

**Working Copy BUILDING AUTOMATION SYSTEM & SERVICES PROPOSAL**

Allianz Life Insurance Company

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| ***Prepared by:*** | ***Presented to:*** |
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| **EGAN COMPANY**  Kirk Wahlstrom | **ALLIANZ** |
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# Exhibits and Attachments

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**Exhibit I Allianz Master List of Schedules**

**Exhibit J Allianz Additional Set Up & Service Quote**

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##### **Section 1.0**

##### *Company Background*

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##### Section 1.0 Company Background

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| 1. ***Private vs. public, length of time in business, length of time as certified provider of products and services itemized within this RFP, number of employees, your core revenue stream, roadmap, locations and employees, etc.*** |  | * Privately owned and operated since 1945 (78 years in business) * Building automation services since * Employees: 870 (seasonally adjusted) * Business breakout: Electrical, mechanical, will find percentages of all * Locations: Champlin and Rochester, MN |
| --- | --- | --- |
| 1. ***Years of experience with Niagara 4 and Servicing this solution*** |  | 18 years |
| 1. ***Certifications for systems and services*** |  | Tridium Certified Engineers  ABB Certified Engineers, leadership in the Technical Development Council and Product Council  Schneider EcoStruxure Certified Engineers |
| 1. ***Business Hours, Holiday Schedule, Emergency Hours*** |  | Business hours: Monday-Friday, 7am-5pm  We observe nine holidays: New Year’s Day, Good Friday (offices close at noon), Memorial Day, Independence Day, Labor Day, Thanksgiving (Thursday and Friday), Christmas Eve, Christmas Day  In case of emergency or after-hours need: Egan’s 24/7/365 call center is answered by an Egan employee and can dispatch any Egan trade |
| 1. ***Diversity certifications*** |  | N/A |
| 1. ***Your initiatives and goals to be Net Zero as a company*** |  | Egan is leveraging its partnerships and vendor initiatives wherever possible. Egan Company is reviewing its energy consumption impact and is developing opportunities. As a specialty contractor, we work closely with many large scale installations of renewable energies, and are working to implement those ideas in our buildings, our transportation, and our physical and personnel resources. |

### Section 1.1 References

***Provide three references from customers you have performed similar services for in the past year. Include company name, contact, telephone number, email address, and brief description of scope of work.***

**PROJECT EXPERIENCE**

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| **Centennial Lakes**  The existing building automation front-end system for Centennial Lakes, an office complex consisting of five separate buildings totaling approximately 843,000 square feet, was originally installed by Egan Company. Previously, controls on the rooftop units for each of the five buildings were updated, enabling the customer direct and full control of the RTUs and eliminating the need to go on the roof unless there are actual mechanical issues with the units. **Currently, the site is undergoing a complete IP based system update of tenant VAV controls, central plants, and followed by RTU replacement and RTU controls upgrade**.  **Contact**: Amy Remely, Senior Property Manager - Cushman Wakefield  **Telephone**: 952.837.8403  **Email address:** amy.remely@cushwake.com |  |
| --- | --- |
| **Target North Campus**  This project is a 750,000 square foot expansion of the already existing 600,000 square feet of building space. Egan was responsible for the Schneider Electric INET system, work on all the mechanical systems, chillers, boilers, air handlers, VAV boxes, radiation control, full DDC, and Egan managed IP network and internet connectivity.  **Contact**: Greg Ault, Senior Building Operations Manager  **Telephone**: 612.250.9654  **Email address:** greg.ault@target.com |  |
| **MSP Airport**  Egan's building automation team provided various system upgrades and electrical monitoring at Terminal 1 of the Minneapolis-St. Paul Airport. Egan's scope also included lift station work for this project.  Contact:  Telephone:  Email address: |  |

### Section 1.2 Roles & Responsibilities

1. ***Please describe the roles and responsibilities included in the project scope for this proposal.***

Proposed team and responsibilities for each team member is listed below.

1. ***Please note any geographic locations outside of the Twin Cities area that would be required.***
   1. All personnel for this project office out of Egan’s Twin Cities offices.
2. ***If you are using sub-contractors, please list them and describe your relationship with the sub-contractor and when and how services by the sub-contractor will be performed for you.*** 
   1. No proposed subcontracts required at this time. We would provide this information if it became necessary in the future.

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## **PROPOSED TEAM**

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|  | **Kirk Wahlstrom**  // *Building Automation Group Manager*  Kirk Wahlstrom earned his mechanical engineering degree from Northwestern University. Kirk has over 30 years of experience within the mechanical engineering industry. Past leadership roles include Building Automation Department Manager, Project Manager, and Group Manager. He is a strong sales professional who is well versed in HVAC, operations, team building, energy efficiency, and management. Kirk is a strategic thinker and is able to focus on the bigger picture. He brings his engineering background, personality, and mindset to bring the right resources together to build our community.  *Outside of work, Kirk enjoys cycling, swimming, and hiking both state and national parks with his family.* |
| --- | --- |
| **EDUCATION**   * Bachelor of Science - Mechanical Engineering - Northwestern University   **RESPONSIBILITIES ON THIS PROJECT**   * Group Executive. General Department management and planning and project coordination. | |

## **PROPOSED TEAM**

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|  | **Ryan Haller** // *Engineering Manager*  Ryan Haller has been with Egan Company since 2004. He graduated from the University of Minnesota in 2000 with a Bachelor of Science in Mechanical Engineering. He is Tridium Niagara AX & N4 certified, and holds product and software certifications for both Schneider Electric and ABB. In his past he has done extensive development and product testing work with various control manufacturers to ensure interoperability of equipment unit controllers with major BAS suppliers. He was active in both the BACnet Manufacturer's Association and LonMark International Associations and has diverse knowledge and experience with both open protocol platforms. He has worked on hundreds of control projects in his 22 years in the industry, ranging from K-12 and higher education, government and municipalities, healthcare, airports, casinos, data centers, and commercial office sectors.  *Outside of work, Ryan enjoys fishing, hunting, being outdoors, and traveling.* |
| --- | --- |
| **EDUCATION**   * Bachelor of Science - Mechanical Engineering - University of Minnesota, Twin Cities   **RELEVANT PROJECT EXPERIENCE**   * Bishop Henry Whipple Building * Bio-Techne * Minneapolis- St. Paul Airport * Warren E Burger Federal Building and U.S. Courthouse   **RESPONSIBILITIES ON THIS PROJECT**   * Ryan coordinates all the Engineering staff, as well as leading all technical discussions, process development and field/engineering planning. * Ryan’s years of experience will be directly utilized in the design and implementation of this project, and as a high level resource where necessary. | |

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## **PROPOSED TEAM**

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|  | **Dane Grunerud**  // *Senior Project Manager*  Dane Grunerud has been with Egan Company since 2012. As a Project Manager, Dane applies his expertise in low-voltage systems integration and building automation. He has extensive experience with data center projects, HVAC controls, fiber optics, card access, fire alarm, paging, structured cabling and CCTV. Dane strongly believes in communication throughout the project to ensure that all needs are met. He has a bachelor’s degree in Construction Management from North Dakota State University and a Masters of Business Administration from the University of St. Thomas.  *Outside of work, Dane enjoys spending time with his family, running, fishing, tinkering in his shop, and on the lake.* |
| --- | --- |
| **EDUCATION**   * Bachelors in Construction Management - North Dakota State University * Masters of Business Administration - University of St. Thomas   **RELEVANT PROJECT EXPERIENCE**   * City Center * Bio-Techne * Health Partners   **RESPONSIBILITIES ON THIS PROJECT**   * Dane will lead the Project Management of this project, coordinating all labor needs on the field installation side as well as coordinating with the engineering team. * All day-to-day communications are typically run through our Project Management team. * Handles all financial aspects and customer interface for the same. * Scheduling, permitting, material requisition, and access coordination. | |

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## **PROPOSED TEAM**

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|  | **Brett Rasmussen**  // *Account Manager*  Since graduating from Lakewood Community College, Brett Rasmussen has been a Lead Technician with Egan Company. He is certified through the Limited Energy Technician State of Minnesota, and has been with Egan since 2002. Serving in many roles over the years. Brett had twelve years in the building automation project team and was involved in all aspects from engineering to installation during this time. He then was a field service tech for seven years and maintained and serviced the control systems that Egan installed. Brett continued to build strong relationships with customers by providing expert and professional service to our control customers (Schneider Electric and Tridium). Brett provides customers with solutions for the new age of building integration and controls to keep them running more efficiently while keeping occupants comfortable.  *During his free time, he enjoys spending time with his family and friends.* |
| --- | --- |
| **EDUCATION**   * Associates Degree - Lakewood Community College   **RELEVANT PROJECT EXPERIENCE**   * St. Stephens - HVAC Upgrade * Target North Campus * City Center * Bishop Henry Whipple Building * Warren E Burger Federal Building and U.S. Courthouse   **RESPONSIBILITIES ON THIS PROJECT**   * Account Manager, Brett will handle the high level communication with the customer, acting as the liaison and dual purpose advocate. * Project pricing and ongoing pricing needs are handled by the Account Manager. | |

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## **PROPOSED TEAM**

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|  | **Rob LeMay**  // *Senior Applications Engineer*  Rob LeMay received his vocational-technical education in Boiler Maintenance and Operations at St. Paul Technical College as well as in HVAC-R Tech at Dakota County Technical College. He has been in the controls industry for 30 years and joined Egan Company in 2007. He is Tridium Niagara AX certified, and holds product and software certifications for both Schneider Electric and ABB. Rob specializes in providing customers with a seamless transition from legacy systems to current technologies and brings a diverse skill set and keen understanding of the steps involved for a successful migration . His understanding of complex facility challenges sets him up for success in this role.  *Outside of work, Rob enjoys woodworking and pheasant hunting with his children and two dogs.* |
| --- | --- |
| **EDUCATION**   * St. Paul Technical College * Dakota County Technical College   **RELEVANT PROJECT EXPERIENCE**   * City Center * Health Partners * Wells Fargo Downtown East * Target North Campus   **RESPONSIBILITIES ON THIS PROJECT**   * As Sr. Engineer, Rob will be a part of project engineering documentation, software, commissioning and check-out. * Rob’s specialization is with the Schneider product line but is well versed in all of Egan’s offerings. | |

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## **PROPOSED TEAM**

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|  | **Paul Libra**  // *Senior Applications Engineer*  Paul Libra has over 25 years of experience in the building automation industry, and has been with Egan Company for nearly 30 years. He attended the University of Minnesota for pre-engineering and has an associate degree from St. Paul Technical College in pipefitting/steamfitting/HVACR. He has completed technical training seminars in Barber-Colman, Honeywell, American Auto-Matrix/Cylon/ABB, and Schneider Electric. He is a Tridium Niagara AX & N4 certified Engineer. He is a certified State of Minnesota Journeyman of High Pressure Steam, Power Limited Technician, City of St. Paul Journeyman of Gas, Oil, Refrigeration, Low Pressure Steam, and a CFC Universal Technician. He has extensive experience in government buildings, including Anoka County, B.H. Whipple Federal Building, and Warren E. Burger Federal Building and U.S. Courthouse. |
| --- | --- |
| **EDUCATION**   * University of Minnesota * Associate Degree - St. Paul Technical College   **RELEVANT PROJECT EXPERIENCE**   * Minneapolis-St.Paul Airport * Bio-Techne * Mystic Lake Casino and Convention Center * Anoka County   **RESPONSIBILITIES ON THIS PROJECT**   * As Sr. Engineer, Paul will be a part of project engineering documentation, software, commissioning and check-out. * Paul leads our Tridium development and implementation team. He will provide direct support to our Tridium installation and system set-up. | |

## **PROPOSED TEAM**

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|  | **Jon Wegeleben**  // *Applications Engineer*  Jon Wegeleben is an Applications Engineer on the Egan Company team. He is Tridium Niagara AX certified, and holds several product and software certifications for ABB. Jon attended St Cloud Technical and Community College. Jon believes that customer satisfaction is the most important aspect of a project.  *Outside of work, he enjoys fishing, camping, and gaming.* |
| --- | --- |
| **EDUCATION**   * St Cloud Technical and Community College   **RELEVANT PROJECT EXPERIENCE**   * Eden Prairie School District Upgrades * Northland Center Executive Office Center Facility Upgrades * Princeton School District Upgrades * Minneapolis Community & Tech College Controls Upgrade * NorthWestern Health Sciences Upgrades   **RESPONSIBILITIES ON THIS PROJECT**   * Jon is our lead engineering in the programming and development of our ABB product line strategies, the applications developed to control each piece of equipment. * Jon will lead the programming and testing of all applications. | |

## **PROPOSED TEAM**

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|  | **Margo Bonham**  // *Project Associate*  Margo Bonham has served as the Project Associate for Egan Company's ATS group since 2014. She attended Itasca Community College. |
| --- | --- |
| **EDUCATION**   * Itasca Community College   **RELEVANT PROJECT EXPERIENCE**   * Department Support.   **RESPONSIBILITIES ON THIS PROJECT**   * Margo as Project Associate will support all aspects of our project delivery, coordinating permitting, documentation delivery and transfer, as well as duties with customer requirements, badging, access, etc. | |

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## **PROPOSED TEAM**

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|  | **Ross Keane**  // *Electrician*  Ross Keane has been with Egan since 2010, and has been in the electrical industry for 10 years. He graduated from St. Paul College with a degree in Electrical Construction and completed a five year apprenticeship locally. As a Licensed Master Electrician and certifications in OSHA 10, Lift, First Aid/CPR, and various building automation software like SmartStruxure, Ross is fully knowledgeable in what it takes to complete any project and be safe on the job.  *Outside of work he enjoys woodwork and going camping with his family.* |
| --- | --- |
| **EDUCATION**   * St. Paul College   **RELEVANT PROJECT EXPERIENCE**   * Bishop Henry Whipple Building * City Center Eco Upgrade * Health Partners   **RESPONSIBILITIES ON THIS PROJECT**   * Ross is part of our Technician team, Electricians skilled in the programming and commissioning of Building Automation Systems. * Ross’s main duties will be in coordinating final check out and commissioning of Building Automation System hardware, configuring proper operation as well as higher level requirements in the cut-over and installation. | |

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## **PROPOSED TEAM**

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|  | **Eric Oja**  // *Electrician*  With expertise in all aspects of installation, Eric Oja has years of experience with multiple HVAC control systems, including Siemens, Johnson, Honeywell, Trane, TAC, and American Automatrix. He has training in Project Management for Electrical Contractors and Electrical Project Supervision Training, and is a Licensed Electrical Journeyman in Minnesota. Since 2000, Eric has added his expertise to Egan projects, both in the field and in the office.  *Outside of work he enjoys spending time with family and friends, attending church functions, fly fishing, and working on projects around the house.* |
| --- | --- |
| **EDUCATION**   * North Hennepin Community College   **RELEVANT PROJECT EXPERIENCE**   * Minneapolis-St. Paul Terminal 1 * Anoka-Hennepin Schools * Anoka County   **RESPONSIBILITIES ON THIS PROJECT**   * As our lead Electrical Foreman, Eric will coordinate the field Electrical team in all aspects of the installation. | |

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## **PROPOSED TEAM**

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|  | **Dan Wille**  // *Electrician*  Dan Wille has been with Egan since 2005 and is a Licensed Journeyman Electrician. With OSHA 10, Arc Flash, Forklift, First Aid/CPR, and Confined Space training, Dan is fully knowledgeable in what it takes to be safe on the job. Dan’s commissions and installs various building automation systems, including American Automatrix, Schneider, ABB, CXPro, Jace, and Tridium. He has an Associate’s degree from Century College, and completed a five year apprenticeship with Local Union 110. He has also completed American Automatrix courses for Solo Pro and NB Pro, and has a ABB Drive Startup Certification.  *Outside of work, Dan enjoys spending time with family and friends, going up to the lake, and reading books.* |
| --- | --- |
| **EDUCATION**   * Century Community College   **RELEVANT PROJECT EXPERIENCE**   * Anoka-Hennepin School District * Warren E Burger Federal Building and U.S. Courthouse   **RESPONSIBILITIES ON THIS PROJECT**   * Dan is part of our Technician team, Electricians skilled in the programming and commissioning of Building Automation Systems. * Dan’s main duties will be in coordinating final check out and commissioning of Building Automation System hardware, configuring proper operation as well as higher level requirements in the cut-over and installation. | |

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### Section 1.3 Affiliations or Special Relationships

***Please describe your affiliations or special relations with manufacturers, other suppliers or specialties that may impact the services that you can provide to AZL.***

Egan Company is a System Integrator partner for ABB Building Controls.  
Egan Company is a System Integrator partner for Schneider Electric Building Automation Systems.   
  
These relationships, along with our many peripheral equipment, networking, and specialty vendors, provides us and our partners flexibility in designing and executing complex projects.

As one of the region's largest specialty contractors, Egan provides complete installation and service for 12 building trades.

Our mission provides a simple description of how we approach this very important work:  
*Our mission is to provide innovative, high-quality, integrated skilled trades and services that build growth opportunities for our employees and customers while upholding our foundation of safety and keeping our promises*

### Section 1.4 Awards

***Please list any awards your company has received related to the Services.***

**HONORS AND RECOGNITION**

|  | EHS Today’s America’s Safest Companies Award  recognition since 2014 |
| --- | --- |
|  | **#69** - Minnesota’s Largest Private Companies |
|  | **#113** - ENR Top 600 Specialty Contractors  **#10** - Top 20 Firms in Glazing and Curtainwall |
|  | **#1** - Finance & Commerce *Best Engineer* and *Best Plumbing Company* Categories  **#2** - Finance & Commerce *Best Electrical Contractor* Category  Finance & Commerce Top Projects of 2022  *Egan Company was on the project team of three top projects* |
|  | **#18** - Glass Magazine Top 50 Glaziers |
|  | **#49** - US Glass Magazine Top 50 Contract Glaziers  **#2** - US Glass Magazine Industry's Best Companies to Work For |
|  | Governor’s Workplace Safety Awards  recipient since 2007 |

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## Section 2.0 Project & Service Overview

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1. ***Provide a detailed overview of your proposed solution for Allianz. This description should include how your services will provide the best value for Allianz and your approach to partnering with the customer.***

Egan’s proposed solution for the Allianz Life facilities utilizes the full IP offering from ABB to meet the performance and design requirements.

Current Direct Digital Control (DDC ) hardware will be replaced with a nearly 1:1 upgrade. We recognize there are instances where multiple legacy devices are used to meet previous expansion and functional changes, With ABB’s Flexion device, we will be able to consolidate all Input/Output control to a single controller, eliminating the need for extra network traffic and the inherent limitations of using multiple pieces of hardware to control a single piece of equipment.

A new server will be utilized at each facility to provide a parallel operation of the existing system during transition and the offsite server to provide future redundancy.

Utilizing the owner’s cabling installation relationship, we will be able to focus our efforts on the more technical aspects of the project. Coordination of the cabling installation will be imperative to a positive project.

The cabling riser and associated networking equipment, the backbone of the system, will be an early focus of the project. Completing this infrastructure will allow flexibility in where and when further expansion of the IP system takes place.

It is the expectation of our team that we would plan a process of completing the occupied space work and the associated mechanical space work, on a floor-by-floor basis. The occupied space work will require additional, targeted coordination with the cabling provider. We will be replacing the controls at the VAV box, after the ethernet network has been completed in that area. There may be an opportunity for a combined assault at this work, potentially completing much of this work immediately upon the cable installation. There is also a chance that scheduling VAV controller installation at the completion of the cabling versus simultaneous, may be required or beneficial. In this fashion we will move through the facility upgrading delivery equipment (Central Plant AHUs, etc.) and the associated terminal equipment (VAS, EFS, radiation, etc.)

General Project Expectations:

* Project Kick-Off
  + We use the early part of every project to fully understand and investigate. Prior to engineering starting or any documentation, we will Investigate and interrogate the systems to learn and recognize the current operational needs and expectations.
* Design and Engineering
  + The Engineering and Installation teams work with the stakeholders to produce a design, with associated documentation, consistent with the needs and expectations of all parties involved.
  + Questions and revisions will arise. We foresee a significant amount of time to fully investigate the sequence of operations for the HVAC equipment. Furthermore, we have a significant amount of time to fully investigate and plan for the fire/smoke integration portion. Our experience with these systems dictates that more than ample time needs to be directed at this task.
* Communication
  + We offer to partner with Allianz to offer a direct look at our process and participate in the discussion, time frames, access, how best to operate in a specific area or areas, these and other questions will be asked repeatedly as they will differ across the facility. We expect a regular meeting cadence will be designed for continual update, as well as a direct contact(s) for day-to-day and operational needs.
  + All construction documentation is housed within a system used to facilitate clear communications between the Egan project team members. Plan Grid Examples are attached as exhibits.
* Equipment Investigation
  + We will investigate the current operation of the legacy BAS, noting deficiencies, recommendations, and areas for improvement or efficiency. This process at each phase will provide further input to engineering that may need stakeholder buy-in and will proceed as that discussion and approval is provided.
* Conversion - Cut-Over
  + It is our intent to provide a cut-over with limited to zero interruption to occupant comfort or quality. This will require a very specific set of plans and instructions for temporary panel and equipment modifications, permanent installation and final termination.
* Point-to-Point Check Out and Sequence Commissioning
  + Upon completion of a successful cutover to new DDC hardware, a complete Point-To-Point checkout of all Input/Output devices as well as Sequence of Operations will take place. Plan grid again used in this process to communicate across team members, and provide a collaborative process.
  + Graphical commissioning is done confirming live, and accurate data linking and system set-up requirements for alarming, trending, and further integrations are operational.
* Training
  + Training is further discussed within this document. In general, all training is done with the Egan and Allianz team onsite, in small increments, allowing for days to weeks to utilize, question, and habitualized use before moving to the next task.

### Section 2.1 Timing: ***Please describe your dependencies on timing for this project, including lead times and required pre-requisites.***

* Engineering Dependencies
  + Adequate time on site, potentially measured in days to weeks, to investigate and document the current operations.
* Material Dependencies
  + Current lead times for our proposed IP DDC hardware is measured in the delivery time, or less than <10 days manufacturing lead times plus delivery for certain items.
  + Networking hardware is currently at warehouse level availability.
* Labor Dependencies
  + Labor dependencies will be rolled in the timeline below. We are scheduling for 2024, with availability of our proposed team at this point. We will assign and reassign as possible and as work enters the backlog, but we attempt to make minimal moves once a team has been designated. It is our hope and expectation that timely decisions will be made.

### Section 2.2 Project Timeline: ***Detail your proposed project timeline. This should include the time from the signing of an agreement, lead time to configure and install software and equipment, purchase materials, installation timeline (including a project plan showing detailed installation steps), transitioning approach from current to new software and equipment, testing, and project completion at time of turn-over.***

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### Section 2.3 *Allianz Support requirements:* ***Detail the support you will need from Allianz Life to complete the installation.***

* We would request that a designated person or persons lead communication with Egan.
* We would request a reasonable, secure space for material, tool, and equipment storage.

### Section 2.4 Documentation: *Describe your documentation process for configurations, ongoing documentation you provide to customer.*

* As discussed in the Engineering process, we will produce a complete set of Building Automation System documentation.
  + Sequence of Operations
  + Points list
  + Material cut-sheets and manufacturer documentation
  + Plan Grid documentation with installation and configuration information and reporting.
* All documentation will be made available via the Niagara interface as well as hard copy and panel reference versions.

### Section 2.5 Implementation Hours: *To avoid disruption in the workplace, please describe your approach to completing the work without interactions with employees on the floor vs. work that will need to be completed outside of standard business hours. Please identify what your approach and requirements are.*

* We will work with Allianz to understand the locations and situations that will not allow for “normal business hour” installation. There are multiple options to accomplish this.
  + Shift differential. Occupied spaces are worked outside business hours.
  + Split day. We have had good success with starting an early day, completing as much work as possible, prior to standard business hours. The installation then moves to mechanical spaces to complete the work day.
  + It is expected that some combination of after-hours and a split day will be used, depending on the situation.
  + At this time we do not see the need for multiple crews to complete the project within the 12 month time frame. This option is always available and could be utilized if resources allow and there is a mutual benefit and level of comfort in the option.

## Section 3.0 Software Specific Business Requirements

****Allianz will require a set up of three unique dashboards for its environment, please consider the following in your responses:

1. Leadership
2. Sustainability
3. Technician view

### Section 3.1 Growth: *Please describe your company positioning to growth as it is related to the Niagara 4 Software and support services.*

* 1. ***How is the product designed for future growth and changes in technology?***  
     Our products are strategically designed to account for forward progress in technology, building needs, and codes and standards. As such, we incorporate scalability, modularity, and future-proof technologies into our products.

1. Scalability: we have designed a product architecture that can incorporate and handle ever increasing demands of building systems and needs. Using the latest IP networking standards, we can deliver architectures that can span several building systems across a single building to a multi-geography campus.

2. Modularity: We have designed FLX line of products that can expand with a variety of compute, I/O, and supervisory capability. Our Edge to Server architecture has expansion capability delivered through several product variations to meet any need of the building, all supporting the Niagara framework.

3. Future-proof technologies: Supporting dual architectures, both IP and MSTP, across our entire controller line, we support network and protocol evolution backed-up by industry leading hardware reliability - our technology is designed to stand the test of time with forward and backward compatibility.

* 1. ***What is the 3-year roadmap for you that will maximize opportunities for AZL with Niagara 4***

As Gold partners with Tridium, ABB Building solutions has a solid pipeline of innovation. Our roadmap includes incorporating Niagara innovations as they are released. We have built a strong collaborative relationship with Tridium which allows us to test and build alongside Tridium. Egan has been a Tridium partner for 18 years and has embraced it as an integral component of our business to serve the diverse needs of our customers within this market.

* 1. ***What opportunities are there for AZL to partner in with you?***   
     ABB, Inc. is a global company headquartered in Zurich, Switzerland with annual revenues exceeding $29.4B and greater than 105,000 employees across four business units. As such, it is very conceivable that there would be adequate interest and opportunity in mutually beneficial partnership opportunities. We are also the title sponsor for the ABB Formula E World Motorsport series, and since Allianz is the official insurance sponsor; the two companies are already indirectly connected in a shared global mission to decarbonize the world. Egan views every customer as a partner and continually works with end users long after the initial project life cycle to provide customized solutions that maximize efficiency, improve occupant comfort, and simplify operations for facilities stakeholders.

### Section 3.2 Software Implementation & Installation Questions

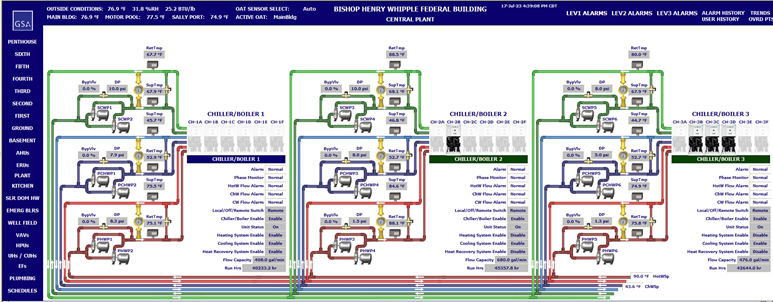
### Section 3.2a Software: Describe your project approach and methodology to set up the system in the implementation phase of the project.

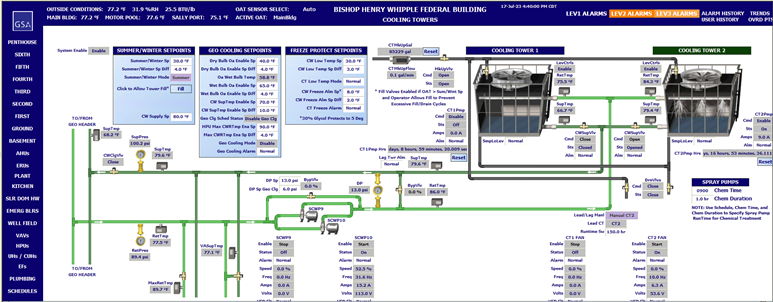
### Egan has extensive experience with replacement of legacy systems, both systems we routinely support and are continually upgrading, and replacement of other contractors/manufacturers installed systems. Any good replacement/upgrade/hardware migration project begins with an extensive communicative partnership with the customer in which expectations are laid out and both parties come away with a clear understanding of the process. It starts with learning the installed system and how data is shared and devices are communicating and understanding the most critical pieces of equipment so a schedule can be constructed to minimize disruption on the end users and their building occupants. Once the installed system is fully understood you can begin parsing out those systems that operate mostly stand alone and you tackle those systems for cutover first. Starting with the most simple, self-sufficient systems first allows you to get experience with the processes involved without any risk of building occupant impacts. Prior to the first cutovers, the new network infrastructure and server(s) will be installed. The project team will hold multiple graphics review meetings with facilities where proposed graphics are presented, allowing for staff to provide feedback and deliver a completely customized GUI that meets their needs. The systems are then removed (alarms disabled and any shared data between systems are forced) from the operating server and brought online on the new system. During the cutover process, trained technicians are on site and monitoring conditions to put VFDs in hand, manually operate valves/dampers to ensure continuity of services to the occupied spaces. Commissioning of the new system is performed throughout this process, followed by end user training on the operations of the moved equipment on the new system. Deficiencies found with peripheral devices (i.e. sensors, valves, actuators, etc) are documented in our digital commissioning platform and are shared with the customer throughout the project. This process is repeated until all systems are replaced. All the while the schedule is communicated with facilities staff and any systems deemed necessary for after hours cutovers are laid out in advance. Once all hardware is replaced, the server(s) and network devices are removed and turned over to the customer.

1. ***Please include screen samples on what your recommended approach on graphics and set up would be for AZL as well as your graphics capabilities and recommendations.***

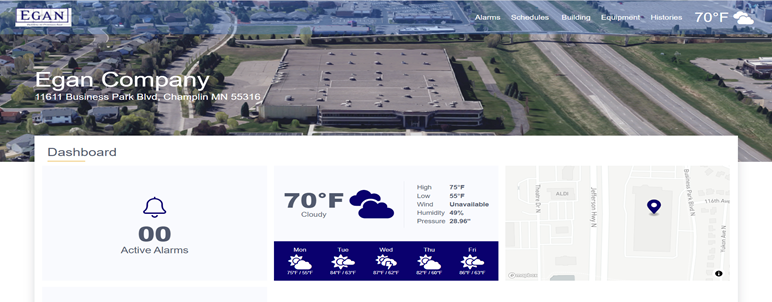
Egan project team leaders will host several graphics review meetings with facilities staff and all system stakeholders at the onset of the construction phase of the project. Existing graphics will be reviewed with staff first to determine their likes/dislikes so that a sample graphics package can begin to be assembled after the initial meetings. Subsequent meetings will be held before and during the cutover process to ensure the final product meets the needs of every end user. We feel a site of this size and complexity will most likely require multiple interfaces, as indicated above, to meet the diverse needs of 1.) Leadership, 2.) Sustainability, 3.) Technicians/Facilities Staff. Below are some examples of interfaces that would preliminarily be proposed during those initial graphical review meetings to determine expectations of the final deployed interfaces:

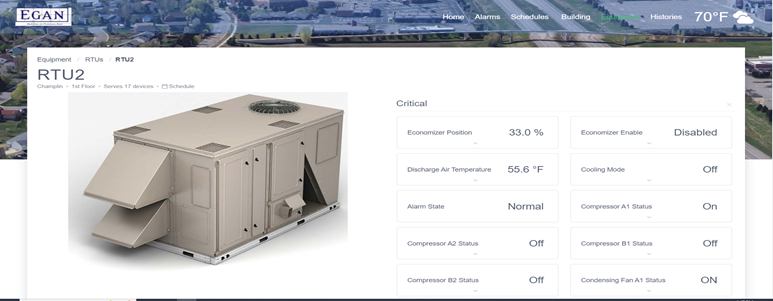
Technician / Facilities Graphics:



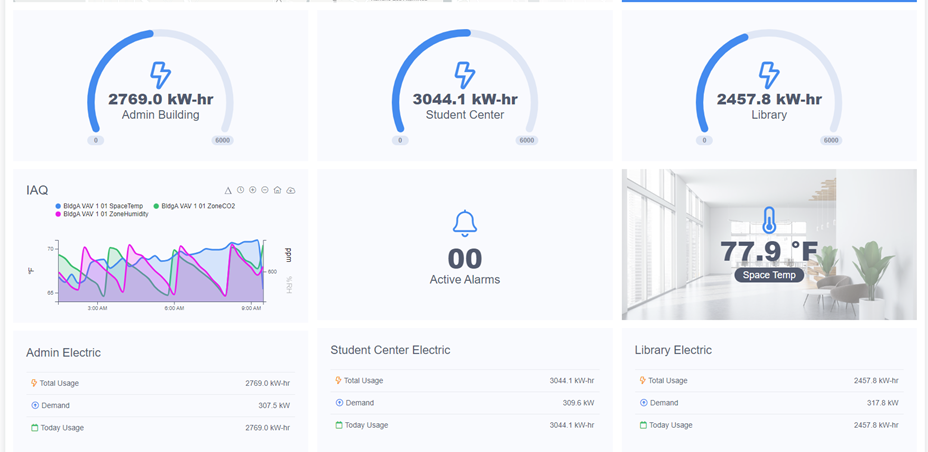


Leadership Graphics:





Sustainability Dashboards:



1. ***Note if you expect to support the implementation with anyone other than your own employees please list out and reference in sub-contractor section.***
2. ***Please indicate ALL software modules or 3rd party software required for a successful set up.***

ABB CxPro - Engineering software to program and commission ABB field level controllers.

-ABB Integra Workbench – Engineering suite for database management, alarming, trending, and graphics.

1. ***Describe the experience and qualifications of the core project team members that would be assigned. How long have they been with your company? What is their technical / quality assurance / project management capabilities and experience? Certifications?***

The size and complexity of the installed system warrants assignment of this project to our most experienced project team. Egan team members average 12+ years of industry experience. These team members have participated in substantial hardware migrations in our most technical facilities, ranging from Data Centers, Clean Rooms and Laboratories, International Airports, and General Services Administration facilities. The installing electricians will consist of Local 292 General Foreman that have been in the industry for decades. They will provide the controller electrical cut overs and will be key communication cogs throughout the project. Local 292 General Foreman will also be used for commissioning of the newly installed systems, operating as Technicians and a direct conduit to the Engineering team. The Engineering team will consist of a mix of Senior Applications Engineers (B.S.M.Es in Mechanical Engineering and/or Computer Science as well as General Foreman Local 455 pipefitters) and software developer support personnel. The Engineering team will provide all the hardware, software, and graphical support for the project.

1. ***Describe your approach for the transfer of knowledge to Allianz technical team members.***

Training will be provided throughout the life cycle of the project, as systems are cutover onto the new platform, to ensure staff is comfortable and able to operate the system immediately. Review sessions will be scheduled before and after system cutovers to make sure the final product captures the key control features of the old system and implements some more modern day efficiency centric control SOPs. Refer to section 4.11 for a more detailed response on final end user training.

1. ***Please describe your recommended set up for alarms and notifications.***

Similar to graphics, alarms are completely customizable and require involvement from the end user to determine what is to be alarmed and what is to be set up for notifications. Egan has adopted a standard 3 level priority methodology for alarming (Critical, Warning, Advisory) that meets the needs of most facilities but discussions will be held at the onset of the project to explore the existing system with facilities staff and establish the preferred alarm handling approach for the new system. Remote notifications will be handled the same way in order to build a customized alarm messaging system that meets facilities needs during business and off hours.

### Section 3.3 On site

**Section 3.4 Installation Service Requirements**

1. ***Confirm capabilities and list details for the complete installation of the system in accordance with the manufacturer's instructions and provide necessary interconnections, services, and adjustments required for a complete and operable system, including server removal, disposal and new installation.***

Egan has been an authorized platinum partner of ABB dating back to 1989 and has been an authorized distributor of Tridium dating back to 2005. Best practices will be followed at every step due to our extensive experience with the products being requested as part of this RFP. If awarded, a complete submittal will be provided detailing the network infrastructure, proposed servers and workstations, controllers and peripheral devices, and controller termination details.

1. ***Communication equipment and cable grounding shall be installed as necessary to preclude ground loops, noise, and surges from adversely affecting system operation. Fiber Optic cables and wiring in exposed areas, including low voltage wiring but not including network cable in telecommunication closets, shall be installed in metallic raceways or EMT conduit.***

Per the RFP and subsequent Q&A, ethernet communication cabling will be provided by owners representative, including any required fiber optic cabling. Existing conduits and raceways will be reused. Any new cabling in mechanical rooms or exposed areas (not consider plenum space) will be installed in conduit.

### Section 3.5 ISO Standards

1. ***Please list any ISO standards that you are complying with.***

* ISO Standard 9001
* ISO Standard 14001
* ISO Standard 45001
* ISO Standard 50001

1. ***Please describe how you would support ISO 14001 ESG standard for Allianz.***

### ABB’s Mission to Zero initiative demonstrates its commitment to sustainable solutions and advancing a zero-emission future. With a diverse range of energy management solutions and an extensive electrification portfolio, ABB harnesses technology and innovation to create a more sustainable and energy efficient future.

### From building and energy management systems, EV charging and digitalization, to smart grid technologies, ABB offers solutions that can be implemented in Allianz facilities to reduce energy consumption and lead to a reduced carbon footprint.

### ABB’s circularity approach focuses on “designing out” waste and pollution, ensuring every resource is used to its full value. By adopting this practice, organizations can ensure resources are efficiently used, and products are designed in a way so they can be reused, remanufactured, or repaired, keeping them in circulation so they don’t contribute to landfilling.

### ABB is committed to ensuring a safe and healthy working environment for both its own employees and the customers it supports. From diversity and inclusion initiatives with its own organization to product development that emphasized a safety-first approach, Allianz can be assured that ABB prioritizes social impact.

### Section 3.6 Reporting & Account Management

1. ***Are there mandatory reporting tools to run pre-defined reports?***

Niagara offers some simple inherent reporting engines to generate routine reports based on history data. The histories can be exported in .csv or .pdf formats for use by other software services or just simple automated exports from the system. The data is exported in table format. There is a multitude of available bolt on reporting services offered that are readily available to provide a customized report output.

1. ***Please attach a sample of standard reports***

See above. The stock reporting service within Niagara provides for simple data table exports via .csv or .pdf formats.

1. ***What is your ability to provide adhoc/non-standard reports?***

There is a multitude of available bolt on reporting services offered that are readily available to provide customized reporting output. We have experience with several of the Niagara and 3rd party based offerings.

1. ***Please provide a copy of your standard Performance Reporting***

Since 2018, Egan Company has annually measured our performance and customers overall experience working with us by utilizing the Net Promoter Score (NPS). NPS is an index from -100 to 100 that measures our customers' willingness to recommend Egan to others.

1. ***Please describe your approach to Account Management and Operational Support***

Egan utilizes a team approach to each customer. We make every effort to provide continuity from the initial project through future service,maintenance, and review. Account Management is handled by the assigned AM, who acts not only to offer solutions for the customer, but as liaison. Our goal is to operate as a partnership with the AM role and responsibilities working for mutual benefit.

1. ***List any required third party or additional module requirements or recommendations to provide reporting.***

There is a multitude of available bolt on reporting services offered that are readily available to provide customized reporting output. We have experience with several of the Niagara and 3rd party based offerings. Most of these services come with upfront and ongoing subscription costs. If awarded the project and reporting services are a need, we will sit down and review each offering and its subsequent cap-ex and op-ex costs to determine best fit.

### Section 3.7 Analytics

### *Please describe the standard analytics included in the basic software package.*

No standard analytics are included with the base package. Tridium offers a very robust history and alarm engine for historical data and alarm handling but fault detection and diagnostics (FDD), a part of modern day analytics engines, is not provided with the base package.

1. **Please describe your capabilities to provide additional analytics and any name any required additional software.**

There is a multitude of available bolt on analytic services offered that are readily available to provide fault detection and diagnostics (analytics). We have experience with several of the Niagara and 3rd party based offerings. Most of these services come with upfront and ongoing subscription costs. If awarded the project and analytic services are a need, we will sit down and review each offering and its subsequent cap-ex and op-ex costs to determine best fit.

1. ***Please provide information on your experience setting up predictive analytics.***

### Egan has a multitude of experience with respect to BAS analytics offerings. We have staff trained and certified on Tridium’s Niagara Analytics offering. We have several sites that are leveraging Schneider Electrics EcoStruxure Building Advisor. We also have partnered with 3rd party providers like Key2Act, Lucid, and SkySpark to interface our EMS systems with their analytics offerings. We can provide a solution or partner with a 3rd party provider to deliver a system tailored around the needs of the customer and their facility.

### Section 3.8 Equipment Downtime & Transition

1. ***Please describe your management of equipment downtime during installation and what Allianz should expect during this process.***

### Egan has extensive experience with replacement of legacy systems, both systems we routinely support and are continually upgrading, and replacement of other contractors/manufacturers installed systems. Refer to section 4.12 for details on how we would approach the migration of a system of this size and complexity

### Section 3.9 Performance Requirements

1. ***Give examples of Service Level Agreements (SLAs) achieved in your reference-able implementations. Include:***
   1. ***Typical availability time, scheduled maintenance windows, target availability percentage, tickets, response and resolution times, MBTF, etc.***  
        
      In the Building Automation sphere, product availability has returned to a regular delivery upon order schedule, for much of our needs.   
        
      Typical response expectations are phone within the hour, and escalated as the situation requires.   
        
      Building Automation hardware is published at a 10+ year MTBT/MTTF.
   2. ***Service call response times, issue resolution times***   
        
      Egan operates a 24/7 Building Automation Service Department. We have a dedicated after hours call center, and weekly assigned after hours technician.   
        
      We have a dedicated Triage desk engineer, to respond to most service requests, diagnose issues, address immediately if possible and assign to engineering or field level technicians as necessary.
   3. ***System performance improvements for sustainability and energy savings goals***   
        
      As fully configurable, integratable, and expandable. all our product offerings allow exceptions of control to grow with the technology and customer’s needs. Egan will work with our partners to discuss areas of potential improvement and decide together the impact and methods to achieve our mutually defined goals.
   4. ***Please include performance factors for leader dashboard, sustainability dashboard, technician dashboards***   
        
      Being fully configurable, each of these partners can be equipped with the most relevant information to their ever changing needs.   
        
      Technician: focused on operational information, equipment functions and all factors that may me at or beyond design performance expectations. KPI can include such data s equipment and space alarms conditions, equipment operational parameters and FDD assessments, etc.  
        
      Sustainability: focused on the comparison of historical data from the energy metering and energy users of the facility. KPI can include consumption, normalized energy usage data, energy avoidance information.  
        
      Leader: focused on the user impacts and financial impacts. KPI can include occupant space concerns, energy information.  
        
      Certain important aspects of dashboards may require additional features and implementations.

### Section 3.10 Licensing Questions

#### ***Please describe the licensing model, including user, named user, volume, leavers and joiner administration and requirements***

Tridium uses an SMA (Software Maintenance Agreement) process for purchasing and managing any embedded hosts (JACEs) or software hosts (Supervisors) licensing. These SMAs are used to assure access is readily available to the latest releases and cybersecurity patches. They can be purchased in 1, 3, and 5 year increments. Tridium offers their Enterprise SMA Manager for both Systems Integrators or end users to efficiently manage their software renewals. All licenses will be provided with open NICs (Tridium Niagara Information & Conformance Statement) so they are accessible by all Workbench tools and they will be licensed to Allianz. The control hardware installed on equipment that interfaces to the Niagara system does not have any up front or recurring licensing costs. We will deploy a flat BACnet IP architecture to minimize the amount of cap-ex and op-ex costs incurred with SMAs.

1. ***Please describe the type of access levels and roles required or available in the solution.***

Tridium offers their Enterprise SMA Manager for both Systems Integrators or end users to efficiently manage their software renewals. This allows end users to monitor/manage their own licensing and submit for quotes from Niagara partners for software renewals.

### Section 3.11 Sustainability

* ***Please provide information on your experience with Sustainability initiatives and opportunities you see for Allianz Life.***At Egan Company, we look to strengthen our relationships by joining ourselves to their initiatives. In other cases we can offer technologies and opportunities to improve upon existing equipment. We have partnered with technology improvements such as variable pumng improvements, energy valve adn pressure independent valve upgrades, demand based ventilation, occupancy utilization, light harvesting, solar load reduction applications,, among others.  
  We have had the opportunity to participate with complex energy initiatives with the GSA, private commercial properties, public sector school, office. treatment, and residential applications. Our goal is to communicate areas of possibility with our partners and together, use our mutual goals to bring these initiatives forward.   
    
  We feel there are ares of improved operation at the Alliaz facility. Targeting the large energy users is of course the most logical process and moving towards the smaller items.  
    
  Improved pumping and energy valve installation holds significant potential for energy savings. Payback on this technology is often measured in single digit years or even months in extreme cases.   
    
  Without knowledge of the boiler and heating system integral system operations, we would suggest targeting that water temperature reset and the potential for multiple reste curve options.   
    
  Outside of the HVAC systems, integration of the BAS would touch other integral systems, bringing themtogether to operate more holistically. Occupancy lighting, light harvesting, solar load avoidance, demand based ventilation, these and other such approaches can be investigated as a better understnadng of the facility, occupant expectations, and management vision.

## Section 4.0 Software Technology, Architecture and Security

### Section 4.1 Release Process

1. ***Describe the re-startability of your solution for both batch and transaction processes.***

Niagara Integra is designed with robustness in mind, considering potential disruptions to controller stations. For both batch and transaction processes, it is recommended the Application Director be configured to automatically restart the Integra station application, ensuring continuity and minimizing downtime.

1. ***Describe the release process for upgrades, bug fixes and minor releases. Include standard deployment methods and confirm management of vulnerabilities (identification, patch management and release timing).***

Tridium provides automated email notification of releases for both major and minor system updates. As Systems Integrators, we are continually reviewing those release notes to determine what sites are impacted and if sites are in need of an update. For upgrades, bug fixes, and minor releases, the primary method involves utilizing the Integra Workbench GUI Application. The Niagara Integra Workbench GUI Application ensures precise and controlled updates for upgrades, bug fixes, and minor releases. For subordinate stations, the process has been streamlined through implementation of the Integra Provisioning tool. Once appropriately configured, automated updates become enabled by the Integra Provisioning tool. Provisioning can be used to automatically backup all subordinate stations, keep all subordinate station software versions up to date, install subordinate station licenses, and restore subordinate stations.

1. ***At what point is support dropped for previous versions? What is your approach to previous version compatibility? How much time do we have to react when notification is received that a version is losing support?***

Tridium, partnered with ABB, designates specific products as “Long-Term Support Releases” (LTS). The Maintenance Period for these products spans no less than two and a half (2 1/2) years from the commercial release date. Throughout this timeframe, LTS releases receive all the latest cybersecurity enhancements and bug fixes. In contrast, non-LTS Integra releases primarily concentrate on feature enhancements.

At any point, support remains active for two Integra versions: the most recent LTS release and the latest non-LTS release. This strategy maintains a balance between feature innovation and stability. Regarding notifications about discontinuing version support, organizations receive ample time within the assigned maintenance period to transition, ensuring minimal disruption. Since the release of Niagara AX, Tridium has provided migration support for major version releases that allows for seamless upgrades and minimal rework.

1. ***How are investments in modifications made by client companies protected when system upgrades are released?***

Niagara Integra licenses operate perpetually, assuring prolonged utilization without enforced updates. Autonomy of clients in decision-making for upgrades in the Integra 4 environment is respected. For safeguarding client modifications, a range of backup and recovery choices are available to capture prior software iterations and configuration logic. In case of external developments requiring disruptive changes, the dedicated professional services team remains prepared. The team can be engaged to create and implement solutions, leveraging updated Integra versions’ benefits while preserving clients’ earlier investments. The above is based on the assumption that any Niagara Framework or Sedona Framework custom applications have been developed by the Systems Integrator at the request of the end user. There are no foreseen custom applications required as part of this RFP.

1. ***What is the frequency of product releases? Please comment on major, minor, and bug fix releases.***

Major Releases:

• Integra R2 in 1999

• Integra AX in 2005 (Known as Integra AX for ABB)

• Integra 4 in 2015 (Known as Integra 4 for ABB)

Minor Releases: Often referred to as “dot” releases, these are launched approximately every 6-9 months. As of August 2023, Integra 4.13 is the latest minor release.

Bug Fix Releases: Also termed “update build” releases, these are rolled out based on need, ensuring any discovered bugs are promptly addressed. An illustrative example is the long-term support build of Integra 4.10, which, as of now, is at 4.10U6. The average interval between these bug fix releases is around 4 months.

1. ***Please identify if you are part of the release planning cycle with the software company.***

Tridium and its OEM partners (i.e. Integra for ABB) are solely responsible for producing the software and its subsequent release. Systems Integrators develop custom deployments of the software to meet end user requirements but are not involved in the core development processes and subsequent release planning.

### Section 4.2 Deployment

1. ***Confirm deployment of on prem, hybrid or cloud for Niagara 4.***

To meet the requirements of this RFP the design intent would be to deploy the Niagara Framework on premises via dedicated server (Golden Valley) and provide redundancy via an on premise backup Niagara server (Eagan). The servers will operate behind 2 factor encrypted VPN firewalls to provide network integrity and protected user access.

1. ***Describe operational transparency for the following: (Monitoring, Performance Management, Change Management, etc.). What interfaces/capabilities are available to allow customers access to system monitoring?***

Integra offers a comprehensive web server interface, tailored to provide detailed insights into the end user's entire system landscape. This interface facilitates:

**Monitoring:** Beyond external systems, Integra is designed to observe every system access and configuration alteration, which is inherently logged. This ensures continuous surveillance of both system health and user activity.

**Performance Management**: The interface offers performance metrics and data analytics capabilities to assess system efficiency and detect any anomalies or potential areas of improvement.

**Change Management**: All system modifications, whether configuration tweaks or software updates, are methodically logged, allowing for retrospective audits and change impact assessments. Though not required as part of this RFP, a bolt on change management application can be provided to support CFR 21 Part 11 requirements for electronic signatures. This creates a user interface that prompts end users to digitally sign all actions within the system that are logged for future auditing.

Customers can effortlessly access these features, and the display of information is governed by Role-Based Access. This ensures that information is disseminated according to roles, maintaining system integrity while providing the necessary transparency.

### Section 4.3 Architectural Design

1. ***Provide a brief functional description of the major components (or subsystems), that comprise your solution, that would be utilized to meet Allianz Life’s requirements.***

The system would consist of DHCP pool based managed ethernet switches in a vertical ethernet riser interconnecting each floor's IP based controls on mechanical equipment. The horizontal ethernet run outs to tertiary equipment (i.e. VAVs, heat pumps, etc) would consist of IP controls that are daisy chained and supporting dual failover ports to protect against devices dropping offline if a cable becomes compromised, power is lost, etc. The major mechanical equipment IP controls would interface to the managed switches via star topology to prevent major disruptions in communications to key equipment. To the fullest extent possible, a flat Niagara architecture would be deployed to integrate the mechanical equipment IP controls into the primary and redundant Niagara Supervisor servers via BACNet I/P. This will minimize the long term asset costs for the end user by reducing the amount of operating expenses required for Niagara Software Maintenance Agreements (SMAs). Where traditional non standard 485 based communication networks are required (i.e. B Bldg Veeder Root to fuel oil pumps), Niagara TITAN JACEs will be provided with requisite drivers and interfaced to the Supervisor servers via the Niagara Network.

1. ***Provide information about the detailed architecture of your product. Include:***
   1. ***Technical topology (identify the components which are client, web, and server based, language(s), platform(s), etc.)***

Aside from the above, the Integra Station application is a server-side application serving up HTML/HTML5 views that can be accessed via Web Client of users’ choice. The Station can be hosted on dedicated server hardware or the embedded JACE controller. Integra Workbench is a client-side application to create Integra Station Applications. For the purpose of this RFP, the server side application will be the predominant end user access method via Web Client of users’ choice. The (2) servers will also provide the Integra Workbench client-side application for contractor and end user programming and graphical user interface modification needs.

* 1. ***Description of functionality placed in various tiers***

An Integra Supervisor sits at the top and can aggregate data (i.e control points, histories, alarms, schedules) from subordinate BACnet IP based devices on mechanical equipment and provides the graphical user interface.

1. ***Describe whether and how your solution can be customized to a customer’s unique needs (e.g., table or metadata-driven, externalized rules, hard-coding, modification to data architecture). Indicate whether and how the solution would support:***
   1. Modifications to business process flow
   2. Modifications to the user interface (e.g., look and feel, branding, etc.)
   3. Additional points of integration, including consumption of additional services
   4. Exposure of services for consumption by external applications
   5. Additional customer-specific data elements or data validation
   6. Additional business entities such as products or lines of business
   7. Additional reporting and/or data extracts.

***a. Modifications to business process flow:***

Integra is inherently flexible when it comes to process adjustments. Workflow designs are primarily driven by the end-user’s requirements and are implemented seamlessly by the installing systems integrator.

***b. Modifications to the user interface (e.g., look and feel, branding, etc.):***

Customization is at the heart of Integra’s interface. Users and integrators can tailor the user interfaces look and feel to align with their brand aesthetics, ensuring consistency across all digital touchpoints. Systems Integrators construct the interface based on the end user’s needs. What’s needed by the building operations/facilities team may be schematic and data intensive, while the interface needed for the management team may consist of a simplified dashboard with KPIs and consumable metrics.

***c. Additional points of integration, including consumption of additional services:***

The platform can effortlessly configure new points of integration to consume additional services as required.

***d. Exposure of services for consumption by external applications:***

Standardized integrations with external applications, like structured databases, are an integral part of Integra’s offering. This ensures that the solution remains both open and versatile for varied operational needs. Structured databases such as SQL are supported for both push/pull data throughput. Niagara offers 3rd party API support to provide secure extraction and import of Niagara data to preferred business intelligence and data modeling tools. Niagara also offers bolt on data services to provide one cloud storage and open APIs for 3rd party integration and solution development.

***e. Additional customer-specific data elements or data validation:***

Integra houses tools that facilitate data validation and the incorporation of customer-specific data elements, ensuring accuracy and relevance.

***f. Additional business entities such as products or lines of business:***

The platform’s modular nature ensures that new business entities, whether they’re products or entire lines of business, can be integrated without major disruptions.

***g. Additional reporting and/or data extracts:***

Reporting is fundamental to informed decision-making. Integra offers comprehensive tools for data segmentation and reporting, ensuring stakeholders have access to pertinent insights when and where they need them. Bolt on Niagara analytics engines (or support for 3rd party analytics engines) or 3rd party Niagara Framework dashboard and reporting engines are available to produce custom end user reports.

1. ***How is workflow maintained in your product? Include commentary on mechanism (UI, etc.) and level of skill required. Note if your system utilizes (or requires) any commercially available workflow engine.***

User Interface (UI): Integra’s UI is tailored for each building, network, or system that’s integrated, ensuring that it remains contextually relevant and user-centric. The interface’s design and functionality hinge on the specifics of the integration, making it both intuitive and adaptive.

**Skill Level:**

System Integration: To perform system integration and establish workflow designs, a certain degree of expertise is essential. Such a skill set typically necessitates formal training by an authorized ABB Integra Systems Integrator.

Operator Level: For individuals operating the system at a user level, the skill requisites are considerably more lenient. While understanding the basics enhances efficiency, formal training isn’t a strict mandate.

Workflow Engine: Integra stands independent in its operational design. It possesses its intrinsic rules engine, negating the need for any third-party, commercially available workflow engines. The workflows themselves are crafted by the System Integrator, ensuring they align perfectly with the specific requirements of each integration. Tridium Workbench is the workflow engine used by all Integrators across all Niagara Installations. Fully customizable, this tool provides the flexibility for the most complex installations, while being a minimal barrier for the technical user if needed.

### Section 4.4 Software Integration

1. ***Describe the standard interface protocols available with this product (e.g., SOAP/REST, MQ, JDBC/ODBC, RMI, JMS, FTP/SFTP, fileshare, etc.). Describe where/when/how these protocols are being used (detailed diagrams or processes would be preferred, based on a normal transaction).***

Integra supports a plethora of standard building automation centric interface protocols to facilitate communication across diverse systems and platforms:

BACnet Protocols:

● BACnet IP Client/Server: Used for network communications on IP networks among building automation and control devices. This will be the primary protocol used to meet the requirements of this RFP.

● BACnet MSTP: A master-slave/token-passing protocol commonly used for controller to controller communication. This will be used to interface to any existing 485 networks under this RFP.

● BACnet AWS: Represents BACnet Advanced Workstations certification for ABB Integra under the BACnet Testing Laboratories (component of BACnet Manufacturers Association). Ensures interoperability amongst BACnet devices across all manufacturers.

● BACnet OWS: Stands for BACnet Operator Workstations certification for ABB Integra under the BACnet Testing Laboratories (component of BACnet Manufacturers Association). Ensures interoperability amongst BACnet devices across all manufacturers.

● BACnet B-BC: Stands for BACnet Building Controller certification for ABB BACnet I/P controllers under the BACnet Testing Laboratories (component of BACnet Manufacturers Association). Ensures interoperability amongst BACnet devices across all manufacturers.

● BACnet B-AAC: Stands for BACnet Advanced Application Controller certification for ABB BACnet MS/TP controllers under the BACnet Testing Laboratories (component of BACnet Manufacturers Association). Ensures interoperability amongst BACnet devices across all manufacturers.

● BACnet Secure Connect: A secure communication protocol ensuring encrypted BACnet communications.

Other Communication Protocols:

● KNX IP: A standardized protocol for building control, operating over IP networks. KNX networks are not known to be present under this RFP and therefore will not be required.

● Lon IP & Lon FTT-10: For communications among LonWorks devices over IP and FTT-10 respectively. LonWorks networks are not known to be present under this RFP and therefore will not be required.

● M-Bus IP & M-Bus serial: A protocol for remote reading of meters over IP or serial connections. M-Bus networks are not known to be present under this RFP and therefore will not be required.

● Modbus TCP Master/Slave & Modbus Async Master/Slave: Widely used for connecting industrial electronic devices over TCP or asynchronous serial connections. Will be used as part of this RFP to interface to B Bldg AHU VFDs.

● MQTT: A lightweight messaging protocol originally developed for lightweight machine to machine industrial communications that is now being used as the open source protocol for IoT devices. While available, this is seen as not needed as part of this RFP.

● oBIX: A standard used for exchanging building management and control system data. This is not seen as needed as part of this RFP.

● OPC UA Client/Server: Ensures interoperable, platform-independent, service-oriented architecture for industrial automation. This is not seen as needed as part of this RFP.

● SNMP: A protocol for managing devices on IP networks.

● SMTP: A protocol for managing secure message handling.

● SMS: A protocol for managing secure message handling.

● HTTPs: A secure protocol for transferring web content.

● FOXs: Integra’s native protocol for device and system communication.

***Usage:***

In a typical transaction, based on the system integration and the devices involved:

● Device Communication: BACnet, KNX, Lon, M-Bus, and Modbus protocols are primarily used to communicate with and between building control devices.

● Data Collection and Reporting: MQTT, oBIX, and OPC UA come into play when collecting data from devices or integrating with third-party applications and services.

● Remote Management and Access: HTTPs and SNMP are instrumental for secure remote access, management, and monitoring of devices and systems.

● Internal Communications: FOXs is the protocol Integra uses internally for its devices and systems to communicate with each other (such as Supervisor to JACE connections).

1. ***Describe the specific approach to support APIs (programmatic interfaces) to major system components and underlying services (including any runtime services, administrative maintenance functions, etc.). Provide documentation of all services/APIs available.***
2. There are a huge number of APIs available which are documented to varying degrees. In working with a specific API there are a couple key points to understand:

● **Stability**: a designation for the maturity of the API and its likelihood for incompatible changes;

● **Baja vs Tridium**: public APIs are published under java.baja packages, and implementation specific code is published under com.tridium;

Public APIs are classified into three categories:

● **Stable**: this designation is for mature APIs which have been thoroughly evaluated and locked down. Every attempt is made to keep stable APIs source compatible between releases (a recompile may be necessary). Only critical bug fixes or design flaws are just cause to break compatibility, and even then only between major revisions (such 3.0 to 3.1). This does not mean that stable APIs are frozen, they will continue to be enhanced with new classes and new methods. But no existing classes or methods will be removed.

● **Evaluation**: this designation is for a functionally complete API published for public use. Evaluation APIs are mature enough to use for production development. However, they have not received enough utilization and feedback to justify locking them down. Evaluation APIs will likely undergo minor modification between major revisions (such 3.0 to 3.1). These changes will likely break both binary and source compatibility. However, any changes should be easily incorporated into production code with reasonable refactoring of the source code (such as a method being renamed).

● **Development**: this designation is for code actively underdevelopment. It is published for customers who need the latest development build of the framework. Non-compatible changes should be expected, with the potential for large scale redesign.

Baja is a term coined from **B**uilding **A**utomationJava **A**rchitecture. The core framework built by Tridium is designed to be published as an open standard. This standard is being developed through Sun's Java Community Process as JSR 60. This JSR is still an ongoing effort, but it is important to understand the distinction between Baja and Integra.

Fundamentally Baja is an open specification and the Integra Framework is an implementation of that specification. As a specification, Baja is not a set of software, but rather purely a set of documentation. The Baja specification will include:

● Standards for how Baja software modules are packaged;

● The component model and its APIs;

● Historical database components and APIs;

● Alarming components and APIs;

● Control logic components and APIs;

● Scheduling components and APIs;

● BACnet driver components and APIs;

● Lonworks driver components and APIs;

Over time many more specifications for features will be added to Baja.But what is important to remember is that Baja is only a specification. Integra is an implementation of that specification. Furthermore, you will find a vast number of features in Integra, that are not included under the Baja umbrella. In this respect Integra provides a superset of the Baja features.

Many features found in Integra are exposed through a set of Java APIs. In the Java world APIs are grouped together into packages, which are scoped using DNS domain names. Software developed through the Java Community Process is usually scoped by packages starting with java or javax. The APIs developed for Baja are all grouped under javax.baja. These are APIs that will be part of the open Baja specification and maybe implemented by vendors other than Tridium. Using these APIs guarantees a measure of vendor neutrality and backward compatibility.

Software developed by Tridium which is proprietary and outside of the Baja specification is grouped under the com.tridium packages. The com.tridium packages contain code specific to how Integra implements the Baja APIs. The com.tridium code may or may not be documented. Most often these packages have their components and slots documented (doc=bajaonly), but not their low level fields and methods. In general com.tridium APIs should never be used by developers, and no compatibility is guaranteed.

The use of APIs in the Building Automation industry is just beginning to take shape and Tridium has been at the forefront of that trend. Several 3rd party developed APIs have been made available as bolt on services to Niagara that can interface to most anything with a HTTP/REST API. Common Building Automation centric interfaces include news & weather, IoT sensor systems, Air Quality systems, room booking systems, people counting systems, and even CRM systems.

1. ***Describe what industry standard message formats your system supports (e.g., ACORD, DTCC, proprietary XML, JSON, etc.).***

Integra supports a range of industry-standard message formats, ensuring interoperability and ease of integration across various platforms and applications. The supported formats include:

XML (Extensible Markup Language): A widely-used format that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable.

CSV (Comma-Separated Values): A plain-text format used for representing tabular data, offering simplicity and broad application in data processing tools, databases, and spreadsheet applications.

JSON (JavaScript Object Notation): A lightweight data-interchange format that is easy for humans to read and write, and easy for machines to parse and generate. It’s often used in modern web APIs and configurations.

1. ***What security mechanisms can be used to secure calls and messages? Are any custom or vendor specific security schemes utilized? Provide detail.***

The default mechanism is SCRAM-SHA256 authentication, which provides authentication without revealing secret key information in transit. The transport mechanism also provides confidentiality and integrity by using Transport Layer Security (TLS) in communication.

1. ***Can your system invoke services (Rest, SOAP, etc.) provided by another application? Describe how calling an external service is integrated/configured in your system.***

Using Integra’s HTTP Client Module allows Integra stations to easily interact with HTTP web services and APIs so that data can be exchanged both in and out of the Integra framework.Several 3rd party developed APIs have been made available as bolt on services to Niagara that can interface to most anything with a HTTP/REST API as well as devices or services supporting the SOAP protocol.

1. ***Describe your product's implementation of Services/APIs and how Allianz could customize, to add new Service interfaces, in order to access previously unavailable data or application functions.***

The openness of Integra allows developers to create their own unique products, applications, plug-ins, data views and business application logic. Users can customize Integra with additional drivers, other components, and custom engineering tools. Tridium offers development partners a standard and stable set of APIs for all aspects of the framework. These APIs make the framework extensible in virtually all functional aspects so users can make their IoT ideas and solutions an integral part of Integra simply by creating a new module and dropping it in the Integra modules folder. Java developers can replace or add to core features of the framework, and drivers and extra applications can be easily created using the Driver Framework. New types of user interface and whole new applications can be created based on Integra.

1. ***Allianz utilizes software from MRI software eSight and FM: Systems that we may want to push and pull data with.***

The Integra platform, as mentioned above, supports the oBIX protocol which is used by eSight Energy for mass data collection of energy meter information. This would enable the Integra platform installed under this RFP to push data into the eSight suite via oBIX.

1. ***Describe any batch based data movement and integration capabilities that are available within your product.***

Integra Data Services is a Software as a Service offering to allow for cloud hosted storage of EMS information for ease of 3rd party applications integration and normalization of history data for archival purposes. Integra also offers the RDBMS (Relational Database Management System) driver for importing/exporting historical ems data to/from 3rd party SQL databases (i.e. MySQL, Oracle, SqlServer, HsqlDb.

1. ***Describe your Service/API availability during internal nightly batch cycle processing..***

The use of APIs in the Building Automation industry is just beginning to take shape and Tridium has been at the forefront of that trend. Several 3rd party developed APIs have been made available as bolt-on services to Niagara that can interface to most anything with a HTTP/REST API. These APIs are not resident in the Integra platform, rather an http client driver is offered for the push/pull of data to the 3rd party API, so the service availability would depend on the availability of the API being interfaced to.

1. ***Confirm that requirements for the following: Each user must have unique login credentials. Allianz staff will require access via the internet, utilizing VPN tools with two-factor authentication. Allianz will provide local internet access.***

Remote access will be accomplished via L2TP Cisco Meraki firewalls and 2FA authentication. Once connected to the VPN, access to the EMS server(s) and any subordinate JACEs will be via LDAP authentication configured on the server(s).

1. ***Is your solution able to push pull data to and from a 3rd party SFTP site, if so please describe your skills or past experience?***

 SFTP (Secure File Transfer Protocol) and SSH (Secure Shell) access to a JACE are disabled by default and should remain disabled unless necessary for troubleshooting or as directed by Tridium technical support. This helps prevent unauthorized access to the JACE. Enabling SFTP or SSH on a JACE poses a very significant security risk. For exporting data from the Integra Supervisor (i.e. exporting electrical meter data for use by a 3rd party system), bolt on SFTP services are available to securely transfer that data to any machine running an FTP server. Other Integra drivers exist (i.e the CSV driver) to push data from the EMS to 3rd party analytics engines such as Lucid.

### Section 4.5 Quality Assurance

1. ***Describe your overall software quality assurance process.***
2. ***Tridium utilizes an Agile development methodology and ASDP Level 4 (a CMMI variant). Tridium operates its product development organization to security standards set by ISA 62443-3-3, Security Level 4 for Critical Infrastructure. Integra is compliant with FIPS 140-2 and For US Federal Government, DoD Risk Management Framework (RMF), artifacts for Integra 4 available in SAFE.***

In addition, ABB follows an additional quality assurance process for verification of security standards set forth by Tridium.

The Systems Integrator is tasked with functional testing of installed systems. Egan uses a cloud based 3rd party construction platform known as PlanGrid to publish all documentation and to serve as a collaborative commissioning platform for Engineers, Technicians, and Installers. All parties participate in rigorous on-site point-to-point checks of installed systems, verification of custom application programming, and testing of graphical user interface.

1. ***Describe your software testing process. Include commentary on automated testing tools (vendor and internally developed).***

Tridium has a rigorous cybersecurity process. In terms of security, the company performs threat modeling, security design reviews, security code reviews, and static code analysis. Additionally, periodic third-party advanced independent security testing is requested. This testing encompasses white box testing, black box testing, penetration testing, additional static code analysis, and abuse case testing. The objective is to identify and mitigate any potential vulnerabilities. Some publicly mentioned Security Best Practices include Pen Testing with Tools like:

• BurpSuite

• Metasploit

• FuzzDB

• Nmap

• Qualys

The Systems Integrator is tasked with functional testing of installed systems. Egan uses a cloud based 3rd party construction platform known as PlanGrid to publish all documentation and to serve as a collaborative commissioning platform for Engineers, Technicians, and Installers. All parties participate in rigorous on site point to point checks of installed systems, verification of custom application programming, and testing of graphical user interface

1. ***Describe your notification / communication processes and timelines.***

All findings from these processes are kept in an internal threat register, ranked via NIST CVSS Scores. Each item in the register is reviewed by internal Cybersecurity Engineers and Architects and is prioritized for mitigation. All known security vulnerabilities have visibility at the highest level, with 30-day, 60-day, 90-day, 120-day requirements for mitigation based on CVSS Scor*e*

### Section 4.6 Server & Client Requirements

1. ***Describe all hardware, software, platform and environmental requirements needed to implement your solution. (Include client requirements, server requirements, browser requirements, local install requirements, memory, disk, processor, etc.).***

The Integra Framework® requires an adequate processor, hard disk, memory and speed to run complex building models.  
  
The minimum hardware requirements include:  
Processor: Intel Pentium Core 2 Duo, 2GHz  
RAM Memory: 2GB, with 8GB recommended if a 64-bit installation

Hard drive space: 2GB available, 10GB recommended for any Supervisor  
Ethernet 100 Mbit or 1Gbit NIC (network interface card) with TCP/IP support  
Valid license  
Internet access for confirming your license.  
  
As a multi-threading Java application, the Integra Framework® can take advantage of the added power available in multi-core processors. A processor that goes beyond minimum requirements, such as the current Intel Core i3, i5, i7 or AMD A6, A8, A10 series processors, can provide performance benefits.

As part of this RFP, it is our understanding that the servers and subsequent on premise workstations are to be provided by the selected vendor and Egan will provide hardware that exceeds the minimum requirements to ensure performance standards are met.

1. ***Is your client software multi-user aware? Can it be run on a Windows Terminal Server or Citrix environment? Describe.***

Multi-User Support:

Integra is designed to accommodate multiple users simultaneously. With its robust multi-session capabilities, various users can interact with the system concurrently, each having individual sessions. The software employs Role-Based Access Control (RBAC) to assign specific permissions and privileges to different users, ensuring secure and controlled access based on their roles. Audit logging is readily available to review change history by the various users.

Compatibility with Windows Terminal Server and Citrix:

As part of this RFP, it is our understanding that the servers and subsequent on-premise workstations are to be provided by the selected vendor. Windows servers will be provided to run the Supervisor station and on-site (and remote) client workstations will access the system via web browser.

1. ***Is your software completely browser-based? If so, are there any required plug-ins or third-party programs required?***

Browser-Based Interface:

Integra is primarily designed to function through its standalone web interface once the stations are set up using the Workbench tool. This design allows for easy and convenient access from any location with just a web browser, without the need to install any client-side application.

Dependencies and Plug-ins:

The Integra web interface is designed to be lean and does not require any third-party plugins or software installations to function correctly. This ensures smooth operation, less vulnerability to external software issues, and a more secure user experience.

1. ***Do you have a native mobile app available?***

ABB has developed native mobile apps that function at the field controller level to conduct Test and Balance as well as commissioning functions. Various 3rd party apps have been developed to make the Niagara interface more portable for on the move end users. Egan will provide a user interface that is scalable and portable to meet the needs of all end users.

### Section 4.7 Database Requirements

1. ***What database managers and versions are supported in the GA version of your product?***

Integra has its own file system storage database, the “.bog file” No integration to 3rd party databases is required. The most recent release supports integrations with third party relational databases including: MS SQL Server 2017, Oracle (SQL) 12c.1/2, Oracle (SQL) 18c, Oracle (SQL) 19c, Integra System DB Orient v3, MySQL Server 8.0, MS SQL Server 2016, and MS SQL Server 2019.

1. ***Describe the accessibility of the application database for automated extraction of data (either through an interface or direct database connection); also describe the necessity to replicate application logic (including business rules) in the extraction process.***

### Section 4.8 Security Architecture

1. **Describe the overall security architecture for your product – discuss authentication mechanisms, authorization methods, audit trails, and reporting of security events/activities. Provide supporting diagrams if available.**
   1. ***Please detail any vendor support access required ongoing and how those interfaces are secured.***  
      Tridium/ABB supports the use of digital certificates via a PKI, and offer certificate management capabilities in our product that will enable users to import digital certificates to enable TLS, and to import digital certificates for trusted Certificate Authorities (CA)s. For convenience, Integra is packaged with self-signed certificates to enable TLS connections. Backups are what are used for key recovery. We have updated support for TLS v1+ only. No proprietary interfaces or dependencies are used related to digital certificate management & communications (i.e. we can connect with any TLS client or browser). The audit history logs all station changes, logins and logouts.
2. **Can your product integrate with an ldap compliant directory (i.e., Microsoft Active Directory) for security services such as authentication and/or authorization – please describe.**  
   Yes, LDAP communicates record-based, directory-like data between programs. It defines database access permissions and provides a schema, which is a way to describe the format and attributes of data stored in a server. Corporate and campus installations that already use Windows Active Directory, or other LDAP-based directory services to manage user access across distributed network resources, can benefit from configuring Integra stations to use an LDAP user service. Benefits include: Ease of implementation. Installations that already use Windows AD or an open-source implementation of LDAP can easily include stations in their existing user management configuration. Automatic new user account creation. When a user logs in to a station for the first time, the system automatically creates a user account (component) in the station and populates it with predefined properties (based on user prototype), such as permissions, and predefined LDAP properties (from the LDAP server), such as email address, full name, and language.
   1. **Describe password construction, reuse and expiration rules.**  
      The framework uses passwords to authenticate station and platform users, encrypt stored data, and protect data in transmission. It is particularly important to handle passwords correctly. If an attacker acquires a user’s password, they can gain access to the system and have the same permissions as the user has. In the worst case, an attacker might gain access to a super user account or platform account and compromise the entire system.  
      The framework provides the following features to help in securing the passwords in your system:

Password strength  
Account lockout  
Password expiration  
Password History  
Unique login requirement  
Password reset

1. ***Does your application support single sign-on? If so, what mechanisms are used?***  
   Yes, SAML 2.0 with external IdP (Identity Provider) or Integra Supervisor acting as IdP (preferred).
2. ***If SSO in enabled, can direct sign-on (user ID/password) be disabled?***  
   Yes
3. ***If your application exposes functionality via API, what security integration options are supported?***  
   Any tools that are available for the host machine and surrounding network architecture. In Integra, All communications are encrypted by default. TLS 1.3, 1.2, 1.1, 1.0 (FOXS/HTTPS) Issued with RSA 2048 bit certificate, SHA256withRSA
4. ***If your solution requires an application specific security service for authentication and authorization please describe the capability of these components in detail – including controls associated.***  
   Our primary mechanism is against a locally stored, password hash database. (PBKDF2-SHA256). Integra 4 supports integration with LDAP directories, Active Directory, and Kerberos. It also supports Client Cert Authentication, Google Two Factor and SAML authentication.

The default mechanism is SCRAM-SHA256 authentication, which provides authentication without revealing secret key information in transit. The transport mechanism also provides confidentiality and integrity by using Transport Layer Security (TLS) in communication.

1. ***Describe the system/network/data access auditing and logging mechanisms in detail including any reporting capabilities.***  
   The audit history logs all station changes, logins and logouts. Integra daemon events go to syslog on Linux and QNX, and the Win32 event log on Windows.
2. ***What encryption methods are available to protect data in motion and at rest (password submission, on-line transactions, database updates, data import/export and file transfer activities)?***  
   If TLS is enabled then all network communications are encrypted between Integra systems and browser clients. We also support TLS encryption for connections to email servers and LDAP servers. Most field bus devices don’t support encryption. We recommend that Integra systems are always configured to utilize encrypted communications. With Integra 4, sensitive data is encrypted using AES256 encryption. For example, Kerberos keytab files are encrypted and third-party systems where passwords need to be reversible, and are encrypted using AES256 encryption. For situations where passwords do not need to be reversible (ex: user accounts), we store a one-way hash of the password.
3. **Are there different levels of security provided for administrative functions? Describe them.  
   Integra 4 utilizes Role-Based Access Control (RBAC), where components are grouped into categories, permission to access categories are granted by roles, and users are associated with one or more roles**
   1. ***What method of assurance or inspection do you provide to your customers to prove an effective security environment when handling their data?*** Specifically:
   2. ***Are customers or customers’ agent allowed to perform an annual site inspection and information security risk assessment? Please describe how this would be accommodated.***
   3. ***Do you perform independent third party reviews such as a SOC 2 and provide results to your customer base to ensure controls over your delivery environment? If yes, provide the most recent report.***  
      The SOC 2 certifications are typically provided by a data center owner to a client of that data center. We have never issued such documents. We get an SOC report from Microsoft Azure for their software as a service offering. We as the software vendor don’t have control over most of the underlying networking/ security architecture.For the most up-to-date list of certifications see the overall [Azure Compliance site](https://www.microsoft.com/en-us/trustcenter/compliance/complianceofferings) as well as the latest [Azure Compliance Document](https://gallery.technet.microsoft.com/Overview-of-Azure-c1be3942) with all certifications (search for Cosmos).
   4. ***Do you perform vulnerability or penetration testing against systems that would be hosting or processing customer data? If yes, describe the nature and frequency of this testing. Explain how results are communicated to customers.***Tridium has a rigorous cybersecurity process. From a security perspective, we do threat modeling, security design reviews, security code reviews and static code analysis. In addition, we periodically request that a third party provide advanced independent security testing which includes white box testing, black box testing, penetration testing, additional static code analysis and abuse case testing for the purpose of identifying and mitigating any potential vulnerabilities. All findings from these processes are kept in an internal threat register, ranked via NIST CVSS Scores. Each item in the register is reviewed by our internal Cybersecurity Engineers and Architects and is prioritized for mitigation. As a policy, we do not share any of the artifacts of this process or the results of this security testing
   5. ***Do you maintain an Information Security Program that includes the following, and if yes, please detail:***
   6. Program Director
   7. Recurring Risk Management
   8. Incident Management
   9. Disaster Recovery
   10. Security/Privacy Training
   11. Security Monitoring.

Yes, Bill Smith, Lead Security Architect, leads Tridium's Product Security Incident Response Team (PSIRT) Process. Recurring Risk Management, Incident Management Disaster Recovery, and Security Monitoring. With ASDP 3.2 ACS Engineering began requiring cyber security training for all ACS software engineers and testers.

* 1. ***When a provider is interacting with Allianz Life information/data that is subject to PII, PHI or SOX controls, specific contractual obligation should be specified? Does your standard contract address:***
  2. ***Baseline security control requirements?***
  3. ***Customer’s right to audit or review?***
  4. ***Provider’s responsibility to notify customer of any breach or potential breach of information confidentiality or integrity?***
  5. ***Explain the provider’s responsibility to notify customer of identified vulnerability that could be transferred or exploited within the Allianz Life environment.***  
     This BAS project is based on the installation of a wholly separate and disconnected network. No interaction with Allianz Life’s systems are required and no PII or PHI data or SOX financially related controls should be required or utilized. The system will be fully open and reviewable by Allianz. Egan has extensive experience working with GSA (General Services Administration) facilities and several team members are required to take annual security training centered around the protection of PII when sharing digital communications.

### Section 4.9 Other Integration Questions

1. ***Describe your mandatory requirements for configurations, upgrades and roll out processes.***   
   Integra only needs a single controller or a single PC/Server to host the software. Configuration is done using the Integra Workbench GUI application

### Section 4.10 Software Upgrades

1. ***Describe your testing process for the release and for the custom configuration management.***   
   Tridium’s Product Security Team Security Design Reviews, Security Code Reviews, Security Threat Modeling, Automated Security Tests for ISA 62443-3-3 Security Requirements, Reviews for vulnerabilities in third party libraries, Static Code Analysis and Binary Code Analysis,  
     
   Routine and Periodic Robust Security Testing by External Organizations on new and existing releases – partnering with commercial and government entities, throughout the year, Penetration Testing, Abuse Case Testing, Security Code Reviews by external teams.

Egan analyzes all new Integra software major/minor releases to determine their potential impacts and necessity for deployment on sites. If a minor version is released, Egan reviews the OEM software release notes to determine whether an upgrade/update is warranted and deploys them accordingly.

1. ***Describe the release notes and test reports AZL will receive prior to release.***   
   A summary of resolved Defect issues is collected and published for public customer consumption for each release and update build. Release notes are posted to tridium-community.com. If a release is deemed warranted for deployment, Egan will notify AZL of the release, provide the release notes, and coordinate with facilities staff an acceptable time for installing major/minor upgrades. Some minor releases that have minimal impact on systems operations can be done remotely during normal business hours. Upgrades that potentially impact system operations will be performed on-site at an arranged time with facilities staff.
2. ***Describe special training / documentation processes.***Most minor version upgrades are for “bug” fixes that don’t in turn require any form of end user training. Major version upgrades that offer additional features and benefits will be discussed with facilities staff prior to upgrade and training would be provided on the specific new features and benefits as part of the proposed upgrade project.
3. ***Describe the frequency for software upgrades for both operating systems and application.***  
   Tridium does not upgrade the underlying operating systems of hosted applications, only the hosted application itself. See below for details:

Major Releases:

• Integra R2 in 1999

• Integra AX in 2005 (Known as Integra AX for ABB)

• Integra 4 in 2015 (Known as Integra 4 for ABB)

Minor Releases: Often referred to as “dot” releases, these are launched approximately every 6-9 months. As of August 2023, Integra 4.13 is the latest minor release.

Bug Fix Releases: Also termed “update build” releases, these are rolled out based on need, ensuring any discovered bugs are promptly addressed. An illustrative example is the long-term support build of Integra 4.10, which, as of now, is at 4.10U6. The average interval between these bug fix releases is around 4 months.

### Section 4.11 Training

1. ***Describe what system training you provide to new customers initially and on an ongoing basis.***  
   Training is an essential part of the deployment of any building management system and is a critical component to the overall success of any project. Comprehensive training leaves the end user with a system they are familiar, comfortable, and confident in, resulting in reduced warranty and/or service call backs due to misunderstanding or misuse. Training therefore benefits both the installing contractor and the end user almost equally. Egan deploys a multi-layered approach to training to ensure end users have access to the installing project team over the course of several sessions to digest the entire system. A custom end user training manual tailored to the specific project is provided at project completion to drive subsequent training sessions. We recommend an introductory training session at the end of the project that covers the below sections at a glance. Then we prefer to give operations staff time with the system and the leave behind manuals to familiarize themselves with it and begin generating questions. Subsequent training sessions are tailored around those questions and taking deeper dives into each individual section. We recommend training sessions to be performed quarterly for the 1st year the system is in operation.

Training Topics

Topic #1 - Focuses on the installation itself, where key components are located and how to troubleshoot them. Where to go look when something isn’t working and what the status lights indicate, how to reset devices, etc.

Topic #2 - Focuses on the graphical user interface, how to navigate through the system, how to adjust setpoints, how to adjust time schedules, alarm handling, viewing trends/histories, etc.

Topic #3 - Focuses on the equipment sequences of operation (SOPs). Time is spent on each system type, reviewing how the sequences were programmed and how they operate.

Topic #4 - Focuses on a review of the system operation & maintenance manuals so facilities staff knows where to look for key components (bill of materials), network topologies, written SOPs, and wiring diagrams.

NOTE: Training will be provided throughout the life cycle of the project, as systems are cutover onto the new platform, to ensure staff is comfortable and able to operate the system immediately. The above covers the more formal, structured training, that comes at the end of the project.

### Section 4.12 Decommissioning and termination

1. ***Please describe your process of decommissioning hardware and servers for existing systems***Egan has extensive experience with replacement of legacy systems, both systems we routinely support and are continually upgrading, and replacement of other contractors/manufacturers installed systems. Any good replacement/upgrade/hardware migration project begins with an extensive communicative partnership with the customer in which expectations are laid out and both parties come away with a clear understanding of the process. It starts with learning the installed system and how data is shared and devices are communicating and understanding the most critical pieces of equipment so a schedule can be constructed to minimize disruption on the end users and their building occupants. Once the installed system is fully understood you can begin parsing out those systems that operate mostly stand alone and you tackle those systems for cutover first. Starting with the most simple, self-sufficient systems first allows you to get experience with the processes involved without any risk of building occupant impacts. The systems are then removed (alarms disabled and any shared data between systems are forced) from the operating server and brought online on the new system. During the cutover process, trained technicians are on site and monitoring conditions to put VFDs in hand, manually operate valves/dampers to ensure continuity of services to the occupied spaces. Commissioning of the new system is performed throughout this process, followed by end user training on the operations of the moved equipment on the new system. Deficiencies found with peripheral devices (i.e. sensors, valves, actuators, etc) are documented in our digital commissioning platform and are shared with the customer throughout the project. This process is repeated until all systems are replaced. All the while the schedule is communicated with facilities staff and any systems deemed necessary for after hours cutovers are laid out in advance. Once all hardware is replaced, the server(s) and network devices are removed and turned over to the customer.
2. ***Please describe the process and requirements for decommissioning the solution or transitioning to a new solution.***

SEE ABOVE

## Section 5.0 Hardware Questions

1. ***Allianz requires provision of all hardware for systems and network, including servers, switches, firewalls, VPN, cabling plans, and potentially two-factor authentication requirements transitioning from Andover.***   
   Acknowledged
2. ***Please refer to the Exhibits for details on equipment, controllers, buildings and scheduling.***   
   Acknowledged
3. ***Allianz will use their own cable provider for installation.***   
   Acknowledged
4. ***Please confirm your capabilities for requirements and list out qualifications and exceptions to the above.***   
   Egan utilizes union electricians for all installations. We are capable of providing in-house labor for all aspects of this project, including the low voltage ad communication cabling.
5. ***Please specify and include make and model where applicable:*** 
   1. ***Type of Hardware, make and models required to transition***  
      Please see section 7.10 for hardware information.
   2. ***Will you procure all hardware?***   
      Yes
   3. ***Will you install and calibrate all hardware?***   
      Yes
   4. ***Are there any areas of the hardware or installations that you will not provide?***  
      No
   5. ***List any labor requirements for the above.***

All labor will be handled in-house by Egan Company.

* 1. ***Do you have special programs in place with manufacturers and what is the benefit for Allianz?***   
     No current programs in effect with suppliers. Project may be open to special project pricing upon acceptance.

1. ***Any other information Allianz should be aware of for hardware related services?***   
   No

## Section 6.0 Service & Maintenance

***Please describe your approach to ongoing support for both Software, Hardware and overall Support. Please differentiate between mechanical and software services.***

1. ***List your recommended or required service frequencies for the hardware listed or supplied, identify service frequencies for any warranties, warranty length, extended warranty plans and options to warranty for up to five years.***
2. ***On-site support / capabilities, recommended service plans.***
3. ***Software support / capabilities and recommended service plans, standard release management.***
4. ***Hardware support / capabilities and recommended service plans.***

Egan recommends regular service and maintenance, inclusive of hardware and software warranty periods.

Our typical approach to continuous service is to build a Task Based service plan. We produce a spreadsheet with a complete listing of available service and maintenance tasks for that equipment. In the case of Allianz, after a new installation and for all intensive purposes a reCommissioning of the equipment, many of those tasks would not be applicable. An example Task based Service “Menu” has been attached as an example. There are certain tasks that should be done in all circumstances, and others that may be seasonal, part of a modernization or Commissioning Plan, or to provide continual improvement.

In addition to the task based items, additional owner directed time can be pre-purchased to be used at the owner’s discretion.

The total number of hours tasked based and owner directed, is added up and the rate applied. Currently our preferred hourly rate for Building Automation is $161.00/hour.

The rate sheet for Egan Service is attached. This rate sheet may not cover all groups or departments, as other relationships and expectations may take precedence.

## Section 7.0 Pricing Questions

1. ***Price structure should be net prices, excluding tax. Services must list out all components and ancillary services required for the full contractual performance/service provision (e.g. planning, implementation, realization, operation, delivery, testing, tools, commissioning, interfaces and connections of components and systems, acceptance, servicing, warranties, maintenance, upgrades, induction of personnel and operations, all expenses associated, resources, freight, materials, transport, packaging, set up, etc.]***

### Section 7.1 Standard Pricing Structure and Requirements

1. ***Please provide information on your standard discount structure and margin requirements.*** 
   1. ***What specific cost benefits do you feel your service would provide to AZL.***   
      Egan Buildign Automation provides a turn-key installation for our Buildign Autoamtion System installations. This is not uncommon, but in addition to the ability to provide all aspects of the BAS,we are able to provide al lassociated trades and services. We are ableto coordinate internally. For Allianz, you have focused on using partners for the cabling installation. We acknowledge this important relationship as well as how Egan’s current relationship with Allianz and it’s partners provides us comfort and potential cost benefits we are able to pass along by reducing our project budget   
      We have secured best pricing from our major vendors and incorporated that into our proposal.   
      We provide a partnership process in building our service and maintenance plans, providing you the plan that works best, following a full and complete discussion of expectations, recommendations, and mutual understanding.
   2. ***What energy savings opportunities can you provide to Allianz with your service?***

Updating the Building Automation System can provide many energy saving opportunities.

With an upgrade, the expectation is that the low hanging fruit has been taken care of: scheduling, and temperature control. Updating the building automation system can provide the opportunity to reimagine how those seemingly simple operations are utilized. More accurate and space use can be employed and simple scheduling can be updated to allow for enhanced operations using a layered approach to occupancy: warm-up, coast, stand-by, etc.   
  
Other sequence modifications can be implemented without additional hardware installation.

Additionally, value added options such as occupancy sensing, people counters, CO2, can expand that sensor profile to provide options for sequence enhancements Demand based ventilation and improved temperature reset are examples that could be implemented in both existing and expanded sensing instances.  
  
Possibly the biggest impact of an updated BAS is the opportunity to provide a better interface to future software interfaces. You will have a largely updated building, but the fault detection and diagnostics softwares, can better interface under this needed upgrade. In addition, as the facility begins to drift even with FDD in palace, the option to move towards a more autonomous, AI driven operation are easily interfaced.

* 1. ***Please provide your cost changes for software and professional services over the past three years.***   
       
     Egan’s rate will increase on a yearly basis unless otherwise negotiated. We often enter into long term relationships and negotiate rates for our customers. Over the past 3 years our rates for Technicians, Engineers, and associated support teams have increased at an average rate of 3.1% over the past 3 years.
  2. ***For each pricing component, please identify what price guarantee you can give for your services over the next three and five years?***  
       
     We can offer a stable pricing structure over a 3, 5 years time frame. Upon agreement of the current 1 year base rate, a standard yearly rate increase of 3% for Allianz would be our starting point for negotiations. This increase would be for BAS related labor only including BAS engineering, project management, service technician, and electrical installation.
  3. ***Please provide discount structure for 1, 3 or 5 year pricing and for overall Allianz Services.***   
       
     We can offer a 5% discount on preferred yearly updated labor rates, to Allianz, up to 5 years.

### Section 7.2 Standard Software pricing

1. ***Provide a detailed, line item pricing for your proposed solution, including Licensing costs to implement the solution.*** 
   1. Standard Software license based on various deployment methods
   2. Device count pricing (software/hardware), additional device costs
   3. Various levels access available
   4. Description and pricing for additional software modules required for implementation or desired once implementation is completed
   5. Provision for any Test environment in transition or new releases
   6. Required third party plug-ins to provide full services

**Section 7.3 Pricing on Configuration, Implementation and Customization Requirements**

1. Please provide pricing on implementation based on equipment, floor plans and dashboard requirements outlined.
   1. Implementation and configurations for software requirements/ cost structure
   2. Please describe your pricing on graphic options for User Interfaces

We will provide graphics for the HVAC equipment along with floor plans, list screens, and dashboards for a complete overview of the system and quick navigation throughout the system. Sample graphics will be provided for customer review and approval before being deployed on the BAS. The agreed upon graphics will be provided as part of the RFP.

* 1. Security, network integration
  2. List assumptions

**Section 7.4 Servers & Redundancy Implementation**

1. Provide installation, redundancy pricing, opportunities to test and transition from current systems
2. Make and Model
3. Installation and decommissioning of existing server

### Section 7.5 Professional Services Pricing

1. ***Standard skill sets and rate cards***   
     
   Egan Building Automation is currently completing our application for additional to the General Service Administration Schedule Services provider. The Skills matrix and GSA rates submitted for this application are attached.  
   The Current Egan standard rate sheet is attached.
2. ***Weekend/off business hour/Emergency rates***   
   We follow the standard trades designations for dates/times/hours worked for what constitutes additional rates.   
     
   50% increase for Over-Time labor  
   100% increase for Double-Time labor
3. ***Do you provide flat fee pricing for services, if so please include***

We provide hourly rate for services as defined on the rate sheet attached.

1. ***Standard additional equipment set up and customization charges*** 
   1. On-site
   2. Software
2. Ongoing servicing (minor/major upgrades/support)
3. Transition and decommissioning costs
4. Testing and vulnerability management costs
5. Documentation on implementation & installation (where / how / what)
6. Reporting configurations & dashboard
7. Analytics configurations modules, configuration, maintenance costs
8. Account Management & Support
9. Please provide your cost changes for Professional Services over the past three years

### Section 7.6 Software Support Service Pricing

1. Standard Support Package
2. Additional Support
3. Other support

### Section 7.7 Expenses

1. List out any expenses required to fulfill services.

### Section 7.8 Training

1. Standard training included in software pricing

We will provide user training during the onset of the project and after each phase has been converted to assist Allianz with the transitional period. Upon completion there will also be additional training provided to Allianz for

1. Optional training costs + training options

Addition training is available upon request at our preferred hourly rate.

1. Recommendations

### 

### Section 7.9 Sub-contracting

* 1. Please describe your subcontracting requirements to provide a full service solution

We are able to provide all the required labor and engineering in- house for completion of the RFP.

* 1. Name sub-contractor N/A
  2. Services N/A
  3. Pricing methodology N/A

### Section 7.10 Hardware

1. Please describe the hardware components that you will be providing to AZL
2. Cost structure and special manufacturer pricing
3. ***Make and models***

The proposed hardware for this RFP is listed in the attached cutsheets.

1. Installation & Configuration Costs
2. Ongoing Servicing Costs
3. ***Warranties + Extended warranty pricing***

We provide one year warranty from date of completion for material and labor.

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### Section 7.11 Other Services

1. Please describe your additional service offers and
2. Please provide pricing related to predictive maintenance.
3. Please provide pricing related to sustainability initiatives.

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## Section 8.0 Additional Set up and Services Quote:

***The following equipment is not on the existing BAS and should be added as a separate quote:***

* Water softener – to be controlled and monitored by BAS-2 softener in A, 1 in B building
* Motion sensors in every meeting room – there are a total of 85 conference rooms, some rooms are equipped with sensors now – provide quotes for additional conference rooms. Refer to appendix Allianz Conference Room List. Is there technology that can count the occupants as well as control the hvac systems?
* Transparency on Xcel Energy sub-station in the BAS
* Monitor the kitchen oil storage system –One system in each kitchen, RTI model# 11715509- ability to view levels in storage tanks and high limit alarm.
* Would like the ability to read meters from the BAS – any utility installed.   
  Firm Gas 1 each building  
  Interruptible Gas 1 each building  
  A meters are in the lower level, room 412  
  B meters are located outdoors south of the loading dock  
  Water meters  
  A building has 6, includes 4 city Golden Valley, 1 tower water in the penthouse, 1 steam make-up a  
  B building has 8, includes 4 city Golden Valley 2 Bistro, 1 steam make up, 1 tower make-up  
  Fuel Oil monitoring  
  For “A” building located on the lower level. Veeder Root Brand panels 14 points to monitor  
  would like the “A” panel status/Alarm monitor readings.   
  (BAS already monitors 14 points for the B Building fuel oil)
* Read the chemical feed controllers – ability to talk to the system and add alarm contact; include opportunity to
* One Boiler Chemical controller per building  
  One Cooling tower chemical controller per building.  
  Located in the penthouses  
  Monitor panel status/alarm
* Flow sensors on water in the ramp riser