

CRITICAL INFRASTRUCTURE PROTECTION AND HOMELAND SECURITY

PLANNING • DESIGNING • DEPLOYING



STRATEGY + SPECIFICATIONS + TECHNOLOGY

An Introduction to Our Public Safety Services

Increasing Stakeholder and Shareholder Value

Because decreasing risk, increasing safety, preparing for emergencies, and planning for continuity of business disruption is your business, our business must be providing the continuity of management and design services that create an increased value and return-on-investment. We create enterprise wide strategic communications, security, and safety plans that incorporate our responsibility as a partner for you and your organization. Providing highly integrated, visually managed, enterprise wide communication and control centers allows the incorporation of RF systems control, fleet management, SCADA and BMS control, networked CCTV, and GPS coordinated information flow. Centralizing, monitoring, automating, and integrating advanced systems into state of the art technologies has been demonstrated in hundreds of our projects, and reflects successful completion of your future project.

Wireless and Wired Enterprise Solutions

Since 1986, PSE's principle objective has been to become a partner with agencies and corporations in the development of wireless and wired enterprise level communications, including public safety radio, corporate communications and IP telephone. We integrate broad and varied manufacture platforms into universal systems including security, safety, radio communications, and enterprise based control systems. We develop detailed technology requirements and collaborate on their successful implementation. We provide reports, specifications, and documents for defining enterprise structures that include widely dispersed systems for monitoring, communications, GPS coordinate fixing radio dispatching, secure access, and alarms for environmental, energy, safety, and operations whose activity is critical to sustaining the enterprise and whose loss would impair continued safe operations.

We provide network connectivity using native or conversion systems to provide communications throughout the plant IT universe. We marry the similar systems with particular managed strategy within open framework software, often having dozens or even hundreds of touch screen control systems in the design.

The Cyber-Security Framework

The enterprise system provides graphical, visual, audible, and record management functionality, often including radio, IP, and other wireless unifying software to encourage the streamlining of critical information, management of daily systems activity, and recording of all critical functions. Our systems capture cost savings in unique ways -- accelerating ROI using global strategies.

Today, a cyber-security framework of structured IP-based interconnected appliances and cloud enabled storage permits better control and integration.

Network based command and control centers - whether local NG911, enterprise wide or fusion/operations management - partner and planner.

Public Safety / EOC Consulting



Command Center Experience

Our experience includes dozens of command, control and communications centers, which entail everything from fire and life safety, security to 9-1-1 and emergency management services. The team's capability of completing large enterprise projects are reflected in. PSE being project manager for a \$7.5 million upgrade for computer-aided dispatch and records management systems for Amtrak throughout the United States. PSE already had direct responsibility for Homeland Security on the Northeast Corridor and 15 other sites throughout the United States. Amtrak found that PSE's communications capabilities extended to CAD, computerized GIS, records management systems (RMS), and 9-1-1 dispatch services.

Conceptual Design

Conceptual design may be based on Department of Homeland Security models derived through a questionnaire and objective-based design guide produced for SAFECOM. The SAFECOM protocol was recently employed in Boston, Washington, DC, and Chicago, and is a model for encompassing interoperability needs and complementary levels of service between agencies and support groups in the event of an emergency situation or disaster. This provides command, control, and communications functionality for planning event strategies, tactical missions during the event, maintenance of the site during the event, cleanup and restoration. We are able to employ an Incident Command Structure (ICS) which provides for managed interoperability as the stepping-stone for the full development cycle of the project and its active maintenance and continued improvement.

Because of the breadth of the owner, agencies and stakeholders involved to their respective roles in relation to particular events, a governance model must be established with personnel involved in EMS and emergency planning, along with all stakeholders, including hazmat, search and rescue, and equipment operators that may be involved. The policies and procedures put into place for these different events must be developed into a written or web available document that clarifies stakeholder positions, agency influencer, and ultimate command, control and communications structuring of the situation room as it relates to each possible event.

This is especially important in multi-jurisdictional response to active school shooting and mass casualty events where interoperability is as critical as operational ground awareness and command.

Security Conditions Assessment & Evaluation



Our Assessment Services have been utilized to assess a range of properties from systems to 1,200 acre refineries and DOD facilities. Our engineers perform testing for security, communications, and life safety systems. PSE has surveyed dozens of critical infrastructure, high security and mission-critical facilities totaling over 5 million square feet.

Inspection Services

Whether code evaluation and enforcement issues or good practice standards conformance, collaborative efforts of our staff with client and contractors produce safe and effective plans to allow judicious and respectful use of facilities for licensing and inspection. Compliance with local, state, and national codes as adopted is assured with our field-tested staff.

Systems Evaluation and Assessment

Our staff knows operations of mission critical facilities for emergency operations, high security detainees, maximum security prisons, nuclear facilities and transportation hubs. Major project coordination for test and acceptance have been accomplished by our staff using customized PSE applications for assessments using iPads and surface tablets for accuracy, reproducibility, and consistency.

Assessment Functions

- Critical security electronics
- High security hardware
- High security fencing
- Detention electronics
- Programmable logic control
- Duress systems – wireless/wired
- Security intercoms
- Fire alarm/smoke detection
- Emergency evacuation
- Perimeter detection
- Gates, barriers, sallyports
- GUI screens and navigation
- CCTV surveillance and recording
- Enterprise awareness

Systems Health Programs

Deployment of gear and equipment in most technical facilities demands conformance to testing and certification program for assurance of capital expenditures, life cycle cost maximization, least cost maintenance programs, operational requirements, and warranty response issues. A record-of systems health includes regular operations review, establishing maintenance strategies, and record keeping to place and keep registration current.

CITGO Petroleum - Lake Charles Manufacturing

Security Threat & Vulnerability Assessment

📍 Lake Charles, Louisiana



PSE surveyed, inspected, and assessed all existing refinery security devices, equipment, alarms, and monitoring systems currently installed. This included: fences, intrusion detection devices, surveillance equipment, and access control devices. Policy and procedures for the use of security equipment were addressed in a full threat and vulnerability assessment. PSE was responsible for CITGO obtaining a \$14 million grant from the Department of Homeland Security.

Professional Systems Engineering provided a baseline threat and vulnerability assessment of refinery security and made recommendations from which CITGO management optimized efficiency, minimized cost, and maximized the protection of critical assets. The data and information gathered by the on-site PSE project team was contained in a Security Survey Report, which contained recommendations addressing areas for change and/or improvement, alternatives, benefit analysis, as well as identification of areas that are satisfactory. PSE utilized the CARVER Model to assess and determine the threats and vulnerability of the refinery operation including offshore and land traffic impact.

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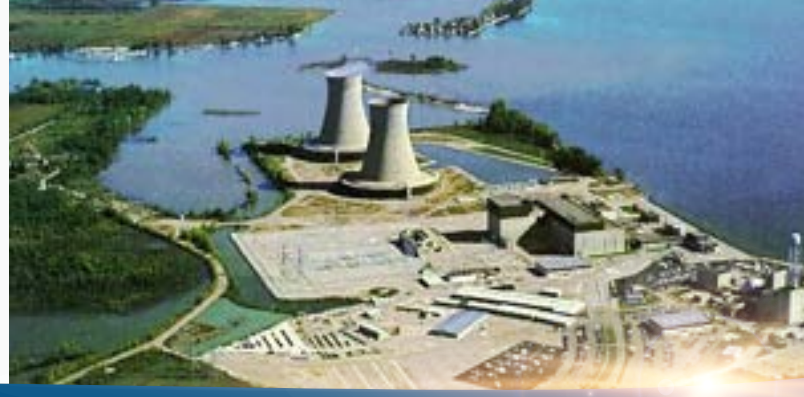
PSE's services included a comprehensive management oriented physical security survey and risk/threat assessment which:

- Analyzed the security requirements to achieve adequate and cost-effective protection for the Lake Charles Manufacturing, equipment, and personnel
- Assessed the adequacy of existing site security systems with regard to the requirements
- Determined the existing risk that CITGO had with its current security program as it relates to the unauthorized access, sabotage, public safety, and overall vulnerability of the refinery
- Provided recommendations regarding how to better protect CITGO assets
- Provided a cost estimate for the recommended courses of action

Fermi 2 Nuclear Generating Station

Security Threat Assessment & Critical Infrastructure

📍 Newport, Michigan



Like many nuclear operators throughout the U.S., the events of 9/11 made security of nuclear generator stations a national homeland security priority. PSE met this challenge with experienced methodologies to address new Nuclear Regulatory Commission (NRC) requirements for owners-controlled areas and general access.

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Professional Systems Engineering, LLC conducted an on-site evaluation of the physical and electronic security systems for the Fermi 2 nuclear power plant. The plant has a capacity to produce 1139 megawatts from its boiling water reactors. The evaluation included perimeter barriers, perimeter intrusion detection, CCTV, lighting, access control, power supplies, computers, alarm stations, consoles, multiplexers, personnel screening/search entrance facility, licensing, documentation and procedures. PSE prepared a detailed assessment report containing alternatives, recommendations, drawings, schedule and a detailed cost estimate with cost benefit analysis.

Services Provided

Studies and Recommendations

- Re-licensing application documentation support
- Screening/search study for contractors, employees, and visitors
- Perimeter threat assessment
- Mitigation study of terrorist and criminal intent
- Systems cost-benefit study and estimate
- Defensive positions study
- NRC post 9/11 owners' area compliance

Critical Physical Infrastructure

- New entrance facility design to withstand ballistic assault
- New barrier placement design
- New perimeter intrusion detection system (PIDS)
- New CCTV surveillance
- Enhancements to central alarm system (CAS)
- Enhancements to secondary alarm systems (SAS)
- New high lumen perimeter lighting

Potomac Electric Power Company (PEPCO)

Substation Security Assessment & Engineering

📍 Metro Washington, DC



PSE has over 35 years experience providing comprehensive professional engineering, design, and consulting services in security, particularly for utility and government agency clients throughout the U.S. The firm's depth of expertise is measurable in the great number of our designs in current operation, which total several hundred and equal over \$5 billion in construction

Professional Systems Engineering, LLC (PSE) has over 35 years experience providing comprehensive professional engineering, design, and consulting services in security, particularly for utility and government agency clients throughout the U.S. The firm's depth of expertise is measurable in the great number of our designs in current operation, which total several hundred and equal over \$2 billion in construction costs.

PSE conducted a comprehensive security survey and high level risk/threat assessment of each PEPCO property specified by PEPCO, including all structures and their interiors, other improvements and facilities, the property perimeter, and the property immediately surrounding perimeters. This included a homeland security based threat assessment and risk mitigation recommendation plan for over 25 locations.

PSE's services encompassed a comprehensive management-oriented physical security survey and risk/threat assessment for representative substation properties and facilities.

PSE provided the following:

- Analyzed the security requirements for each site to achieve adequate and cost-effective protection for facilities, equipment, and personnel
- Assessed adequacy of existing site security installations and systems in regard to the requirements
- Determined the existing risk with current security systems
- Provided recommendations concerning the security organization, operations, procedures, and security guard force composition
- Provided cost and benefit analysis

The emergency designs included:

- Card access control
- Perimeter surveillance
- Intrusion detection
- Physical control
- Enterprise access considerations

Saint Lucie Nuclear Power Plant

Forensic Services

 Hutchinson Island, Florida



Under a tight timetable established by the Nuclear Regulatory Commission (NRC), PSE adapted a 20-year-old nuclear security infrastructure to accommodate new technologies. This enhancement, in response to recent terrorist threats and attacks, established a higher level of ability to neutralize many threats perceived by the plant operators and security staff.

Professional Systems Engineering, LLC provided design analysis services as part of the damage assessment and adjustment team, for the Insurer of the Saint Lucie Nuclear Power Plant. PSE worked to evaluate the damage claim for the plant's Perimeter Intrusion Detection System (PIDS) resulting from two hurricanes.

PSE's services included the following:

Damage Assessment

- Performed Site Survey
- Photo documentation
- Obtained System Performance data

Research Existing Conditions

- Interviewed PIDS manufacturer
- Collected system performance and reliability data
- Obtained As-built documentation
- Determined equipment life expectancy and maintenance history

Analysis of Claim


- Evaluation of cost and justification
- Determination of direct replacement vs. upgrade
- Requirements of U.S. Nuclear Regulatory Commission (NRC) regulations
- Evaluation of different technologies

Design of Replacement System

- System of like and kind which met NRC performance requirements (Regulatory Guide 544 and Design Basis Threat 10CFR73.1)
- Replacement Methods
- Phasing required for construction
- Opinion of probable cost

Donald C. Cook Nuclear Power Plant

Security Threat Assessment & Critical Infrastructure

 Bridgman, Michigan



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Professional Systems Engineering, LLC performed threat assessment and risk mitigation studies and developed a conceptual design to upgrade the perimeter security systems and procedures for the Donald C. Cook Nuclear Power Station. The plant has the capacity to produce 1020 megawatts through the pressurized water reactors. The project included a site assessment and preparation of a report and conceptual design. Recommendations were made to modify protected area barriers, establish bullet-resistant defensive positions, replace the soil for stabilization, and upgrade intrusion detection system, CCTV system, and lighting. PSE also prepared a detailed cost estimate.

PSE developed a conceptual design to upgrade the vital area security system. The design included enhancement of vital area barriers, addition and replacement of CCTV surveillance equipment, and enhancement of the interior intrusion detection system. The design also included new conduit and cable, seismic supports, and interface to the existing security system and the existing CAS and SAS consoles. Under a tight timetable established by the Nuclear Regulatory Commission (NRC), PSE adapted a 20-year-old nuclear security infrastructure to accommodate new technologies. This enhancement, in response to recent terrorist threats and attacks, established a higher level of ability to neutralize many threats perceived by the plant operators and security staff.

Services Provided

Threat Assessment and Concepts

- Protected area barrier design
- New defensive position recommendations
- Vital area barrier design
- Upgrades to central and secondary alarm system consoles

Critical Enhancements

- New CCTV surveillance systems
- Perimeter intrusion detection systems (PIDS) enhancement
- New critical infrastructure
- New entrance gate barriers and controls

Philadelphia International Airport

Homeland Security & Airport Perimeter Designs

📍 Philadelphia, Pennsylvania



The goal of this project is to improve security and correct inefficiencies and delays at this high-volume gate where delivery trucks enter the airport. PSE performed operational studies and vehicle monitoring as part of the planning process.

Professional Systems Engineering, LLC provided engineering services for the redesign of Air Side Gate Access. PSE also provided engineering redesign for secondary gates, providing alternate entrance to the airport. The goal of this project is to improve security and correct inefficiencies and delays at this high-volume gate where delivery trucks enter the airport. PSE performed operational studies and vehicle monitoring as part of the planning process.

PSE redesigned these secondary gates to be monitored and controlled by means of card readers, infrared detectors, and video surveillance. This project also includes designing a canopy system for the pre-screening and screening areas for protection from environmental elements. This canopy system will include fire alarm, fire protection, and an intercom/paging system. In addition to providing security access control, PSE will be providing design options for snow melt systems for the gates.

PSE's Scope of Work

- Surveys of existing gates areas
- Determine legacy infrastructure including fiber, electrical, communications, ductbanks, etc.
- Determine legacy security system (integration requirements including access control, CCTV, alarm monitoring, PLC networks, etc.
- Investigate all existing service infrastructure including sewer, water, power, communications, and storm water
- Review standards and codes
- Generate narrative outlining of all findings and recommendations
- Develop phasing plans for temporary access, construction, and system
- Provide drawings of the proposed designs for gates areas
- Provide narrative specifications
- Screening Building will check for authorized credentials and will also include vehicle and personnel searches using back scatter x-ray technology and undercarriage video detection
- Nuclear Materials screened
- Pre-screening building to serve as the credential verifiers and providers for individuals requiring access into the airport operations area

NG911/EOC/Fusion Command Control and Dispatch Center Planning



Project Goals – Addressing Needs of Stakeholders

- **Business Process Modeling** – the first step is establishing agency and stakeholder hierarchy and developing strategies for various emergency responses and scenarios, as well as distribution of tactical command and operation posts within the “situation room.” Included must be preliminary evaluation of needs for policies and procedures and the technical resources available for full implementation.
- **Master Planning** – The second step is developing concept designs for primary and secondary/fallback areas with a tactical analysis of all available communications, infrastructure and management/control systems in place or expected.
- **Final Program Development** – After Master Planning, a conceptual budgetary estimate can be established along with the different alternatives. The program will identify the particular choice made by the owner/authority and designated for operation at opening. The program will identify the specific needs, identify all infrastructure requirements and room accommodations through a space program, and finalize concepts, goals and strategies for documentation and design of the planned changes and modifications. This is the first phase of consulting services and is ultimately the most important.

Command/Control/Communications/Dispatch Centers PSE Identifies Specific Needs of the Facility and its Roles After Finalizing Concepts, Goals, and Strategies for Documentation and Design of Planned Changes and Modifications Including:

- NG911/311/811 centers
- Integration of geolocations, radio, call logging, and hazard
- Incident command centers
- Situation, press, and composure rooms
- Crisis command and communications
- Command/control requirements
- Emergency management
- Integrated wireless mesh
- Hardened operations centers
- VoIP/cellular/trunked radio dispatch
- Unified command/fusion center
- SCADA/PLC/Mesh-IP integration
- Remote incident command
- Security/surveillance control rooms
- Cyber security framework
- Structured cabling
- Outside fiber/copper plant

Emergency Operations Management Services

Professional Consulting and Engineering Services

- Project Management
- Applications Design/Engineering
- Specifications
- RFP Preparation
- Bid Analysis
- Drawings & Bid Documents Preparation
- Site Surveys/Studies
- Compliance Audits
- Planning/Programmatic Development
- Construction Observation
- Certification Testing
- Training
- Operating Policies/Procedures Code Compliance
- Systems Analysis
- Code Review

Emergency Operations Planning

- Migration Plan/Project Schedule (Primavera)
- Procurement Assistance
- Installation and Acceptance testing Oversight
- Computer Premises Equipment (CPE)/ 9-1-1 Telephony
- Computer Aided Dispatch (CAD)
- Records Management System (RMS)
- Cabling and Grounding
- Specifications and User Requirements Review
- Fire/Emergency Safety Manuals
- Fire/Emergency Evacuation Graphics
- Communication Infrastructure

Emergency Operations (cont'd)

- LAN-WAN-RF Combined Media Distribution
- Structured Copper-Fiber-Coax Distribution Networks
- Access Control/Central Station/Homeland Security Center Operation Planning
- Computer-aided dispatch
- 800 MHZ Trunked Radio Design/Management
- Geographic and Jurisdictional Database Mapping Management with Call Dispatch Integration
- Remote RF Mobile Data via Fixed Terminal Equipment and PDA Installs
- Critical Electrical and Environmental Systems Analysis
- Life Safety Analysis
- RFP Procurement, Bid/Negotiation
- Construction Services

Communications Design

- 911 Call Centers
- Data/Telecom
- Computer Networking
- Video Conferencing
- Video Arraignment
- Digital Video Broadcast
- Multi-Media
- Audio/Visual/Video
- Acoustics
- Noise & Vibration Control
- Wide Area Networks
- Fiber Networks

9-1-1 Intergraph and Rail Security

Enterprise Safety Assessment/Emergency 9-1-1 Dispatch

 New Jersey



PSE was chosen by Amtrak to replace its Emergency 9-1-1 Dispatch Center with a modern system that covers no less than 15 cities and nearly 150 operators. PSE's designs allow for adaptation with evolving technology to serve current and future needs.

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Professional Systems Engineering, LLC (PSE) provided consultant services including debriefing, interviews, historical analysis, technology requirements, specification preparation, RFP production, and bid analysis to replace Amtrak's CHIEFS system public safety software. Amtrak's existing system was nearly ten years old and no longer met Amtrak Police Department's business needs. It did not keep pace with up-to-date technological demands and proved labor-intensive to maintain. The existing central monitoring center is a national call center providing coverage for emergency, enforcement, disaster management, hazardous spill/contamination response and rail operations management with far-reaching, and sometimes overlapping jurisdictional-based, automated response call-up. The new system includes the following components and capabilities:

- Computer-aided dispatch/geo-base sensitive programming
- Records management system
- Internal affairs module for secure review
- Employee communications
- Personnel management module
- GIS mapping with national coverage and integrated/imported response jurisdiction mapping
- Custom reporting relating to train-specific information

The new system allows for effective real time dissemination of information regarding departmental productivity and crime trend analysis, which facilitates effective deployment of resources in conjunction with daily operational requirements as well as emergency deployments. This project demonstrates PSE's ability to "prime" a sophisticated, nationally advertised consulting award and bring stakeholders technology support into a modern data and systems managed universe that is deployed in at least 15 cities and covering almost 150 operators.

Delaware Valley Intelligence Center

Consulting & Review Services

Philadelphia, Pennsylvania



The new Delaware Valley Intelligence Center's \$20 million, 47,500 SF facility promotes information-sharing in Homeland Security matters by bringing city, state, and federal law enforcement agencies from 14 counties in four states together under one roof.

The Delaware Valley Intelligence Center (DVIC) is located in South Philadelphia. The DVIC provides a centralized, multi-agency intelligence-sharing network that utilizes a collaborative and preventive approach to regional threats, critical to supporting the health and safety of the public. This supports and strengthens the partnership between the agencies, organizations, and community. It also houses Real Time Crime Center (RTCC) that provides intelligence and investigative approach and support for the Philadelphia Police Department.

Professional Systems Engineering, LLC provided security and telecommunication consulting and construction administration services for the Delaware Valley Intelligence Center (DVIC). The new DVIC's \$20 million, 47,500 SF facility promotes information sharing in Homeland Security matters by bringing city, state, and federal law enforcement agencies from 14 counties in four states together under one roof.

Services Provided

Public Safety Systems

- Citywide video surveillance (City Watch)
- Physical Security Information Management (PSIM)
- Access control systems
- Command and control
- Gunshot detection
- LPR systems
- Command center consulting
- Systems integration consulting

Telecommunications

- Communications infrastructure
- Main point of presence coordination
- Wide area network interface
- Distribution backbone design
- Tele/data structured cabling systems
- Audio/video systems
- IDF/MDF tele/data room equipment layout

Capital Complex and Five Cities in Commonwealth of PA – Design / Commission

Security Assessments & Capitol Police Command Center

📍 Harrisburg, Pennsylvania



PSE has provided in-depth survey and security assessments, as well as design and engineering services for physical security, video surveillance, access control, and overall enterprise security monitoring and integration.

Professional Systems Engineering, LLC (PSE) provided statewide security upgrades at the Capitol Police Command Center and state-owned sites around the Commonwealth of Pennsylvania to be monitored by the Capitol Police at the IMCS Command Center. This project includes a total of 32 buildings in various cities across the state, as well as extensive coordination with various government agencies and stakeholders. PSE has provided in-depth survey and security assessments, as well as design and engineering services for physical security, video surveillance, access control, and overall enterprise security monitoring and integration.

Capital Security Site buildings included the Agriculture Building and Agricultural Vet Lab. The facilities included three (3) Bio Security Level Labs. Assessed access control for personnel with multiple authorized credentials for a secured system to detect and track with an upgraded integrated system with card access, video surveillance system, the IMCS, and integrating all electronic security system technologies. This program consists of a review of the existing equipment, alternatives available for new technology and placement, and recommendations for new system characteristics, which were utilized in preparing an opinion of probable cost.

This project won first place in 2019 as an "Outstanding Engineering Achievement" by the Pennsylvania Society of Professional Engineers. The project included five cities, five million square feet under roof with thousands of cameras, card readers, and access-controlled doors.

Services Provided

Enhance Assessment and Study

- Existing electronic security systems
- Existing physical barriers
- Overall building security
- Statewide command and control center

Command and Control Upgrade

- Real-time viewing
- Complete electronic security system integration
- Redesign of command center
- Physical Security Information Management (PSIM)

Electronic Security Design

- Access control system and monitoring
- Video surveillance systems
- Security Intercom and communications
- Personal duress

Physical Barrier Controls

- Wedge barriers and popup bollards retrofit
- X-ray package screening
- Guard booths
- Vehicle control gates
- Real-time viewing

Incident Command & Deployment Process



Incident Command Structure Design

The Incident Command System (ICS) has been the center of many activities regarding interoperability with the Department of Homeland Security. ICS is designed to be highly integrated, redundant, flexible and expandable so that a synergistic relationship occurs with all agencies and stakeholders responding during an incident. An Incident Command System includes a communications plan, an incident action plan, and all stakeholders responsive to the governance agreement through a cooperative effort.

An Incident Action Plan (IAP) is developed through the governance committee to identify jurisdiction in hierarchical order and stakeholders in response order. The communications plan uses the inventory of communications assets available that are visual, historical (surveillance), real-time (alarms), and verbal through wireless, radio, LAN, or landline communication.

The 12-Step Deployment Process

Communications equipment, infrastructure, and all their related support require phased implementation for satisfactory deployment of all communications equipment. PSE employs a 12-step process that provides a thorough and complete solution set from inception through purchase and continuous validated operation.



NY State Hydro Power Dams & Clark Energy Center

Switchyard, Control Center & Intake Security Study & Design

📍 Massena, New York



PSE provided a security study, reports, and design services to upgrade physical security at this critical power plant location.

Professional Systems Engineering, LLC conducted a security study and implemented counter terrorist security deterrents for two dams, the 345kV/765kV high tension distribution Massena switchyard, and the water supply intake for the town of Massena, NY. A component of the study included cyber security for SCADA and telemetry systems.

The R.E. Moses Power Dam (FDR Power Project) is a critical power generation dam spanning the St. Lawrence River, and is shared with Canada. The Long Sault Dam is a critical water control dam on the St. Lawrence River, which is associated with the Moses Dam. The Massena switchyard is a critical feed to the NYPA electrical power distribution system. The study assessed the vulnerabilities of the facilities, documented the existing security measures, provided recommendations with alternatives, and provided a detailed construction cost estimate.


The Clark Energy Center is a major control center for electrical power distribution for NYPA and is manned 24 hours per day. The 345kV switchyard is a critical feed to the NYPA electrical power distribution system. The study assessed the vulnerabilities of the facilities, documented the existing security measures, provided alternatives and recommendations, and provided a detailed construction cost estimate. The CEC system interfaces with the existing NYPA system-wide security control center located approximately 125 miles away, which have remote control and monitoring capabilities of the CEC system.

Our consulting and specifications included:

- Perimeter barriers
- Intrusion detection
- Digital CCTV cameras
- Digital CCTV switching and recording
- Security lighting
- Interfacing with existing security power supplies
- Computer systems
- Security control center
- Cyber security analysis

CITGO Petroleum - North American Headquarters

Physical Security Risk Assessment & Engineering

 Houston, Texas



This report provided a high level, management oriented discussion and analysis of existing security program. The end result was a detailed analysis of threats, vulnerabilities, mitigation alternatives and estimates of offsetting risks.

Professional Systems Engineering provided a physical security risk assessment for the North American Headquarters Building located in the City of Houston, Texas. The major objectives of the assessment were to determine the current risk to CITGO, evaluate the existing security program, and recommendations for improvements.

This report provided a high level, management oriented discussion and analysis of existing security program. The end result was a detailed analysis of threats, vulnerabilities, mitigation alternatives and estimates of offsetting risks.

The objectives of the study:

- Analyze the security requirements and present a standard for security
- Assess the adequacy of existing security systems
- Provide recommendations for improvements
- Provide a cost and benefit analysis of alternative

The engineering designs included:

- Integrated enterprise level card access
- Smart card implementation
- Hydraulic barriers
- Iris reader for high security with independent biometric access
- Secure man-trap revolving entrances

Security/Network Technology

PSE has extensive experience providing complete Tele/Datacom infrastructure and information technology assessments, systems planning, design and engineering services.

Wireless Data/Voice Systems

- Wi-Fi
- WiMAX
- Cellular Data
- Microwave Systems
- 700/800/900 MHz

Wireless Network Applications

- Mesh Networks
- Point-to-Point
- Wireless Backhaul
- Wireless LAN/WAN
- Hot Spots
- Wireless Network Infrastructure

Wireless Network Security

- Autonomous Access Points
- Lightweight Access Points
- Wireless Network Switching
- Wireless Network Management
- Rogue Access Point Client Detection

Data Network Types

- LAN
- WAN/MAN
- High-rise Fiber Networks
- Multi-Building Campus Nodes

Network Communication Security

- VoIP
- Unified Messaging
- Video Conferencing
- Video Delivery and Storage

Data Center Security


- Storage Networking
- Data Back-up Systems
- Critical Power Systems
- Network Monitoring
- Server Consolidation
- VLAN Coordination
- Legacy Systems Migration
- Visualization of Servers

Infrastructure Security

- Cable Monitoring
- Structured Cabling
- Campus Wide Infrastructure
- City/County Wide Infrastructure
- Microwave Links
- Aerial Cabling Systems
- Ductbank Systems

Bloom Energy

Security, Communications, Networks & A/V Design Services

 Sunnyvale, California & Newark, Delaware



PSE provided Bloom Energy technical knowledge required to successfully existing system to connect West coast and East coast facilities.

Professional Systems Engineering, LLC provided a complete technology package for Bloom Energy's Natural Gas Fuel Cell Manufacturing Facility. This facility blends the latest in Green Power Generation Technology with a vision for a new model of American manufacturing. Our services included security, communications, audio/video presentation and video conferencing systems. These systems and networks will be spanning from Sunnyvale, California to Newark, Delaware and will eventually connect all energy servers installed worldwide. PSE successfully mixed IP networks with a keen sensitivity to a different kind of IP (Intellectual Property) to provide systems which support both Bloom's digitally connected creative environment and the critical security elements needed to keep Bloom at the head of the Green power sector. During the planning stage of the new facility, PSE provided programming for a global monitoring and control center to monitor all sites, nationally and globally for security, manufacturing, life safety, communications, and building management systems.

Services Provided

Security

- Access control
- IP video surveillance
- Video intercom
- Remote monitoring

Communications

- Universal cabling distribution system
- Inside/outside plant communication
- IP telephone
- Video conferencing)

Networks

- Wifi distribution
- Industrial network
- Data center planning

Audio/Visual

- Conference room presentation system
- Video conferencing

Philadelphia International Airport

Enterprise for SCADA, Building Management &
Lighting Control Systems

📍 Philadelphia, Pennsylvania



This project aimed to provide a more efficient and effective solution for monitoring the airport's various HVAC, lighting, and power systems. Working with various members of the airport staff, PSE proposed a solution which provides monitoring of all systems from a single workstation while increasing efficiency and reducing the Airport's maintenance costs.

Professional Systems Engineering, LLC provided engineering services for the survey and analysis of the Airport's building management, facility lighting, airfield lighting, and power substation monitoring and control systems. This project aimed to provide a more efficient and effective solution for monitoring the airport's various HVAC, lighting, and power systems. Working with various members of the airport staff, PSE proposed a solution which provides monitoring of all systems from a single workstation while increasing efficiency and reducing the Airport's maintenance costs.

PSE investigated the current methods for monitoring and controlling these systems and devices in order to develop a new, streamlined solution for unified monitoring. PSE also surveyed the existing airport's job control center and made recommendations and conceptual designs to improve room layout, console design, and monitoring systems. A solution was recommended that would increase efficiency while providing significant cost savings to the airport. Additional functionality was recommended including automatic maintenance ticketing, notification of staff using smart phones and other devices, and preventative maintenance (PM) scheduling and tracking.


PSE's recommended solution allows for the addition of energy-saving functionality such as energy management, lighting control, and load shedding.

PSE's scope of work Included:

- On-site survey of the following systems:
 - Wonderware SCADA interface for power substations
 - Siemens Apogee Insight building management systems
 - TAC I/A building management system
 - Cooper/Crouse-Hinds airfield lighting control systems
 - Lutron Grafik 6000/7000 interior lighting systems
- Interviews/meetings with airport maintenance staff
- Interviews/meetings with various hardware and software vendors
- Development of unified monitoring solution
- Preparation of an needs assessment with our findings and solutions
- IT recommendations for hi-capacity, secure networks upgrades

Philadelphia Naval Business Center

Telecommunication System Assessment Study & Master Plan

 Philadelphia, Pennsylvania



PNBC continues to be developed into a modern business campus with facilities for shipbuilding, industrial manufacturing, warehouse/ distribution, intermodal yard, and office tenant spaces. With 2,000 acres, the client required data and tele-communications infrastructure to replaced aging copper pairs buried in marine environment manholes pressured with nitrogen and built in 1942.

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Professional Systems Engineering, LLC developed a Master Plan for a campus-wide Tele/Data Communications Service Distribution System at Philadelphia Naval Business Center (PNBC), site of the former Philadelphia Naval Ship Yard.

The purpose of the Master Plan was to provide guidelines for continued improvements and reconstruction of the campus-wide Tele/Data Communications Service Distribution system. The Plan details existing services, infrastructure and cable, proposed new infrastructure and cabling, and alternative solutions to meet both short- and long-term telecommunications service distribution needs at PNBC.

Services Provided

- Assessment of the existing telecom system
- Assessment of the duct bank system
- Survey of abandoned utility systems for modernization of the telecom cabling pathways
- Prepare an RFP for telecom testing
- Develop solutions for various telecom services outage issues
- Design of new fiber infrastructure
- Rodding of all maritime environment duct banks
- Utility mapping services
- As-built configuration
- Coordination with Verizon outside plant engineering
- Model design for fiber services
- Outside fiber plant design for tenants

Amtrak Homeland Security Protection Programs

Enterprise Security & Communications Consulting

📍 Various Cities, throughout United States



The size of the project was unique from a national perspective and required a team of PSE evaluation specialists to complete and document all projects over the 2-year period.

Security (8th Street Heavy Maintenance Yard, New York):

This entails homeland security and communications requirements for Amtrak in regarding protection of assets through counter-crime and counter-terrorism measures. Projects included maintenance and Owner's areas in Los Angeles, Washington, D.C., Baltimore, Wilmington, Philadelphia, and Queens. Owner area security included responsibility for review of CCTV, gates, and other physical items. Los Angeles required maintenance and storage yards to be physically secured, as well as electronically monitored with an extensive barrier system that was completed with specialized fencing.

Northeast Corridor:

Another set of projects allocated to these task order arrangements included the Northeast Corridor tunnels and bridges including Bergen and Newark. Tunnel projects included counter-terrorism assessments and actions to electronically monitor and provide sensors for the surround upon intrusion into the tunnel by "warm body" objects. Networked CCTV surveillance was also provided. Study and assessments of all card access assets were provided for 15 cities including Chicago, Wilmington Penn Station, Philadelphia 30th Street Station, New York City Penn Station, Boston, Washington, Los Angeles, and Riverside, California.

The study and assessments included a complete inventory of all card access systems, panels, connectivity, locations of the items, integration diagrams to show existing layouts, and all pertinent data bound into 15 separate binders to create as-record documentation along with all pertinent data.

The size of the project was unique from a national perspective and required a team of PSE evaluation specialists to complete and document all projects over the 2-year period.