event programming and associated revenue. Consequently, the facility will experience extended closures and periods of limited operation while repairs and upgrades are underway.

SECTION 03

Structural, Architectural, and General Building Conditions

SECTION 03 STRUCTURAL, ARCHITECTURAL, AND GENERAL BUILDING CONDITIONS

Executive Summary

This comprehensive 20-year capital expenditure plan for the Arena provides a structured roadmap to address architectural, structural, and general condition needs. The plan utilizes current facility conditions, identifies key deficiencies, and outlines upgrade and lifecycle management strategies. A detailed year-by-year capital expenditure schedule supports informed decision-making, long-term asset stewardship, and operational continuity. The overarching objectives are to maintain building integrity, enhance user experience, and ensure compliance with safety and accessibility standards.

Current Status Overview

The Panther Arena is a versatile facility encompassing more than 267,000 square feet of floor space across lower, main, upper, and multiple seating levels. Recent improvements include seating renovations, ongoing roof replacements, elevator modernization, and architectural enhancements. The segmented roof system consists of sections with varying ages and conditions, utilizing both EPDM Ballasted and TPO membranes. While the structural components such as doors, floors, and masonry are original and robustly constructed for longevity, their age demands significant updates. Although these architectural features have been well maintained, continued investment is essential to prevent the facility from becoming outdated and to ensure it aligns with current industry standards and guest expectations.

Key Deficiencies and Challenges

Aging Roof Sections

Multiple roof segments of the Arena have been assessed as being in “Poor” or “Fair” condition. These sections, which vary in age and membrane type, present significant risk for water infiltration if not addressed promptly. Immediate replacement of the most compromised areas is needed to prevent structural damage, protect building contents, and maintain overall facility integrity. Ongoing roof surveys and condition monitoring are crucial for prioritizing replacement schedules and allocating capital resources efficiently.

Seating Lifecycle

The Arena’s seating, comprehensively renovated and replaced in 2016, is projected to reach the end of its serviceable life by 2036. Adhering to industry standards for comfort, safety, and accessibility, a full seating replacement will be required to ensure patron satisfaction and regulatory compliance. Planning for this expenditure well in advance allows for budgetary preparation and minimizes operational disruptions during the upgrade process.

Structural Wear

Key structural elements, including concrete, masonry, expansion joints, doors, flooring, and stairways, are exhibiting noticeable signs of deterioration due to age and constant use. These components are critical for both the safety of occupants and the aesthetic appeal of the facility. Regular inspections and periodic repairs must be scheduled to address issues such as cracked masonry, worn flooring, and malfunctioning doors, thereby mitigating safety risks and sustaining the Arena’s appearance.

General Maintenance

Several interior features, such as windows, wall finishes, carpeting, and terrazzo flooring, are nearing the end of their expected lifespans. Proactive scheduling of upgrades and replacements for these items will prevent unexpected failures, reduce long-term maintenance costs, and contribute to a consistently high-quality environment for users.

Hockey and Basketball Venue Components

The required equipment and components for delivering basketball and hockey events at the Panther Arena will reach end of life over the next 20 years and will need to be replaced. The Zamboni ice resurfacing machines presently in use were originally acquired

from the Bradley Center and are now well past their recommended operational period. Also, other components dasher boards, nets, the modular basketball court, and basketball goals will also reach end of life in the next decade and will need to be replaced in sequence to meet modern standards for performance and safety.

UWM Panther, Admirals , Wave Team Areas

The UWM Panther, Admirals and Wave team locker rooms are still in good shape both functionally and visually, thanks to updates made in 2017. However, as these areas approach a ten-year mark, they will likely become outdated within the next decade and will need to be renovated. It's also important to consider that the NCAA, AHL and MASL may update their requirements, since each organization sets its own standards for teams and venues. If new league facility standards are introduced, the facility must comply and cover any related expenses.

Upgrade Strategy and Lifecycle Management

The general conditions capital upgrade strategy for the Arena is built on a proactive, structured approach that targets key facility systems based on their condition, criticality, and expected service life. The plan encompasses scheduled replacements and modernizations to maximize asset longevity and minimize disruptions.

Roof Replacement

Roof sections are prioritized for replacement according to their condition ratings and projected remaining lifespan. Annual roof surveys are conducted to determine the urgency of interventions, ensuring that sections rated as "Poor" or at high risk of water infiltration are addressed first. This approach protects the building's structural integrity and contents from potential damage.

Seating Replacement

Arena seating, fully renovated in 2016, should be slated for replacement in 2036, to align with industry standards. Structural Repairs and Upgrades: Critical components such as concrete, masonry, doors, flooring, expansion joints and stairways are managed through phased inspections, repairs, and upgrades. Regular checks identify issues like cracks, wear, or malfunction, allowing timely interventions that sustain both safety and the visual appeal of the Arena.

Interior Feature Maintenance

Windows, wall finishes, carpeting, and terrazzo flooring should be regularly reviewed and replaced as they near the end of their lifespans. Proactive upgrades prevent unexpected failures, lower long-term maintenance costs, and help maintain a high-quality environment for users.

Collectively, these strategies provide a clear framework for maintaining and improving the Arena's infrastructure, prioritizing safety, user experience, and regulatory compliance while optimizing capital investment over the next two decades.

20-Year Capital Expenditure Plan

Structural, Architectural, and General Building Conditions

Year	Major Expenditure	Estimated Cost	Justification	Anticipated Improvement
2026	Roof replacement (25NW, 25NE, 25SW, 25SE)	$468,000	Sections rated "Poor" with imminent risk of leaks and degradation	Restored roof integrity, reduced risk of water infiltration
2026	Roof replacement (18, 19, 23, 24)	$690,000	Sections with only 2 years' service life remaining	Prevention of water damage, improved drainage
2026	Brick & Masonry Tuckpointing repairs	$36,055	Structural wear, preservation of exterior	Extended masonry, concrete lifespan, improved aesthetics
2026	Exterior concrete walkway repair	$625,000	Repairs	Smooth consistent surface, improved aesthetics
2026	Arena interior expansion joint repairs	$661,000	Repairs	Smooth consistent surface, improved aesthetics
2027	Roof Replacement (20 & 22)	$540,000	Sections approaching end of service life	Maintained weatherproofing, facility protection
2027	Vertical Platform Lift Installation	$31,775	Accessibility upgrade to meet ADA requirements	Enhanced patron access, compliance with codes
2027	Rolling steel door replacements	$75,000	Older doors require replacement	Improved functionality, consistency
2027	Two (2) New Zamboni's	$450,000	Units are passed life span	Functionality, reduce risk of major repairs and downtime
2028	Roof Replacement (21)	$1,820,000	Largest section, "Fair" condition, replacement req.	Major roof system renewal, facility longevity
2031	Roof Replacement (C1–C6), Major repairs to areas 16, 26, 27,28, 29, LD)	$445,000	Scheduled replacement, "Good" condition but aging	Sustained roof performance
2031	Exterior signage updates	$325,000	Refresh	Rebranding/updating exterior signage
2031	Hockey Dasher boards, replacement glass, new nets	$1,119,000	Upgrade due to significant wear and tear, improved safety and functionality	Coincide with ice floor install
2032	Repair and upgrades (floors, doors, painting, terrazzo, finishes)	$410,516	Routine upkeep and compliance	Continuous facility reliability and safety
2032	Locker Room upgrades , team spaces improvements	$585,000	Refresh, improvements	Refresh , update finsishes
2032	Event Stage replacement/ upgrade	$90,000	Upgrade performance stage	Consistency, functionality
2033	Replace portable event ice coverage	$225,000	Replace aging cover	Improved functionality, consistent surface
2033	Window replacement & upgrades	$125,000	Windows over 40 years old, energy inefficiency	Improved energy efficiency, comfort, and aesthetics
2035	Basketball Court replacement, new basketball goals	$425,000	Replace older court	Clean, consistent playing surface
2036	Seating replacement (8,951 seats)	$3,132,850	End of 20-year lifecycle, evolving standards	Enhanced comfort, safety, and accessibility
2037	Roof replacement (17 & 17A)	$81,000	Planned lifecycle replacement	Maintained roof integrity
2026-2044 Structural, Architectural and General Building Conditions Subtotal		**$12,360,196**		

Justification and Impact

Investments in the roof, seating, and architectural components are essential for preserving the Arena's long-term functionality, safety, and appeal. Roof replacements are vital to prevent water infiltration, which can lead to costly damage, structural deterioration, and safety hazards for occupants. By proactively addressing roofing issues, the facility ensures that events can proceed without interruption and avoids emergency repair costs and liability risks.

Quality seating is also important, as it directly affects patron experience. Well-maintained and functional seating not only supports comfort and convenience for all guests, including those with disabilities, but also enables the Arena to host a wider variety of events, from sports competitions to community gatherings.

Structural repairs covering floors, doors, painting, terrazzo, and windows are crucial for maintaining the Arena's aesthetic appeal and ensuring continuous reliability. Routine upkeep helps prevent small issues from escalating into major failures, which can be significantly more expensive and disruptive to address. This approach reduces long-term costs and supports uninterrupted operations.

Accessibility enhancements, like elevator and lift modernization, are key to promoting inclusivity and meeting legal requirements. These improvements ensure that all visitors, regardless of mobility needs, can safely and comfortably access the Arena's amenities. Such upgrades strengthen the facility's reputation as a welcoming and compliant venue.

Collectively, these capital investments safeguard the Arena's reputation, operational viability, and value for stakeholders. They help maintain regulatory compliance, enhance user satisfaction, and support the facility's ability to adapt to evolving demands, all while minimizing the risk of costly emergencies and operational disruptions.

Long-Term Projections

The Arena's long-term capital planning is structured to ensure the facility remains safe, functional, and attractive for decades to come. Significant repairs to the roof system is critical to prevent water intrusion, structural deterioration, and interruptions to scheduled events. In addition, a major seating replacement is anticipated in 2036.

Beyond these major projects, additional budget allocations are required for ongoing structural repairs, accessibility upgrades (including elevator and lift modernization), and annual maintenance of facility features like floors, doors, painting, terrazzo, and windows. These recurring investments are essential for preserving the Arena's aesthetic appeal, operational reliability, and overall value to stakeholders.

Effective budget forecasting should account for factors such as inflation, market volatility, and the possibility of emergency repairs. To prepare for significant replacement cycles, it is recommended to allocate reserve funds annually. This proactive approach ensures financial readiness and helps avoid sudden, disruptive costs.

To further strengthen financial and operational resilience, periodic review and adjustment of the capital plan should be conducted. This allows the facility to respond effectively to unforeseen conditions, changes in regulatory requirements, or shifts in how the Arena is used by the community. In summary, a forward-looking and adaptable approach to capital expenditures and contingency planning will safeguard the Arena's long-term functionality, safety, and appeal, ensuring it continues to serve the community reliably and inclusively.

SECTION 04

Mechanical, Electrical, Plumbing, and Fire Systems (MEPF)

SECTION 04 MECHANICAL, ELECTRICAL, PLUMBING, AND FIRE SYSTEMS (MEPF)

Executive Summary

This report presents a comprehensive 20-year capital expenditure plan for the Arena's Mechanical, Electrical, Plumbing, and Fire (MEPF) systems. The plan's primary objective is to ensure reliable, safe, and efficient facility operations through strategic investments, phased equipment upgrades, and proactive lifecycle management. The building continues to use units that are more than 70 years old, which have long exceeded their intended lifespan. As a result, the only viable solution is replacement. By addressing deficiencies in aging infrastructure and integrating modern technologies, this plan aims to extend the Arena's operational viability, optimize energy use, and enhance occupant safety and comfort for the next two decades.

Current System Status

The Arena's mechanical systems are comprised of legacy components, many of which date back to the original 1950 construction and subsequent 1968 retrofits. The Arena relies primarily on two Trane 500-ton chillers installed in 1998 and a Marley cooling tower from 1968, which is asbestos-lined and presents both operational and safety concerns. Supporting these systems are chilled water, condenser water, and hot water pumps, also installed in 1968, and a series of air handling units (AHUs) that vary in size and capacity. The primary AHUs for the main bowl are rated at 33,000 and 22,000 cubic feet per minute (cfm), and all were installed during the 1968 upgrade. Notably, the facility lacks widespread integration of Variable Frequency Drives (VFDs), which limits energy efficiency and operational flexibility. Space constraints within mechanical rooms further complicate maintenance and replacement options for these large pieces of equipment.

On the electrical side, the Arena receives power through two WE-Energy feeds. While the Eaton Cutler Hammer switchgear installed in 1998 remains functional, the original Sorgel medium-voltage 13.2KVA transformers are now obsolete, with replacement parts unavailable. Additionally, the motor control centers located in the mechanical rooms have surpassed their intended lifespan, increasing the risk of failure and downtime. Lighting throughout the facility is managed by separate systems, with Musco handling the sport lighting and Cutler and Hammer overseeing concourse and restroom lighting, making unified control and energy management challenging.

The plumbing infrastructure consists of domestic water feeds delivered to two main locations, primarily through cast iron piping. There are ongoing concerns regarding the condition of piping serving restrooms, concession stands, and drinking fountains, particularly with exposed pipes and unknown underground conditions. Staff have reported recurring issues with hot water delivery at concession stands, raising questions about the systems' ability to meet sanitary compliance standards.

Fire protection systems in the Arena are notably insufficient. Currently, there is no dedicated wet fire protection system, fire pump, control panel, or notification devices in place. Efforts are underway to install a new public address system to improve emergency communication, but comprehensive fire safety measures remain absent, exposing the facility to significant risks.

Building automation is limited, with the existing Building Automation System (BAS) only capable of basic scheduling and setpoint management. Calibration and integration with other facility systems are incomplete, which restricts operational oversight and efficiency. The improvements are at an early stage of implementation, primarily focused on asset input and setting up maintenance procedures, indicating that a fully integrated and proactive approach to facility management is still in development.

Key Deficiencies and Challenges

Obsolete Equipment

The Arena's mechanical systems including chillers, cooling tower, pumps, and air handling units (AHUs) have exceeded their expected service lives, with some components dating back to 1968. Similarly, the facility's transformers and motor control centers are at or beyond their intended lifespan. This creates a significant risk of equipment failure and extended periods of downtime, especially since replacement parts for these aging systems are no longer readily available.

Inefficiency and High Energy Use

The absence of Variable Frequency Drives (VFDs) and reliance on outdated equipment significantly reduces the energy efficiency of the Arena's operations. As a result, the facility experiences higher utility costs and limited flexibility in managing energy consumption.

Safety Concerns

The advanced age of the Arena presents several immediate safety and compliance concerns.

- **ASBESTOS HAZARDS:** The cooling tower and pipe insulation throughout the facility contain asbestos. This creates significant health risks and regulatory liabilities. Abatement and remediation projects are complex and costly, and the presence of asbestos complicates routine maintenance and emergency repairs. For example, in the event of a water leak, maintenance staff are unable to promptly access and repair affected areas, increasing the risk of extensive damage and delayed response times. Removing and replacing all asbestos insulation is critical to improve safety, facilitate timely repairs, and eliminate underlying health risks.
- **FIRE PROTECTION DEFICIENCIES:** The Arena currently lacks a comprehensive fire protection system, increasing vulnerability in emergency situations and putting the facility at risk of non-compliance with current safety regulations.
- **OUTDATED ELECTRICAL COMPONENTS:** Reliance on aging electrical infrastructure further elevates the risk of system failure and potential hazards.
- **AMMONIA ICE PLANT:** Still in satisfactory operating condition with all safeguards in place for operations and maintenance, however ammonia is toxic and flammable. With the path forward for the Arena it is recommended that along with the ice floor replacement the ice plant be replaced with a safer less toxic glycol cooling system.

Maintenance Gaps

The aging mechanical and electrical systems require frequent repairs, which puts additional strain on staff resources. This increases the likelihood of unplanned outages and makes it difficult to maintain consistent, reliable facility operations.

Space Constraints and Installation Complexity

The restricted size of the mechanical rooms significantly limits options for replacing and upgrading equipment, especially larger air handling units (AHUs). These spatial limitations increase the complexity of installation and maintenance and will require specialized solutions or substantial modifications to accommodate new systems. Efficient removal of decommissioned equipment presents further challenges; for example, air handlers may need to be cut down to fit through standard doorways. This raises additional questions regarding the installation of new AHUs such as whether creating an access point in the roof for equipment delivery during repairs would be feasible, and if the existing piping can support new installations considering its age and wear.

Ductwork modifications will also likely be required after installation. An alternative solution could be creating rooftop openings, removing piping and ductwork, and using a crane to facilitate the removal of the old units and installing the new ones. Another approach could involve disassembling the old AHU's for removal via the mechanical room doors, followed by the implementation of customizable modular air handlers, which would demand extensive engineering, design work, and increased costs. Given the limited space, modular AHUs may need to be installed horizontally to address spatial constraints.

Replacements will require considerable time and are expected to impact operations, potentially resulting in revenue loss. There is also considerable uncertainty surrounding the replacement of the cooling tower, as several critical factors must be evaluated to ensure a successful outcome. First, the structural capacity of the existing roof must be assessed to determine

whether it can safely support the weight of a new cooling tower or if additional supports will be required. Relocating the cooling tower to street level should also be considered as a possible solution to address these structural limitations. Regardless of the chosen location, modifications to the existing piping and pump systems will be necessary to accommodate the new units, so careful planning is essential to ensure compatibility and proper function.

Plumbing Deterioration

The condition of the facility's piping is uncertain, with ongoing concerns about the reliability of hot water delivery in concession stands and other areas. These issues threaten the Arena's ability to maintain sanitary compliance and provide adequate services to patrons.

System Integration

The lighting and automation systems within the Arena are fragmented and lack proper integration. This limits operational oversight, complicates energy management, and makes it challenging to implement centralized control over facility systems.

Upgrade Strategy and Lifecycle Management

A comprehensive, phased, multi-year upgrade strategy is proposed to systematically tackle the Arena's critical deficiencies while minimizing disruption to daily operations. The strategy divides essential improvements into four distinct phases, each with clear objectives, timelines, and outcomes:

Immediate Actions

- **MECHANICAL AND ELECTRICAL INFRASTRUCTURE REPLACEMENT:** Replace outdated chillers, cooling tower, key pumps, major transformers, and motor control centers that have exceeded their service lives. This addresses immediate risks of equipment failure and helps ensure reliable facility operation.
- **BAS AND HVAC COMMISSIONING:** Commission and calibrate the Building Automation System (BAS) and Heating, Ventilation, and Air Conditioning (HVAC) systems. This step enables better oversight, scheduling, and setpoint management, resolving urgent operational issues and improving energy efficiency.
- **PLUMBING INSPECTION:** Conduct a thorough inspection of the facility's piping to assess the reliability of hot water delivery and sanitary compliance, especially in concession stands and high-traffic areas.

Short-Term Upgrades

- **AIR HANDLING UNIT (AHU) REPLACEMENTS:** Sequentially replace aging AHUs, prioritizing units most critical to indoor air quality and climate control.
- **LIGHTING SYSTEM INTEGRATION:** Upgrade and integrate fragmented lighting systems with the BAS to enable centralized control, improve energy management, and enhance operational oversight.
- **FIRE PROTECTION SYSTEM INSTALLATION:** Begin installing a dedicated wet fire protection system, including fire pumps, control panels, and notification devices, to address significant safety and compliance gaps.
- **VARIABLE FREQUENCY DRIVES (VFDS):** Implement VFDs for major mechanical components to increase operational flexibility, reduce energy consumption, and lower utility costs.
- **SYSTEM INTEGRATION:** Tie all major mechanical and electrical components into the BAS for unified monitoring and control.

Mid-Term Replacements

- **CONTINUED AHU AND PUMP UPGRADES:** Complete the phased replacement of remaining AHUs and pumps to further reduce maintenance needs and improve system reliability.
- **PLUMBING AND ICE FLOOR SYSTEMS:** Address outstanding plumbing issues and upgrade ice floor systems to maintain compliance and support Arena operations.
- **FIRE SYSTEM EXPANSION:** Install a fire protection system to cover all areas of the facility, ensuring comprehensive safety and regulatory compliance.

Long-Term Management

- **LIFECYCLE-BASED REPLACEMENTS:** Establish a schedule for replacing equipment and systems based on lifecycle projections, preventing unexpected failures and minimizing downtime.
- **PREVENTIVE MAINTENANCE:** Secure contracts with preferred vendors for regular preventive

maintenance of all major equipment. Schedule biannual or annual calibrations, inspections, and performance reviews to maintain optimal operation and extend the lifespan of assets.

- **SYSTEM RECALIBRATION AND TECHNOLOGY REFRESH:** Recalibrate systems as needed and plan for technology upgrades in line with evolving industry standards to ensure the Arena remains current, efficient, and safe.

Overall, this phased upgrade and lifecycle management plan provides a clear roadmap for restoring and maintaining the Arena's infrastructure. By prioritizing safety, operational reliability, and energy efficiency, the strategy ensures sustainable facility management and compliance with modern standards.

The budgetary pricing outlined in the table on the following page represents current estimates for equipment and labor and disposal, with forecasted projections including a 4% yearly increase to account for anticipated rises in labor rates and equipment costs. These figures provide a reliable baseline for planning future equipment replacement expenses. However, the estimates do not include costs associated with design and engineering, major modifications to piping, masonry, ductwork or temporary building removal efforts to allow the units to be dropped in to space, required to accommodate new equipment, or any costs associated with asbestos abatement. The Arena presents a huge challenge to replace these units. There is not a freight elevator to assist, and access to the areas is going to be a challenge.

The Arena MEPF pricing in the table is for like units, as component modular options will probably not work in this case as the units are very large and space constrained, the labor costs included are quite extensive in order to try and capture the time and technical skills to complete these jobs. Factored in is a month of work for each air handling unit, with a full crew of six to eight technical staff. The best plan of attack might be to work with the roof repair contractor and synchronize the mechanical equipment installation to coincide with the roof repairs, giving the WCD the ability to drop the units into place utilizing a crane.

20-Year Capital Expenditure Plan

Mechanical, Electrical, Plumbing, and Fire Systems (MEPF)

Year	Major Expenditure	Estimated Cost	Justification	Anticipated Improvement
2026	Replace Chillers (2), Cooling Tower, Primary/Condenser/ Hot Water/Glycol Pumps, BAS Commissioning, Plumbing Inspection	$5,163,348	Critical equipment at end-of-life; immediate operational and safety risks; foundational BAS calibration	Improved reliability, energy efficiency, and system baseline for further upgrades
2027	Replace Large/Small Motor Control Centers, Begin AHU 1–4 Replacement, Add VFDs	$2,768,483	Electrical safety, AHU efficiency, and phased modernization	Reduced downtime, lower energy use, enhanced control
2028	Replace AHU 18, Continue VFD Upgrades, Begin Lighting System Upgrade.	$818,000	Ongoing AHU and lighting modernization	Lower maintenance costs, enhanced lighting quality
2028	Replace shell and tube heat exchangers, walk-in cooler update	$376,940	Performance degradation	Improved performance heat exchangers for hot water system
2029	Replace AHU 5–7, Return Fans, Sorgel Transformer Replacement, Continue Lighting Upgrade	$2,073,800	Begin major AHU and electrical modernization	Improved air quality, initial reliability gains, safer power delivery
2030	Replace AHU 8–9, Sorgel Transformer Replacement, Continue Lighting Upgrade	$1,485,590	Continued AHU and electrical modernization	Operational safety, improved air quality, reliable power supply
2031	Replace AHU 10–12, AHU 19, Dehumidifiers, Ice Floor & Refrigeration System, Lighting System Completion	$6,529,023	Critical ice system and further AHU modernization, complete lighting integration	Enhanced event flexibility, safety, and comfort
2032	Replace AHU 13–15, Fire System Panel and Sprinkler Addition	$6,533,000	Fire protection compliance and AHU lifecycle replacement	Code compliance, occupant safety
2033	Replace AHU 16A	$137,550	Continued AHU lifecycle replacement	Maintained air quality and comfort
2034	Replace AHU 16B	$137,550	Continued AHU lifecycle replacement	Maintained air quality and comfort
2035	Plumbing Upgrades, VFD Refresh As Needed	$385,670	Finalize MEPF modernization cycle	System reliability, water conservation, energy savings
2036	Lifecycle Replacement Reserve, Periodic BAS and Technology Upgrades, Contingency Repairs	$150,000	Anticipated wear, obsolescence, and unforeseen needs	Long-term operational continuity and flexibility
2037	Lifecycle Replacement Reserve, Periodic BAS and Technology Upgrades, Contingency Repairs, new Chiller 1 VSD	$400,000	Anticipated wear, obsolescence, and unforeseen needs	Long-term operational continuity and flexibility
2038	Lifecycle Replacement Reserve, Periodic BAS and Technology Upgrades, Contingency Repairs, new Chiller 2 VSD	$495,000	Anticipated wear, obsolescence, and unforeseen needs	Long-term operational continuity and flexibility
2026-2044 MEPF Subtotal		**$27,453,954**		

Justification and Impact Analysis

Operational Reliability

Proactively replacing outdated or high-risk MEPF systems will significantly enhance the Arena's operational reliability. By prioritizing replacement of equipment prone to failure, the facility will have fewer unexpected breakdowns and service interruptions. This approach will help minimize emergency repair costs, ensuring operations remain stable and predictable for staff, tenants, and event organizers. Such reliability is crucial for maintaining the Arena's reputation and ability to host a variety of events without disruption.

Energy and Cost Efficiency

The installation of modern chillers, variable frequency drive (VFD) pumps, air handling units (AHUs) with VFDs, and integrated energy-efficient lighting systems will lead to substantial reductions in energy consumption. These upgrades are expected to lower utility bills significantly and decrease the facility's overall carbon footprint. Enhanced control capabilities, such as those provided by an upgraded BAS, will further optimize energy use by allowing precise adjustments to match occupancy and operational needs. As a result, the Arena will achieve both immediate and long-term cost savings, freeing up resources for other operational priorities.

Safety and Compliance

Installing fire protection systems, conducting asbestos abatement, and modernizing electrical infrastructure will bring the Arena into full compliance with current life safety, environmental, and electrical codes. These improvements not only protect the health and safety of building occupants but also help mitigate liability and reduce insurance risks. Staying ahead of regulatory changes ensures that the facility remains a safe and legally compliant environment for all users, while also demonstrating the Arena's commitment to best practices in facility management.

Occupant Comfort and Event Flexibility

Enhancements to HVAC and ice-making systems will significantly improve indoor air quality, temperature regulation, and humidity control. These changes will create a more comfortable environment for spectators, athletes, and event staff, regardless of the season or type of event being hosted. The flexibility of upgraded systems will allow the Arena to accommodate a broader range of programming, from sporting events to concerts and community gatherings, thereby increasing its appeal to tenants and event organizers and supporting diverse revenue streams.

Asset Value Preservation

Implementing a proactive lifecycle management approach ensures that all major systems are maintained, upgraded, or replaced before reaching the end of their useful lives. This strategy maximizes the longevity and performance of capital investments, preserves the structural and functional integrity of the Arena, and maintains its competitiveness in the regional event market. By safeguarding the Arena's long-term value, stakeholders can be confident that the facility will continue serving the community effectively and efficiently for decades to come.

Long-Term Projections

Technology Evolution

To ensure the Arena remains technologically current and operates efficiently, the WCD should regularly monitor developments in BAS, energy management, and MEPF technologies. By staying informed on emerging innovations, the Arena can plan for mid-cycle upgrades that leverage new efficiencies and features. This proactive approach will keep systems modernized, allowing the Arena to benefit from advancements in control, sustainability, and operational effectiveness throughout the 20-year capital plan.

Preventive Maintenance

The Arena's approach to maintenance requires prevention over reaction. All newly installed systems will be covered by ongoing, vendor-supported maintenance contracts, ensuring expert oversight, timely repairs, and optimized performance.

This comprehensive 20-year MEPF capital expenditure plan gives a clear, actionable guide for making critical infrastructure investment decisions. By systematically implementing these strategies, the Arena will safeguard operational continuity, enhance occupant safety and comfort and preserve the long-term value and competitiveness of this community asset.

MEPF Photos

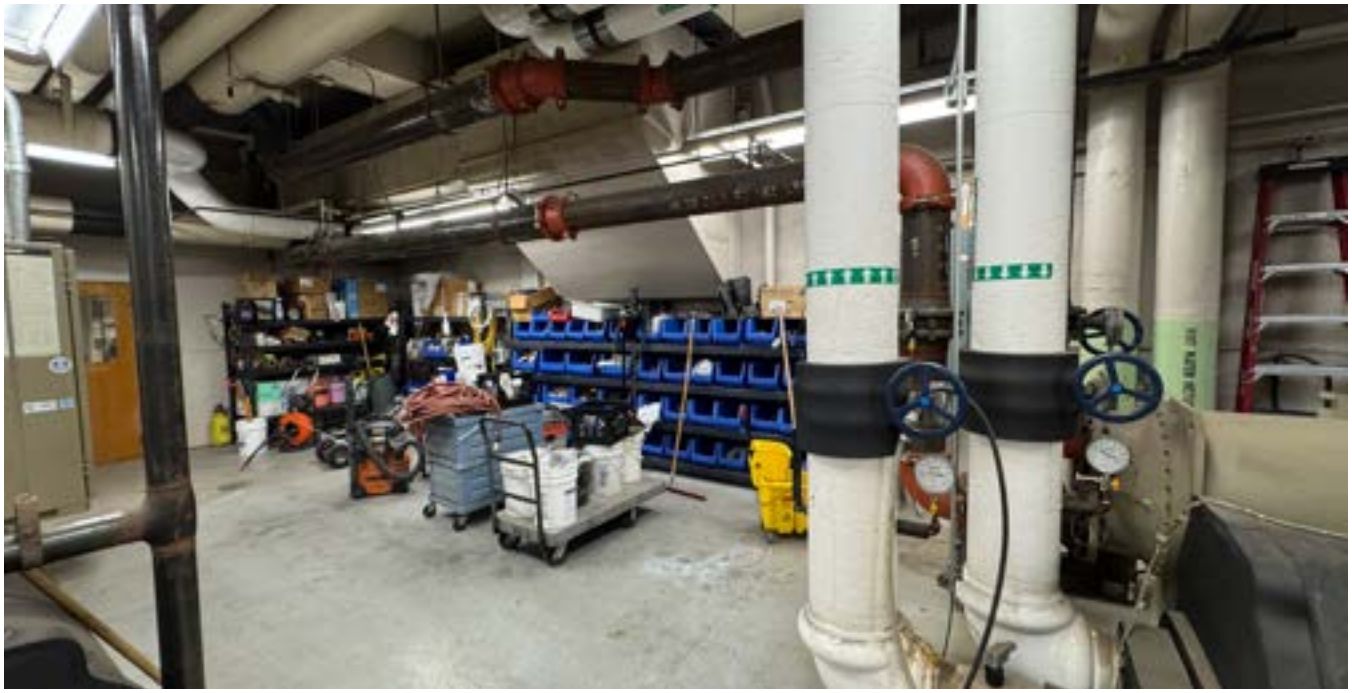
Air Handling Unit (AHU 2)
Photo shows AHU2 which provides airflow to the bowl and the concourses. The unit shows signs of extreme wear due to its age. It also shows asbestos insulation.

Chiller 2
Installed in 1998, chiller 2 is past life expectancy. Shows signs of extreme wear and tear. Recommended replacement.

Condenser Water Pump
The Allis Chalmers pumps were discontinued in 1999. There are repair kits still available but recommend replacing with modern pumps due to age and reliability. This specific pump pictured has not run in over 20 years.

Condenser Water Pumps
Allis Chalmers active condenser water pumps. Aged and obsolete. Recommend replacing with updated modern, units for improved reliability and efficiency.

Air Handling Unit (AHU 6)
AHU 6 main function is to provide airflow into the bowl only. Performing work on the unit is a challenge due to its design and area of installation



Chilled Water Piping
Piping for chilled water to the chiller passes through from floor above. Not ideal for this setup, but chillers were added after the fact and piping had to be reconfigured for the chillers.

Cooling Tower (Exterior)
Marley cooling towers from 1955 to March 1986 may contain asbestos in components like casing, louvers, decking, fill, and drift eliminators, primarily using asbestos cement board or asbestos-containing fill. This cooling tower contains those asbestos cement boards.

Cooling Tower (Interior)
The media was replaced in 2012. It is past its lifecycle and needs replacement. Recommend replacing whole cooling tower and improving water management procedures.

Hot Water Pumps
Showing extreme signs of wear on pumps and piping. Recommend replacing pumps.

Heat Exchangers
To the best of our knowledge these shell and tube heat exchangers are approximately 50 years old. Need replacements.

Hot Water Pumps Mechanical
Pumps are newer, replaced within the last 20 years. Signs of some wear but have been kept up relatively good.

Ice System Chiller
Ammonia ice chiller system. Recommend replacing with ice floor to update system and use safer alternative glycol system.

Large Motor Control Center
Outdated motor control center. Recommend replacing with mechanical upgrades.

Pneumatic System Controls
Should phase out pneumatics and convert to ddc with all of the upgrades.

Small Motor Control Station
Outdated, will need to be replaced when mechanical system is upgraded.

Small Motor Control Station
Outdated, will need to be replaced when mechanical system is upgraded.

Updated Switchboard
Example of an updated switchboard at the arena. These can stay. No recommendations for these.

North Main Substation
Recommended that the housing and transformers be updated to a modern style. Reliability being the biggest reason why. If these went out, lead time on a custom transformer made specifically to fit in that enclosure could pose a big issue.

We Energies Power System
We Energies switchgear. Updated.

South Substation
Recommended that the housing and transformers be updated to a modern style. Reliability being the biggest reason why. If these went out, lead time on a custom transformer made specifically to fit in that enclosure could pose a big issue.

SECTION 05

The Americans with Disabilities Act (ADA) and Code Compliance

SECTION 05 THE AMERICANS WITH DISABILITIES ACT (ADA) AND CODE COMPLIANCE

Executive Summary

This report presents a strategic 20-year capital expenditure plan for the Arena, focusing on proactively addressing ADA and building code compliance. Although the Arena which was originally built in 1950 is not mandated to adhere to current ADA or building codes under its existing use, any substantial renovations or major upgrades would likely trigger mandatory compliance projects. Even in the absence of such requirements, it is advisable to pursue accessibility improvements to ensure the Arena's amenities and access are comparable with other sporting venues as of 2025 and into the future, thereby maintaining a safe and welcoming environment for all guests and staff.

A preliminary code review conducted by EUA Architects Identified several significant ADA deficiencies. It is expected that a more comprehensive assessment would reveal additional compliance issues. The cost estimates included in this plan are preliminary, as the scope of work is expected to be highly disruptive, incredibly expensive and fraught with unforeseen challenges. The Arena's tight footprint poses significant obstacles to expansion, making improvements extremely difficult. Nevertheless, a range of solutions should be explored to enhance accessibility and strive toward current standards for all guests.

Current Status

The Arena has received ongoing routine maintenance and targeted renovations over the years; however, it has not yet undergone a comprehensive modernization that would bring its infrastructure fully in line with current building codes and accessibility standards. At present, the Arena operates under the grandfathered provisions set forth by the 2015 editions of the International Building Code (IBC), International Existing Building Code (IEBC), and ANSI A117.1-2009 standards for accessible and usable buildings. This grandfathered status means the facility is exempt from meeting newer requirements unless the nature of work performed triggers mandatory updates.

Notably, the State of Wisconsin will transition to updated codes, including IBC/IEBC 2021 and ANSI A117.1-2017, effective November 1, 2025. Despite this change, the Arena will not be required to retroactively upgrade its systems and spaces to comply with these new standards unless it undergoes major alteration projects. According to the IEBC, code compliance for existing buildings is only required when renovations, additions, or changes in use are substantial enough to meet or exceed specific thresholds defined by the code. In practice, this means minor repairs and isolated improvements can proceed without triggering full compliance, but larger-scale projects such as extensive remodeling or expansion would necessitate upgrades to meet the latest building and accessibility codes.

Key Deficiencies and Challenges

This assessment identifies several significant areas in which the Arena does not meet current ADA and building code requirements. While the facility benefits from grandfathered status and is not mandated to undertake immediate corrective measures, these deficiencies may require attention if substantial renovations or major upgrades are planned in the future. Additionally, addressing these issues would enhance the guest experience and help the facility align with contemporary standards for accessibility, thereby fostering a more inclusive environment. An understanding of these shortcomings is crucial for effective strategic capital planning. The main deficiencies include:

Fire Protection

The Arena does not currently have a comprehensive fire sprinkler system, which is a significant concern given present safety standards. This system is a mandatory requirement for new facilities classified as A-4 occupancy. Should substantial construction or

renovation be undertaken, the lack of appropriate fire protection would increase life safety risks and represent a considerable compliance investment for any major upgrades.

Means of Egress

Existing exit routes, door hardware, and guardrails do not fully meet current code standards for safe building egress. Specifically, exit paths may be inadequately marked or hardware may not support accessible or emergency exit requirements, and guardrails may not provide required protection. These issues must be addressed if any renovations modify the egress system or increase occupancy loads.

Accessibility

Several accessibility barriers persist throughout the Arena. Elevator access is limited, restricting mobility for individuals with disabilities. Some ramps exceed the permissible slope limits set by ADA standards, making them difficult or unsafe to navigate. Doors and restrooms lack proper dimensions, hardware, and clearances needed for full compliance.

Specialty Spaces

Restrooms and service counters, do not meet current accessibility standards. The accessible stalls in restrooms are too small, making them less usable for people with different needs. Additionally, service counters are positioned too high, which makes it difficult for individuals with disabilities to interact with staff. If renovations are carried out in these spaces, upgrades to meet compliance would be required. The preliminary estimated cost for these improvements has been incorporated into this plan.

Overall, while the Arena is permitted to operate under its existing conditions, these key deficiencies represent significant challenges for future planning. Any major renovation, expansion, or change in use could require substantial investment to address fire safety, egress, accessibility, and specialty space compliance, ensuring the Arena meets all current regulatory standards and provides the accessibility required for all guests.

Upgrade Strategy and Lifecycle Management

The proposed 20-year capital improvement plan for the Arena utilizes a phased upgrade strategy designed to align with both regulatory requirements and operational priorities. This approach recognizes that major facility upgrades such as comprehensive fire protection, improved egress systems, and enhanced accessibility will only be required if large-scale renovations trigger mandatory compliance under updated building codes and ADA standards, or if the WCD decides to install these improvements to better the guest experience in the Arena. Consequently, the plan is structured to address immediate needs and defer significant investments until substantial projects necessitate them.

20-Year Capital Expenditure Plan

The Americans with Disabilities Act (ADA) and Code Compliance

Year	Major Expenditure	Estimated Cost	Justification	Anticipated Improvement
2028	Upgrade Means of Egress (Doors, Hardware, Guardrails) – Phase 1	$137,500	Mandated if areas are renovated or decision for guest experience	Improved emergency evacuation, regulatory compliance
2028	Upgrade Means of Egress (Doors, Hardware, Guardrails) – Phase 2	$137,500	Mandated if areas are renovated or decision for guest experience	Improved emergency evacuation, regulatory compliance
2028	Accessible Route Modernization (Ramps, Elevators) – Phase 1	$825,000	Mandated if areas are renovated or decision for guest experience	Universal access, reduced liability, enhanced patron experience
2029	Upgrade Means of Egress (Doors, Hardware, Guardrails) – Phase 3	$137,500	Mandated if areas are renovated or decision for guest experience	Improved emergency evacuation, regulatory compliance
2029	Accessible Route Modernization (Ramps, Elevators) – Phase 2	$925,000	Required if major work affects circulation areas or decision for guest experience	Universal access, reduced liability, enhanced patron experience
2030	Restroom Renovation (ADA & Family Facilities) – Phase 1	$150,000	Triggered if facility undergoes major renovations or decision for guest experience	Full restroom accessibility, compliance with IBC 1109
2030	Seating Bowl Modification (Handrails, Guardrails, ADA Seating) – Phase 1	$185,000	Required if seating areas are significantly renovated or decision for guest experience	Safer seating, expanded ADA access
2031	Upgrade Means of Egress (Doors, Hardware, Guardrails) – Phase 4	$137,500	Mandated if areas are renovated or decision for guest experience	Improved emergency evacuation, regulatory compliance
2031	Seating Bowl Modification (Handrails, Guardrails, ADA Seating) – Phase 2	$205,000	Required if seating areas are significantly renovated or decision for guest experience	Safer seating, expanded ADA access
2031	Press Box Accessibility Upgrades – Phase 1	$57,500	Compliance triggered by major press box renovations or decision for guest experience	Press/media inclusivity, regulatory compliance
2032	Comprehensive Fire Sprinkler System Installation	In MEPF	Required only if large-scale renovations trigger compliance	Life safety, code compliance, insurance reduction
2032	Restroom Renovation (ADA & Family Facilities) – Phase 2	$150,000	Triggered if restrooms undergo major renovations or decision for guest experience	Full restroom accessibility, compliance with IBC 1109
2032	Drinking Fountain and Service Counter Upgrades – Phase 1	$62,500	Required if these areas are renovated or decision for guest experience	Accessible amenities, adherence to IBC/ANSI requirements
2032	Signage and Wayfinding System Enhancement	$31,250	Signage systems are replaced or require upgrade	Improved navigation for all patrons

Year	Major Expenditure	Estimated Cost	Justification	Anticipated Improvement
2032	Seating Bowl Modification (Handrails, Guardrails, ADA Seating) – Phase 3	$125,000	Required if seating areas are significantly renovated or decision for guest experience	Safer seating, expanded ADA access
2032	Press Box Accessibility Upgrades – Phase 2	$37,500	Compliance triggered by major press box renovations	Press/media inclusivity, regulatory compliance
2032	Fire Detection and Alarm System Modernization	In MEPF	Mandated if system is replaced or upgraded	Enhanced life safety, code compliance
2033	Accessible Route Modernization (Ramps, Elevators)	$325,000	Required if major work affects circulation areas or decision for guest experience	Universal access, reduced liability, enhanced patron experience
2033	Restroom Renovation Updates (ADA & Family Facilities)	$250,000	Triggered if restrooms undergo major renovations	Full restroom accessibility, compliance with IBC 1109
2033	Drinking Fountain and Service Counter Upgrades – Phase 2	$62,500	Required if areas are renovated or decision for guest experience	Accessible amenities, adherence to IBC/ANSI requirements
2033	Code Compliance Reviews & Targeted Improvements – Phase 1	$50,000	Ongoing readiness for compliance if triggered	Continuous compliance, risk mitigation
2034	Code Compliance Reviews & Targeted Improvements – Phase 2	$50,000	Ongoing readiness for compliance if triggered	Continuous compliance, risk mitigation
2036	Signage and Wayfinding System Enhancement	$31,250	Signage systems are replaced or require upgrade	Improved navigation for all patrons
2038	Code Compliance Reviews & Targeted Improvements	$80,000	Ongoing readiness for compliance if triggered	Continuous compliance, risk mitigation
2040	Code Compliance Reviews & Targeted Improvements	$90,000	Ongoing readiness for compliance if triggered	Continuous compliance, risk mitigation
2026-2044 ADA Code Compliance Subtotal		**$4,242,500**		

Justification and Impact

Although the Arena benefits from a grandfathered status and is not currently obligated to immediately address ADA and code compliance deficiencies, it is essential to recognize the importance of proactive investment in a comprehensive capital plan. This approach is designed to ensure the facility remains fully prepared for any future renovations or upgrades that could activate mandatory compliance requirements. By allocating resources now, the Arena positions itself to maintain continued safe operations, enhance the overall experience for patrons, and increase its eligibility for hosting a wider range of future events.

The planned expenditures are not only about meeting current standards but also about anticipating regulatory evolution over time. Annual code compliance reviews and targeted improvements allow for early detection of potential compliance triggers, minimizing risk and avoiding costly last-minute upgrades. Expert consultation further supports strategic decision-making, ensuring that the Arena is equipped to respond efficiently should major renovations necessitate extensive compliance projects.

Long-Term Projections

By integrating readiness for compliance with comprehensive risk management, the Arena strengthens its long-term resilience and operational excellence. This approach ensures that the facility will remain aligned with regulatory requirements and positioned to seamlessly implement major upgrades whenever they become necessary, or to plan for fan experience improvements. Ultimately, the Arena's commitment to proactive planning secures its reputation as a safe, accessible, and premier venue well into the future.

SECTION 06

Audio, Video, & Event Production (A/V Systems)

SECTION 06 AUDIO, VIDEO, & EVENT PRODUCTION (A/V SYSTEMS)

Executive Summary

The Arena's audio, visual, and production systems (A/V) are fundamental to delivering dynamic guest experiences and supporting a wide array of events. As technology advances and existing equipment ages, a strategic, forward-looking capital plan is essential to ensure continued reliability, safety, and audience satisfaction. This comprehensive 20-year capital expenditure plan outlines the current state of A/V systems, identifies key challenges, and proposes a structured upgrade strategy, supported by a year-by-year investment schedule.

Current System Status

The Arena's audiovisual infrastructure comprises a robust suite of technologies designed to deliver high-quality production and seamless event execution. Central to the A/V ecosystem are several key subsystems, each fulfilling distinct operational roles:

- **GRAPHICS ENGINES:** The Arena utilizes Ross Expression CG engines for generating dynamic graphics and visual content. These platforms support real-time overlays, branding, and custom imagery essential for event presentations and broadcasts.
- **VIDEO SWITCHERS:** The Ross Carbonite and ATEM video switchers orchestrate multiple video sources, enabling smooth transitions and professional-looking production during live events. These switchers are critical for managing camera feeds, replay segments, and integrating visual effects.
- **REPLAY SYSTEMS:** The Newtek 3Play system provides instant replay capabilities, a vital feature for sporting events and live productions. It allows operators to quickly access, edit, and replay footage to enhance audience engagement and event storytelling.
- **DISPLAY BOARDS AND INTERNET PROTOCOL TELEVISION (IPTV) STREAMING:** The VITEC Avedia system is responsible for distributing video content to display boards throughout the Arena and for streaming via IPTV. This ensures that attendees have access to real-time information, event highlights, and promotional materials, regardless of their location within the venue.
- **MAIN DISPLAYS:** Daktronics display boards serve as the primary visual focal point in the Arena, showcasing scores, live footage, and sponsor messages. These displays play a crucial role in fan experience and event atmosphere.

To maintain optimal performance and minimize the risk of disruptions, the Arena conducts regular software updates and hardware maintenance across all A/V systems. This proactive approach extends equipment lifespan, ensures compatibility with evolving standards, and supports reliable operation. Recent upgrades include:

- **RECORDING AND STREAMING HARDWARE:** In 2024, new hardware was acquired to enhance recording and streaming capabilities, supporting both live broadcasts and on-demand content delivery.
- **WIRELESS MICROPHONE SYSTEM:** The Arena replaced its wireless microphone system in 2024, improving audio clarity and reliability for presenters, performers, and event staff.
- **CONTROL ROOM MONITORS:** Control room monitors were upgraded in 2024 to provide operators with higher-resolution displays and improved workflow efficiency.
- **IPTV SYSTEM:** Installation of the VITEC Avedia IPTV system in 2023 allowed for more flexible and scalable video distribution throughout the facility.
- **SOUND SYSTEM:** A significant sound system upgrade is underway, featuring L'Acoustics speakers and advanced controllers. This enhancement is expected to deliver superior audio quality, increased coverage, and greater control for diverse event types.

These recent upgrades reflect the Arena's commitment to modernizing A/V capabilities and ensuring a state-

of-the-art experience for guests, performers, and management. The ongoing investment in technology positions the Arena to meet future demands and maintain its reputation as a premier event destination.

Key Deficiencies and Challenges

The Arena is currently facing several A/V deficiencies and challenges, largely stemming from aging infrastructure and the need to keep pace with evolving technology standards. Many of the A/V subsystems, particularly those installed between 2011 and 2016, are nearing the end of their recommended operational lifespans. This presents significant risks to the reliability and performance of Arena operations, especially as event production demands continue to increase.

Aging Video Production Hardware

Essential equipment such as Ross Carbonite switchers, Expression CG engines, and Newtek 3Play replay systems are becoming outdated. As these components approach obsolescence, the potential for hardware failure and incompatibility with new technologies rises, threatening seamless event broadcasting and in-venue video production.

Display Systems

The Daktronics scoreboard, installed in 2014, is projected to reach the end of its useful life by 2029. Without proactive planning for replacement, the Arena risks diminished visual quality and reduced functionality for event displays, impacting the fan experience and sponsor engagement.

Camera Systems

Sony and Canon cameras, also installed in 2014, are approaching the end of their recommended lifecycle. This could result in declining image quality, reduced reliability, and increased maintenance costs if not addressed promptly.

Technology Gaps

As industry standards for A/V production rapidly evolve, existing equipment may not support new formats, protocols, or features required for modern event production. This can limit the Arena's ability to deliver cutting-edge experiences and meet client expectations.

Operational Risks

The risk of equipment failure and downtime increases as hardware ages, potentially disrupting events and leading to costly repairs or emergency replacements. Addressing these challenges through planned upgrades and lifecycle management is essential to minimize operational disruptions and maintain the Arena's reputation as a premier event destination.

Upgrade Strategy and Lifecycle Management

To effectively overcome the Arena's audio/visual challenges, a carefully planned, phased upgrade strategy should be implemented. This approach centers on lifecycle management, proactive technology investments, and operational efficiency, ensuring the Arena remains competitive and capable of supporting evolving event production needs.

- **TRANSITION FROM LEGACY SDI TO FIBER OPTIC INFRASTRUCTURE:** The Arena is moving away from older Serial Digital Interface (SDI) systems to modern fiber optic solutions. This upgrade enables faster, more reliable, and higher-quality video transmission, supporting future formats and scalability for larger or more complex events.
- **REGULAR SOFTWARE AND HARDWARE UPDATES:** A schedule of ongoing updates should be maintained for both software and hardware components. This ensures equipment compatibility with current technologies, minimizes vulnerabilities, and keeps A/V systems running smoothly with the latest features.
- **PRIORITIZED REPLACEMENT OF AGING EQUIPMENT:** Equipment nearing the end of its recommended lifecycle should be identified and replaced in a timely manner. By focusing on critical systems most at risk of failure, the Arena reduces the likelihood of operational disruptions, emergency repairs, and compromised event quality.
- **ADOPTION OF COST-EFFECTIVE AND INNOVATIVE SOLUTIONS:** The plan emphasizes investing in solutions that balance cost with innovation. This includes evaluating emerging technologies and selecting equipment that delivers improved performance and flexibility without excessive expenditure.

- **PERIODIC ASSESSMENTS AND ALIGNMENT WITH TECHNOLOGY TRENDS:** Routine evaluations of A/V systems and industry advancements should be regularly conducted. These assessments ensure the capital expenditure plan remains responsive to new standards, client expectations, and the changing needs of event production.

This strategic approach helps the Arena maximize the value of its investments, maintain high-quality A/V experiences, and reduce the risks associated with outdated technology.

20-Year Capital Expenditure Plan

Audio, Video, & Event Production (A/V Systems)

Year	Major Expenditure	Estimated Cost	Justification	Anticipated Improvement
2026	Camera System and Fiber Infrastructure, Concourse Monitors, Intercom	$775,000	Replace aging cameras/ lenses, upgrade to fiber, update concourse monitors and intercom system for modern standards	Higher image quality, improved transmission reliability, and better guest information delivery
2027	Switcher and Graphics Playback System Replacements / Production Suite FF&E upgrade	$330,000	Replace outdated video switchers and graphics systems to support advanced production capabilities	Greater production versatility, reduced downtime, and improved broadcast quality
2028	Digital Recording Hardware Refresh	$120,000	Update digital recording equipment to ensure high-quality event archiving and content management	Reliable archiving, enhanced event documentation, and future-proof storage
2029	Main Center-Hung Video Board Replacement, Display Evaluation	$3,000,000	Replace Daktronics scoreboard at end-of-life; evaluate and deploy new display technology	Improved visual impact, higher resolution, and greater engagement for audiences
2030	Routine Software/Hardware Updates	$75,000	Updates to maintain A/V system reliability and compatibility	Consistent performance, reduced risk of obsolescence
2031	Control Room Upgrades, Security Systems	$125,000	Upgrade routing, monitoring, racks, and furniture; enhance security system capabilities	Improved workflow, operational efficiency, and security
2032	Wireless Microphone System Refresh	$80,000	Upgrade wireless microphone systems for better performance and reliability	Clearer audio, reduced interference, and greater flexibility
2033	IPTV System Update, Streaming Hardware	$70,000	Update IPTV and streaming hardware to support evolving broadcast standards	Enhanced streaming quality, broader content distribution

Year	Major Expenditure	Estimated Cost	Justification	Anticipated Improvement
2034	Fiber Infrastructure Maintenance	$60,000	Ongoing maintenance for fiber optic infrastructure to ensure reliability	Stable transmission, minimized downtime
2036	Routine Software/Hardware Updates	$75,000	Updates to maintain A/V system reliability and compatibility	Consistent performance, reduced risk of obsolescence
2036	Switcher/Graphics System Update	$400,000	Upgrade or replace switcher and graphics systems for advanced A/V production	Modernized production capabilities, increased efficiency
2038	Camera System and Fiber complete Refresh	$850,000	Replace or update camera systems to latest models	Improved image quality, future-proofing
2039	Control Room Technology Update	$200,000	Update control room equipment to current industry standards	Optimized workflow, better technology integration
2041	Video Distribution System Upgrade	$150,000	Upgrade video distribution for higher quality and reliability	Consistent delivery, improved viewer experience
2042	Equipment Rack and Infrastructure Refresh	$75,000	Update racks and supporting infrastructure for A/V equipment	Better organization, improved system reliability
2044	Comprehensive System Evaluation and Planning for future needs	$100,000	Conduct a full A/V system evaluation and develop future upgrade plans	Strategic vision, readiness for next technology cycle
2026-2044 A/V Systems Subtotal		**$6,485,000**		

Justification and Impact

These capital investments are essential to ensure the Arena's A/V operations remain at a high standard. By proactively upgrading equipment racks, infrastructure, and conducting comprehensive system evaluations, the Arena can effectively address the natural aging and obsolescence of critical systems.

Staying current with evolving technology standards is another key justification for these expenditures. As A/V technology rapidly advances, older systems may not be compatible with new equipment or may lack features required for modern events. Regular upgrades ensure that the Arena can host a wide variety of events ranging from concerts and sporting events to conferences and community functions without technical limitations.

These investments are also strategically prioritized to focus on systems nearing the end of their useful life, thereby reducing the likelihood of sudden equipment failures. This not only protects event continuity but also supports long-term operational planning and budgeting, allowing the Arena to forecast needs and avoid emergency expenditures.

The anticipated impacts include enhanced production versatility, allowing for more complex or customized event setups; greater system reliability, which builds confidence among event organizers and guests; and improved audio and visual experiences for attendees.

Long-Term Projections

Looking ahead to the next two decades, the landscape of A/V technology will undergo significant transformation. This presents a dual scenario: new possibilities for enhanced event experiences and operational efficiency, but also potential challenges such as system incompatibility, obsolescence, and unexpected disruptions. To address these realities, the Arena's plan should emphasize a proactive approach to both technology adoption and risk mitigation.

SECTION 07

Information Technology (IT) Systems

SECTION 07 INFORMATION TECHNOLOGY (IT) SYSTEMS

Executive Summary

The Arena faces evolving technological demands and operational challenges that necessitate a strategic, long-term capital expenditure plan for its IT systems. This report outlines a structured 20-year approach to infrastructure investment, ensuring the Arena maintains reliable, secure, and high-performing IT services. The plan addresses imminent equipment end-of-life cycles, identifies key deficiencies, and provides a phased upgrade and lifecycle management strategy

Current IT Systems Status

- **WIFI ACCESS POINTS:** The Arena utilizes 67 Extreme Networks WiFi access points, which were deployed between two and three years ago. These devices provide comprehensive wireless coverage throughout the campus, supporting staff, visitors, and operational needs. While they currently deliver reliable connectivity, their performance and compatibility may begin to decline in the next four to five years as they approach mid-life, potentially requiring an upgrade to maintain optimal service levels as well as adhering to Wi-Fi standards that are built in to new mobile devices annually.
- **NETWORK SWITCHES:** The Arena's wired network infrastructure is supported by 16 Juniper EX series switches. The majority of these switches have reached or are nearing their end-of-life, which not only limits the ability to scale the network but also increases the risk of outages and exposes the Arena to security vulnerabilities due to discontinued vendor support and firmware updates.
- **FIBER INFRASTRUCTURE:** Connectivity between 11 IT closets is established using multimode OM1 fiber optic cabling. This infrastructure currently supports bandwidth of up to 2 Gbps, which is insufficient for future expansion and modern high-speed applications. The limited capacity creates a bottleneck for data-intensive services such as streaming, advanced analytics, and real-time operations, highlighting the need for an upgrade to higher-capacity fiber.
- **UPS UNITS:** Ten APC Smart-UPS 1500 units are distributed among the network closets to provide backup power and protect critical IT equipment from outages and surges. However, these closets do not have dedicated cooling systems, resulting in elevated operating temperatures. The lack of cooling increases the likelihood of hardware failures, accelerates equipment aging, and could lead to costly unplanned downtime.
- **IPTV SYSTEM:** The VITEC Avedia IPTV platform was upgraded in 2023 and now offers fully integrated campus-wide streaming and remote access services. This system supports live event streaming, digital signage, and remote viewing capabilities, contributing to improved operational flexibility and enhanced visitor experiences.
- **EXTERIOR SIGNAGE:** The Arena's prominent pylon signs, which play a key role in visitor wayfinding and branding, are scheduled for replacement in the near future. Timely replacement of these signs is important to maintain effective communication and a positive visual impression for guests.
- **MAIN DISTRIBUTION FRAME (MDF) ROOM:** Located in the basement, the MDF room serves both the Arena and the adjacent theater. It is equipped with dedicated cooling, fire suppression systems, and backup servers, ensuring the reliability and safety of the core IT infrastructure. The MDF's robust environmental controls contrast with the network closets, which are currently underserved in terms of cooling.

Key Deficiencies and Challenges

Legacy OM1 Fiber Infrastructure

The existing multimode OM1 fiber connects the Arena's 11 IT closets but is currently limited to supporting a maximum bandwidth of 2 Gbps. This restriction not only hampers the Arena's ability to scale up for future high-speed network demands but also creates a bottleneck for data-intensive applications, streaming, and other performance-critical services. Upgrading to higher-

capacity fiber is essential to accommodate future growth and evolving technology needs.

End-of-Life Network Switches

The Juniper EX series network switches, which form the backbone of the Arena's wired connectivity, have mostly reached the end of their supported lifecycle. Continuing to operate these aging switches increases the risk of equipment failures, network outages, and exposes the network to security vulnerabilities due to discontinued firmware updates and lack of vendor support.

Inadequate Cooling in IT Closets

None of the network closets housing critical infrastructure, such as UPS units and network switches, have dedicated cooling systems. The absence of adequate cooling leads to elevated operating temperatures, which significantly increases the likelihood of hardware malfunctions, reduces the expected lifespan of sensitive equipment, and may result in costly unplanned outages.

WiFi Access Points Approaching Mid-Life

The campus relies on 67 Extreme Networks WiFi access points, currently two to three years old. In another four to five years, these devices are projected to reach their mid-life, at which point declining performance, compatibility issues with newer devices, and lack of feature updates may necessitate a comprehensive replacement to maintain reliable wireless connectivity.

Exterior Signage and Other IT Assets Nearing End-of-Life

Several key assets, including Arena pylon exterior signage and additional IT systems, are approaching the end of their useful life or are already scheduled for replacement. Delayed upgrades to these assets can negatively impact both operational efficiency and the overall visitor experience.

Upgrade Strategy and Lifecycle Management

The capital expenditure plan is structured to ensure the reliability and efficiency of all critical IT and infrastructure assets within the Arena. This strategy relies on a proactive approach to asset management, scheduling upgrades and replacements according to established lifecycle expectations, manufacturer guidelines, and operational needs. By following a systematic schedule, the plan aims to minimize the risk of unexpected equipment failures, performance degradations, and costly emergency repairs.

- **NETWORK SWITCHES (7-YEAR CYCLE):** All wired connectivity depends on network switches. To prevent outages and security vulnerabilities associated with outdated hardware, switches should be replaced every seven years, in line with vendor support timelines and evolving technology standards.
- **FIBER INFRASTRUCTURE (20-YEAR CYCLE):** The backbone connecting IT closets should be scheduled for a major upgrade every 20 years. This long-termcycle accommodates advancements in bandwidth requirements and ensures that the Arena can support future high-speed applications.
- **WIFI ACCESS POINTS (5-YEAR CYCLE):** Wireless connectivity across campus relies on access points that should be upgraded every five years. This schedule keeps up with rapid changes in wireless technology, device compatibility, and user demands.
- **UPS UNITS (7-YEAR CYCLE):** UPS units are vital for protecting equipment from power interruptions. They should be replaced every seven years to maintain reliability and safeguard sensitive infrastructure.
- **IPTV SYSTEM (10-YEAR CYCLE):** IPTV platform should be upgraded every 10 years to ensure continued compatibility with technologies and to provide high-quality service.
- **EXTERIOR DIGITAL SIGNAGE (15-YEAR CYCLE):** exterior digital signs should be replaced every fifteen years to maintain aesthetics, functionality, and visitor engagement.

20-Year Capital Expenditure Plan

Information Technology (IT) Systems

Year	Major Expenditure	Estimated Cost	Justification	Anticipated Improvement
2026	Replace All EOL Network Switches	$73,400	End-of-life status; capacity limitations	10+ Gbps speeds; improved reliability; future scalability
2026	Upgrade Multimode Fiber to Single Mode in all Closets	$71,500	Enable 10Gbps+ speeds, future-proofing	Support for next-generation bandwidth
2027	Replace Arena Pylon Outdoor Signs	$406,000	Lifecycle replacement; technology refresh	Enhanced visibility; improved WiFi coverage and performance
2027	Replace All AP510CX Aps	$88,000	Lifecycle replacement	Increased wireless capacity, reliability
2028	Replace UPS Batteries	$12,000	Replacement	Reliable battery storage
2028	Replace All AP460C Aps	$44,600	Lifecycle replacement	Increased wireless capacity, reliability
2030	Replace UPS Units	$19,900	End-of-life replacement	Improved backup power reliability
2030	Add Outdoor WiFi Access Points	$55,200	Expand coverage beyond building footprint	Supports guest and operational connectivity outdoors
2031	Add Additional Keyscan Access Points	$45,100	Increase physical security	Enhanced access control, improved safety
2031	Install Active Cooling in IT Closets	$87,000	Mitigate overheating risk	Extended equipment lifespan, reduced failure risk
2032	Install Active Cooling in IT Closets	$87,000	Mitigate overheating risk	Extended equipment lifespan, reduced failure risk
2032	Add Additional Keyscan Access Points	$45,100	Increase physical security	Enhanced access control, improved safety
2033	Replace Network Switches	$118,500	Lifecycle replacement	Maintain high-speed connectivity, reliability
2033	Replace MDF Room UPS Systems (shared with Theatre)	$41,000	Lifecycle replacement	Ensures uninterrupted power, protects critical systems
2033	Replace UPS Batteries	$15,000	Replacement	Reliable battery storage
2035	Replace WiFi Access Points (All Models)	$190,000	Capacity demands; technology refresh	Support for new devices, higher speeds
2036	Replace IPTV System (shared with Theatre)	$85,000	Lifecycle replacement (split cost with Theatre)	Enhanced streaming, integration capabilities
2037	Replace Exterior Digital Signage	$580,000	Lifecycle replacement	Improved branding, visibility
2037	Replace UPS Batteries	$15,000	Replacement	Reliable battery storage
2038	Replace UPS Units	$49,000	Lifecycle replacement	Enhanced backup power
2040	Replace Network Switches	$167,000	Lifecycle replacement	Maintain network performance
2041	Replace WiFi Access Points	$278,000	Technology refresh	Support for future wireless standards
2043	Replace UPS Units	$91,000	Lifecycle replacement	Ensure power reliability
2044	Replace Fiber Infrastructure	$178,000	End-of-life replacement	Support for next-generation bandwidth
2026-2044 IT Systems Subtotal		**$2,842,300**		

Justification and Impact

Upgrading network switches is essential for maintaining compatibility with evolving systems and applications. As technology advances, older switches may not support newer protocols, firmware updates, or security features, potentially exposing the network to vulnerabilities and performance degradation. By investing in new switches, the Arena ensures sustained high-speed connectivity, reduces the risk of security breaches, and supports the integration of future technologies.

Transitioning to single-mode fiber infrastructure addresses existing network bottlenecks and prepares the facility for next-generation bandwidth requirements. Single-mode fiber supports higher data transmission speeds and longer distances compared to legacy multimode solutions, allowing for seamless expansion and reliable connectivity as operational demands grow. This upgrade not only improves current network performance but also future-proofs the Arena against increasing data loads and emerging digital services.

Regular replacement of WiFi access points is necessary to accommodate the rising number of devices and expanding bandwidth needs within the Arena. As more guests and staff rely on wireless connectivity for work and entertainment, outdated access points can lead to poor coverage, slow speeds, and dropped connections. Routine upgrades ensure comprehensive wireless coverage, robust network security, and an uninterrupted experience for all users.

Updating UPS units is a critical step in safeguarding operations against unexpected power outages. Modern UPS systems provide reliable backup power, protecting sensitive IT equipment and minimizing the risk of costly service interruptions or data loss. By proactively replacing aging units, the Arena maintains continuous operations and reduces potential downtime.

Enhanced active cooling solutions are vital for preserving the longevity and efficiency of critical IT infrastructure. As equipment generates more heat with increased workloads, effective cooling prevents overheating, hardware failures, and system downtime. Investing in advanced cooling technologies extends equipment lifespan and ensures stable performance under demanding conditions.

Maintaining the IPTV system is important for delivering high-quality streaming services and integrating building-wide communication systems. A reliable IPTV network enables real-time content delivery, supports event management, and enhances visitor engagement by providing timely information and entertainment throughout the facility.

Modernizing exterior signage plays a significant role in creating a positive first impression, guiding visitors, and reinforcing the Arena's brand identity. Updated signage improves wayfinding, increases visibility, and contributes to the overall aesthetic appeal of the venue, enhancing the visitor experience from arrival to departure.

Long-Term Projections

To ensure the Arena's IT infrastructure remains robust and responsive to technological changes over the next two decades, a comprehensive long-term strategy is essential. This plan outlines periodic refresh cycles for critical systems, with major upgrades scheduled every 7–10 years for core networking equipment and exterior signage. These upgrades will address compatibility with emerging protocols, support higher bandwidth demands, and enhance both connectivity and the venue's visual appeal.

SECTION 08

Security Systems

SECTION 08 SECURITY SYSTEMS

Executive Summary

This 20-year capital expenditure plan presents a roadmap to modernize the Arena's security and surveillance infrastructure. The initiative aims to address critical deficiencies in aging hardware, limited system capabilities, and infrastructure constraints, ensuring the Arena's security systems remain robust, scalable, and compliant with evolving industry standards.

Current System Status

The Arena's current video management system is equipped with support for advanced AI analytics, offering potential for modern surveillance features. However, the effectiveness of these analytics is limited by the age and capabilities of the Arena's camera fleet. Most cameras in use are between 10 and 15 years old, which results in lower image resolution providing less detailed data for analytics algorithms to process. This limitation reduces the accuracy and usefulness of AI-driven security measures.

The Arena's camera inventory is primarily composed of AXIS VAPIX models, including legacy units. Some newer models, such as the Q6100-E and P3719-PLE, have been added. While most cameras operate at standard high-definition resolutions (1280x720 or 1920x1080 pixels), only a handful are capable of higher resolutions and more efficient H.265 video compression. This means the overall system does not fully take advantage of modern video quality standards, which could improve live monitoring and recorded footage review.

In addition to cameras, active door switch monitors are installed throughout the Arena. These devices serve to detect unauthorized access or perimeter breaches in real time, helping to strengthen the Arena's overall intrusion detection capabilities. This layer of security is crucial for immediate response to physical threats.

The video management backbone is provided by the Johnson Controls Victor Professional system version 6.2. While this platform is designed for professional-grade video management, its performance is compromised by the need to accommodate older, legacy components.

Compatibility issues arise when integrating new technology with outdated hardware, resulting in reduced system efficiency and functionality.

The WCD employs multiple ExacqVision A-series NVRs which are now a couple of years old and lifecycle replacement for these is generally 3–5 years. The WCD has started a plan to employ Xtract One frictionless walkthrough sensors for entry into all of their public assembly venues, Currently the Convention Center is equipped with these units, It should be part of the capital plan to equip the arena with a full fleet of these units as well. These units have a lifespan of 10–20 years with proper maintenance.

Further infrastructure challenges are present due to the Arena's original design, commonly referred to as a fallout shelter. This unique architectural feature makes cable installation complex and difficult even with existing cable pathways. The majority of the existing cabling is coaxial, which is not well-suited for modern surveillance systems that prefer Cat cables for higher bandwidth and flexibility. To bridge this gap, converters are used to interface coaxial cables with Cat cables; however, this workaround limits the bandwidth to each camera, restricts the ability to transmit dual output streams, and ultimately hampers system scalability and performance. Upgrading the cabling infrastructure is thus a critical step toward modernizing the Arena's security systems.

Key Deficiencies and Challenges

Aging Camera Fleet

The majority of cameras are 10–15 years old, resulting in poor image quality and limited analytics data.

Resolution Limitations

Many units operate at suboptimal resolutions, restricting the effectiveness of AI-based surveillance processes

Bandwidth Constraints

Coaxial cabling, combined with converters, causes bottlenecks and prevents dual-stream output, hindering real-time monitoring and recording.

Infrastructure Barriers
The robust fallout shelter design complicates cable routing and installation, increasing upgrade complexity and cost.

System Compatibility
The professional video management system (VMS) is limited by legacy component integration, reducing overall system functionality.

Upgrade Strategy and Lifecycle Management

To address identified deficiencies, the following strategic approach is recommended:

- **PHASED CAMERA UPGRADES:** Replace aging cameras with advanced models supporting higher resolutions (4K and above), H.265/H.266 compression, and enhanced low-light capabilities. Prioritize high-traffic and critical security zones during initial phases.
- **INFRASTRUCTURE MODERNIZATION:** Transition from coaxial to Cat6/Cat7 cabling to support increased bandwidth, dual-stream output, and future expansions. Schedule cable upgrades alongside camera replacements for efficiency.
- **AI ANALYTICS INTEGRATION:** Deploy cameras and video management systems with native AI analytics capabilities for real-time threat detection, facial recognition, and crowd monitoring.
- **VMS MANAGEMENT SYSTEM:** Upgrade to the latest Victor Professional version or another VMS, ensuring full compatibility with new hardware and expanded feature sets. Integrate with access control, alarm, and building management systems.
- **NETWORK VIDEO RECORDERS (NVRS):** Should be regularly refreshed to prevent hardware deterioration. Proactively maintaining and regularly replacing NVRs helps minimize the risk of system crashes, recording failures, and unreliable performance. Also ensures compatibility with newer, higher-resolution camera technologies.
- **LIFECYCLE PLANNING:** Establish a five-year refresh cycle for cameras, software, and supporting hardware to prevent obsolescence and maintain optimal performance.

20-Year Capital Expenditure Plan

Security Systems

Year	Major Expenditure	Estimated Cost	Justification	Anticipated Improvement
2026	Phase 1: Camera Upgrade (Replace and add new units)	$42,000	Replace oldest cameras in high-traffic and perimeter areas with 4K/H.265 models; improve analytics data	Enhanced image quality, better coverage, increased analytic capability
2027	Phase 1: Cabling Upgrade (Current and new zones)	$38,000	Transition from coaxial to Cat6a/7 cabling in critical zones; support higher bandwidth and dual-stream	Reduced bandwidth issues, improved reliability, future-proofing
2028	Phase 2: Camera Upgrade (Replace and add new units)	$64,000	Upgrade remaining legacy cameras; expand AI analytics coverage	Consistent high-resolution coverage, broader analytics
2028	Management System (VMS) Upgrade, replace surveillance components (monitors, FFE)	$40,000	Implement latest Victor Professional system; integrate with access control and alarms	Unified security management, expanded feature set
2028	Purchase dedicated Xtract One walk through detectors for the Arena	$830,000	Dedicated units for the Arena, stay in place for all events	Additional security screening, improving entry times for guests
2029	Phase 2: Cabling Upgrade (Secondary Zones) Current and new zones	$43,000	Finish Cat6a/7 cabling upgrades; complete backbone modernization	Full system bandwidth, scalable infrastructure
2031	Upgrade NVR Units, expand AI analytics	$56,000	Upgrade NVRs, Deploy advanced AI modules; enable facial recognition, crowd analytics	Improve recording tech, Proactive threat detection, operational insights
2032	Lifecycle Refresh: Cameras (Critical Zones)	$59,000	Replace cameras approaching end-of-life	Maintained image quality, reduced downtime
2033	Integrate advanced AI Analytics | Software/ hardware	$27,000	Increase AI tech, security analytics for breach, follow, insight, detection	Real-time alerts, proactive response
2035	Lifecycle Refresh: Cameras (Secondary Zones)	$63,000	Refresh secondary zone cameras	Ensure consistent system reliability, incorporate tech advancements
2035	VMS Software Refresh and replace surveillance components (monitors, FFE)	$47,000	Ensure optimal performance and security	Reduced vulnerabilities, improved efficiency
2036	Replace NVR units and Analytics Servers	$67,000	Support new analytics workloads	Faster processing, scalability
2038	Camera and related Infrastructure Expansion (New Zones)	$40,000	Add cameras and cabling for expanded arena footprint (interior and exterior)	Increased coverage, scalable growth
2039	Integrate advanced AI Analytics | Software/ hardware	$33,000	Enhance threat detection capabilities	Proactive incident management
2026-2044 Security Systems Subtotal		**$1,449,000**		

Justification and Impact

The proposed capital expenditures are to protect public safety, preserve assets, and ensure regulatory compliance. Upgrading camera resolution and cabling directly enhances image clarity, coverage, and analytic capabilities, enabling faster incident response and more effective surveillance. Integrating advanced AI analytics streamlines operations, reduces manual workloads, and supports proactive threat detection. Lifecycle management prevents technological obsolescence and minimizes downtime, sustaining high operational efficiency.

Long-Term Projections

Over the next two decades, security technology is expected to undergo significant transformations. Trends such as edge-based AI processing will enable cameras and sensors to analyze data directly at the source, reducing latency and improving real-time threat detection. Cloud-integrated surveillance platforms will offer greater flexibility, scalability, and remote management capabilities, allowing security teams to monitor and respond to incidents from anywhere. Advanced biometric identification methods, including facial recognition, fingerprint scanning, and behavioral analytics, will become standard for both access control and incident response, further enhancing safety and efficiency.

By implementing regular refresh cycles and phased investments throughout the 20-year capital expenditure plan, the Arena will remain prepared for ongoing innovations. This proactive strategy ensures that the security systems stay current, effective, and capable of meeting evolving operational and regulatory requirements.

SECTION 09

Attachments

SECTION 09 ATTACHMENTS

EUA Code Assessment Report

WISCONSIN CENTER DISTRICT

Code Assessment of the Milwaukee Panther Arena and the Miller High Life Theater

milwaukee : madison : green bay : denver : atlanta

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EXECUTIVE SUMMARY

The Miller High Life Theatre, having undergone renovations under modern building codes, generally demonstrates satisfactory compliance with current standards. In contrast, the UWM Panther Arena—originally constructed under earlier, less stringent codes—presents several areas of concern that may require attention to meet today's regulatory expectations.

During the walkthrough, EUA's team conducted visual observations and took select field measurements to inform a general understanding of compliance status. While this report provides a high-level overview of observed conditions, a comprehensive evaluation of all building elements would require additional site visits and more detailed analysis should corrective action be pursued. Photographs were taken to document key findings and support ongoing discussions with the client.

INTRODUCTION

This report presents the findings of a building code assessment conducted by EUA team members at the Miller High Life Theatre and the UWM Panther Arena. The assessment included an on-site walkthrough of publicly accessible areas in both facilities. Since building floor plans and life safety drawings were not shared with EUA, evacuation maps were used as a floor plan reference for this report. The purpose of this study is to evaluate the current condition of building elements in relation to applicable building codes and accessibility standards.

The scope of the assessment focused on the following key areas of code compliance:

- Construction Type (where verifiable)
- Fire-Resistive Requirements
- Means of Egress Components
- Accessibility Standards

MILLER HIGH LIFE THEATER

General Information:

The Miller High Life Theatre was originally constructed in 1909 and underwent significant renovation in 2002. Based on available documentation and observed conditions, it appears the renovation was executed in alignment with a contemporary family of building codes and accessibility standards. Although the renovation drawings do not explicitly reference the code used, it is reasonable to assume the project was designed to comply with the International Building Code (IBC) 2000, which was officially adopted by the State of Wisconsin in July 2002. Prior to this, Wisconsin enforced the Wisconsin Enrolled Building Code.

At the time of this report, Wisconsin operates under IBC 2015. Notably, the state is scheduled to adopt IBC 2021 and ANSI A117.1-2017 as of November 1, 2025. While there are updates and refinements between IBC 2000 and IBC 2015, the core principles—such as occupancy classification, construction type, fire protection, egress, and accessibility—remain largely consistent.

The building's primary functional areas and the routes leading to them are fully accessible, and no significant code deficiencies or non-compliance issues were observed during the walkthrough.

General Building Code Data:

- Occupancy Classification: A-1 (Theater)
- Construction Type: Type IB
    - Roof: 1-hour fire-resistance rating (per existing drawings)
    - Floors: 2-hour fire-resistance rating (per existing drawings)
- Fire Protection: Fully sprinklered throughout

Means of Egress Observations:

1. **John Plankinton Room Exit Doors**
   Exit doors are equipped with lever handles and latching mechanisms but lack panic hardware. Per **IBC Section 1010.1.10**, doors serving assembly occupancies must be equipped with panic hardware. This represents a code compliance issue.

2. **Stepped Aisle Guardrails – Upper Seating Mezzanine**
   At the lower ends of stepped aisles where the landing is more than 30 inches above the adjacent floor, guardrails must meet the following requirements per **IBC Section 1029.16.4**:
   a. Minimum height of 36 inches
   b. Openings must not allow passage of a 4-inch diameter sphere
   c. Alternatively, a diagonal measurement of 42 inches from the nosing of the last tread to the top of the guard may be used

   The existing glass railings in the upper mezzanine seating area reach 36 inches in height but do not meet the required guardrail standards below the glass portion. This condition does not comply with current code requirements.

3. **Pre-Function Guardrail Serving Mezzanine**
In the pre-function area overlooking the east lobby—accessible via the vestibule connecting the Miller High Life Theatre and the Milwaukee Panther Arena—a decorative guardrail with ornamental balusters is installed. The spacing between these balusters allows the passage of a 4-inch sphere, which does not comply with current building code requirements for guardrail safety.

UW-MILWAUKEE PANTHER ARENA

General Information:

The UWM Panther Arena was originally constructed in 1950. While incremental maintenance and localized renovations have been performed over the years, the building has not undergone a comprehensive modernization to align with current building codes and accessibility standards.

All code references in this report are based on the 2015 editions of the International Building Code (IBC), International Existing Building Code (IEBC), and ANSI A117.1-2009. It is important to note that the State of Wisconsin will adopt IBC/IEBC 2021 and ANSI A117.1-2017 effective November 1, 2025. Although there are updates between these code versions, the fundamental principles—such as occupancy classification, construction type, fire protection, egress, and accessibility—remain consistent. However, section numbering and specific language may vary between editions.

Any "code-deficiencies" or "non-compliances" identified in this report are based on standards applicable to new construction and do not imply that the existing building must be altered. Buildings constructed or renovated in accordance with the codes in effect at the time of work are generally considered compliant unless otherwise determined by the Authority Having Jurisdiction (AHJ). Modifications to existing buildings are typically only required when an alteration or addition project is initiated. In such cases, the scope of work must comply with current codes.

Repairs, alterations, and additions to existing buildings are governed by the IEBC, which is designed to promote the continued use and reuse of existing structures while requiring reasonable upgrades. The extent of code compliance required is determined by the level of alteration undertaken.

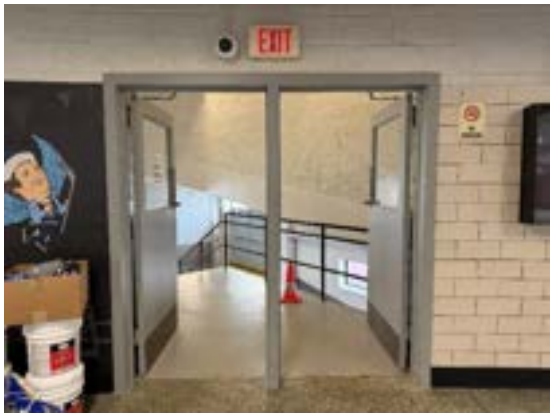
General Building Code Data:

1. Occupancy Classification: A-4 (Arena)
4. Construction Type: IA or IB
    a. The roof structure appears to consist of unprotected steel located within 20 feet of occupied areas (e.g., bowl seating). This condition would not meet the fire-resistance rating requirements for Type IA or IB construction without a variance.
    b. Type IA construction requires a 1½-hour rated roof, while Type IB requires a 1-hour rated roof.
5. Building Height:
    a. Two stories: Ground floor and main concourse
    b. East and west upper concourses are considered mezzanines, not additional stories
6. Fire Protection:
    a. No sprinkler system is present
    b. Sprinklers are required in all new buildings with A-4 occupancy per **IBC 903.2.1.4**
    c. For alteration projects affecting more than 50% of the building's floor area, the work area must be sprinklered per IEBC 804.2.2

Means of Egress Observations:

1. **Northeast Ramped Tunnel Exit:**
   An overhead door at the ramped tunnel exit from the main concourse could obstruct egress if closed. Exits must remain unobstructed at all times. The ramp also exceeds allowable slope and rise limits, as noted in the "Accessible Interior Circulation Route" section.

2. **Exit Doors from Main Concourse to Stairs:**
These doors are equipped with knob handles and latching mechanisms but lack panic hardware. Per **IBC 1010.1.10**, panic hardware is required for doors serving assembly occupancies.



3. **Guardrails at Exit Access Stairs:**
Guardrails at stairs leading from the main concourse to exit discharge points (Pass Gate NW, NE exit, SE exit) do not meet code requirements where the fall hazard exceeds 30 inches (**IBC 1015**).

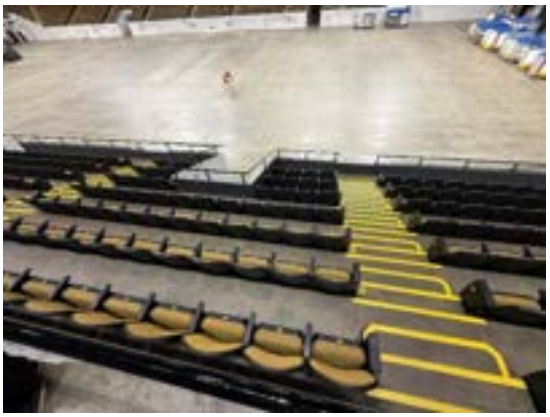
4. **Guardrails at Upper Concourse Ramps:**
Guardrails adjacent to circulation ramps in the upper concourse also fail to meet code requirements for fall protection where elevation changes exceed 30 inches.

5. **Travel Distance:**
In non-sprinklered buildings, the maximum allowable travel distance is 200 feet (**IBC 1029.7**). Because exit access stairways are not enclosed in rated shafts, travel distance must be measured from the furthest seat in the bowl to the exit discharge at grade. Further analysis is needed to confirm compliance from upper seating areas.

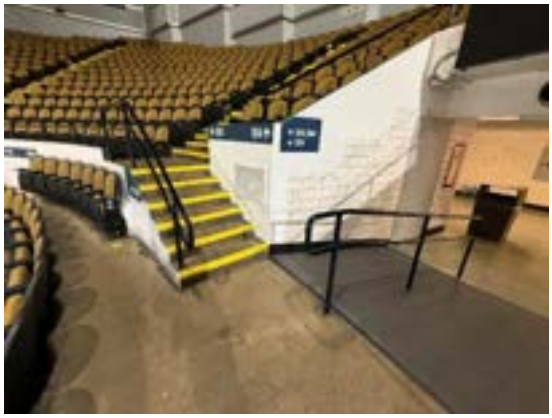
6. **Common Path of Egress Travel:**
The maximum allowable common path of travel is 30 feet from a seat to the point where two distinct egress paths are available (**IBC 1029.8**). Initial observations suggest that some seats in the upper bowl may exceed this limit.

7. **Stair Tread Depths in Seating Bowl:** Stair treads in the seating bowl measure approximately 10 inches in depth. The minimum required tread depth is 11 inches (**IBC 1029.13.2.1**).

8. **Stepped Aisles Without Handrails:** Stepped aisles between seating sections lack handrails. Handrails are required and typically located at the center of the aisle width (**IBC 1029.15**).

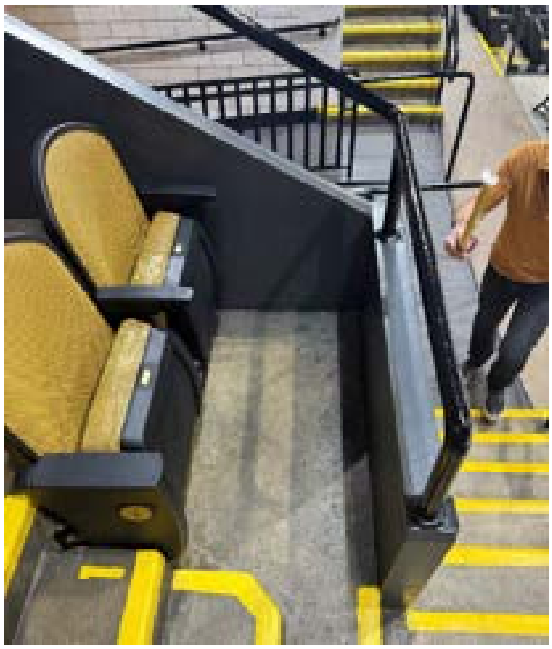


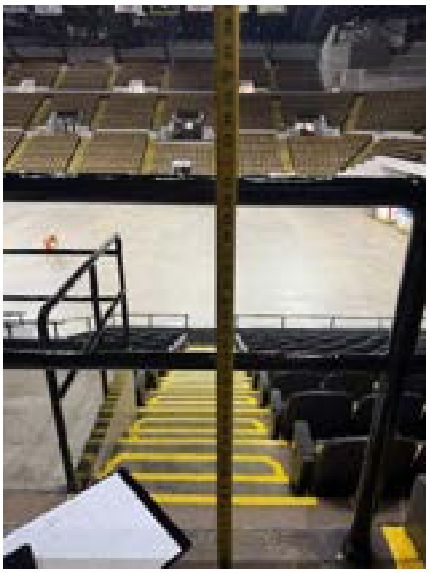
9. **Guards Between Seating and Vomitories:** Where seating areas are elevated more than 30 inches above the vomitory floor, guardrails must be at least 42 inches tall and allow no more than a 4-inch sphere to pass through any opening (**IBC 1029.16.1**). If sightlines are impacted, the guard height may be reduced to 26 inches per **IBC 1029.16.1 Exception 1 / 1029.16.3**.

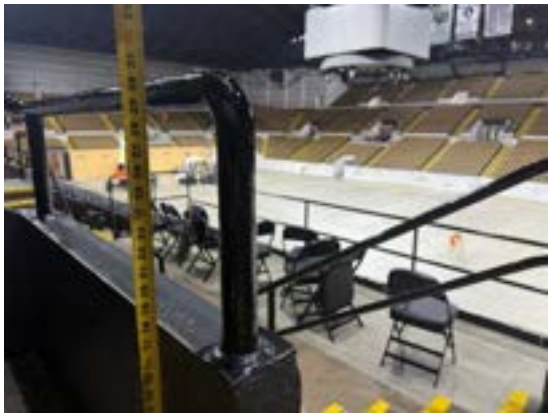


10. **Guards in Front of Seating Areas:** Guardrails are required in multiple locations, including:
    a. In front of ADA seating areas
    b. First-row seating overlooking the arena floor
    c. First-row seating overlooking vomitories
    d. First-row seating forming the upper bowl

    Additionally, guardrails at the bottom of stepped aisles—where the landing is more than 30 inches above the adjacent floor—must be at least 36 inches tall or meet the alternative diagonal measurement of 42 inches from the nosing of the last tread to the top of the guard (**IBC 1029.16.4**). These conditions are not met throughout the facility.







Accessibility Observations:

Site Requirements

1. **Parking**
    a. No on-site parking is available for patrons. Parking is provided through nearby street and structured options in the urban downtown area.
2. **Exterior Accessible Route**
    a. The main entrance on Kilbourn Avenue is accessible via the public sidewalk system.

b. A secondary accessible entrance to the annex (connecting UWM Panther Arena and Miller High Life Theatre) is provided by a ramp. While the ramp meets slope and handrail requirements, the vertical rise between landings exceeds the 30" maximum (IBC 1012.4, ANSI 405.6).

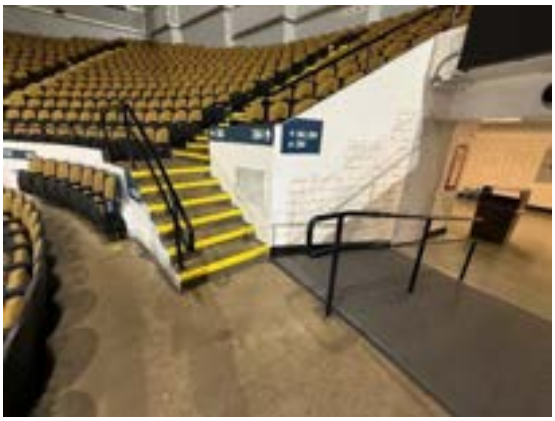
Interior Circulation Routes

1. Horizontal Circulation

a. The main concourse and ground floor are accessible via elevator. However, the east and west upper concourses lack elevator or compliant ramp access.

b. Several doors throughout the facility do not meet required maneuvering clearance (ANSI 404.2.3.2) or lack compliant lever-style hardware (ANSI 404.2.6).

c. Vomitory ramps serving sections 202, 204, 208, 212, 214, 218, 220, 224, 228, and 230 exceed the maximum slope allowed for new (IBC 1012.2) and existing buildings (IEBC 410.8.5/705.1.4).



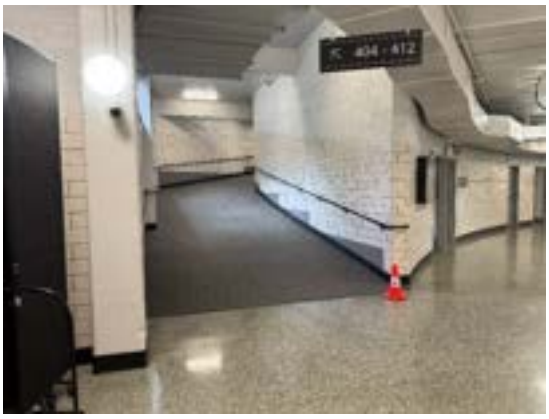
d. Ramps in sections 200, 206, 210, 216, 222, and 226 have been modified with “L”-shaped extensions to reduce slope. These modifications do not meet aisle width and directional change requirements (IBC 1012.5.1/1012.6, ANSI 405.5/405.7), including the minimum 36" clear width between handrails and 60"x60" landing dimensions.

2. Vertical Circulation

a. Entry doors in series must be spaced at least 48" apart plus the width of any door swinging into the space. The current spacing is only 34" (IBC 1010.1.8, ANSI 404.2.5).

b. Handrails on the main entry stairs are mounted at 33", below the required 34"–38" range (IBC 1014.2). Similar conditions exist at the north (State Street) and east (Vel R. Phillips Avenue) egress stairs.
c. The main entry lobby is accessible via elevator.
d. Elevators lack the required two-way communication system at each accessible landing (IBC 1009.8).

e. Ramps connecting the main concourse to upper concourses (four total, one at each corner) and from the ground floor to the main concourse (SW and SE corners) exceed both slope and vertical rise limits (IBC 1012.2, IEBC 410.8.5/705.1.4, IBC 1012.4, ANSI 405.6).



Accessible Elements

1. Drinking Fountains

a. Wall-mounted fountains on the main concourse protrude into circulation paths and must be recessed or equipped with cane-detectable features (IBC 1003.3).

b. Upper concourse fountains are in alcoves, but the alcoves are too shallow, making the fountains protruding objects.
c. Single drinking fountains are installed at upper concourse and ground levels. Each location must provide two (Hi-Low) units (IBC 1109.5).

2. **Signage**
   a. Room signage throughout the building generally complies with requirements for raised text, braille, contrast, and proper mounting location (IBC 1111, ANSI 703).

3. **Fire Detection and Alarm System**
   a. The current alarm system and its compliance status are unknown.

Special Rooms and Spaces:

1. **Toilet Facilities**
   a. Accessible stalls are missing the required 18" vertical grab bar on the side wall (ANSI 604.5.1).
   b. Ambulatory stalls are undersized in both width (<36") and depth (<60") (ANSI 604.10).
   c. Multi-user restrooms (one each for men and women) on the south side of the main concourse are only accessible via stairs and must be made accessible (IBC 1109.2).
   d. No family or assisted-use toilet room was observed. At least one is required in assembly occupancies (IBC 1109.2.1).

2. **Assembly Areas / Seating Bowl**
   a. Wheelchair spaces are provided at the main concourse level and evenly distributed around the bowl. Additional spaces may be added at floor level for specific events. For an 8,000-seat arena, 51 wheelchair spaces are required (IBC 1108.2.2.1), with one companion seat per wheelchair space.
   b. Designated aisle seats with folding armrests and accessibility symbols are present. 5% of aisle seats must meet this requirement (IBC 1108.2.5). Quantity has not been verified.

3. **Dressing and Locker Rooms**
   a. These areas were not included in the current assessment.

4. **Kitchens / Concessions**
    a. Concession areas lack required headroom due to structural elements such as raker beams and ductwork (IBC 1208.2).

5. **Service Counters**
    a. The “Advanced Ticket Sales” counter does not provide the required 36" high accessible surface (IBC 1109.12.3, ANSI 904).

6. **Press Box**
    a. Press boxes must be located on an accessible route. Their location and accessibility status are currently unknown (IBC 1104.3.2).

ACCESSIBILITY AND DISPROPORTIONALITY

While some accessibility-related code deficiencies can be resolved with straightforward, conventional solutions, many require customized design approaches to address the unique conditions of the building and ensure full compliance. As a result, it is difficult to accurately estimate the cost of remediation without first undertaking a more comprehensive building programming and design effort.

For projects within the City of Milwaukee, submission of the form known as ‘Accessibility Analysis – Disproportionality Worksheet’ is required. This document outlines the accessibility upgrade requirements under the IEBC. Specifically, 20% of the total cost of alterations affecting the building’s primary function areas must be allocated toward accessibility improvements.

CONCLUSION

We appreciate the opportunity to conduct this preliminary code assessment of the Miller High Life Theatre and the Milwaukee Panther Arena. Should you have any questions regarding the findings presented in this report, please feel free to contact EUA.

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