



Fire Protection Capabilities



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Unleashing the Power of Human Ingenuity

Nuclear power splits atoms to create energy; yet, when it comes to shaping a carbon-free future, Westinghouse is committed to harnessing an even more potent source of power: The strength of human ingenuity.

Our company has a 130-year history of innovation that began when our founder, George Westinghouse, commercialized the alternating current and forever changed the way electricity was distributed.

Our legacy continues in the nuclear era, which originated when we built the world's first commercial pressurized water reactor in Shippingport, Pennsylvania. More than 60 years later, 430 nuclear reactors operate around the world using Westinghouse technology. While we are proud of our past, its real value lies in providing a guide for our future. As the world strives to address the challenges of a changing climate, we are constantly rethinking the way we deliver nuclear energy.

From the efficient and economical AP1000® nuclear plant to the new eVinci™ micro-reactor for remote energy applications, we are leading the way with the development of new nuclear technologies that will enable us to share the benefits of this reliable, clean, safe and economical source of energy for generations to come.

With over 30 years of industry experience, you can build confidence in your fire defense systems with our comprehensive fire protection portfolio.

From design to implementation to routine examinations, our team of world-class experts deliver performance-based solutions through innovative technologies with proven local and global experience.

Supporting both detection and suppression programs, our experts are factory trained on fire alarm systems, programming and hardware. Leveraging our robust licensing experience with a fully collaborative approach, we provide customized, cost-effective fire protection solutions to keep your site and personnel safe.

Our team members are heavily involved in Canadian, North American and International fire protection committees and organizations including UL/ULC, NFPA, SFPE, NBC, and CSA N293/N393. This allows our experts to remain aligned with the most recent operational experiences across varying industries, ensuring these experiences are then incorporated into future designs and assessments.

Over 30 Years

Fire Protection industry involvement



Extensive experience in Fire Suppression & Detection Design



Proven track record of cost-efficient solutions



Competent in the design of alternative solutions and performance-based design

Committed to:

Shaping Tomorrow's Energy

QA Qualifications

We are trusted to deliver excellence to the U.S., Canadian, and foreign nuclear industries for all our offerings utilizing Quality Assurance standards such as:

- 10 CFR50 Appendix B and Part 21 Compliant
- ISO 9001:2015 Certified
- CSA N299.1 Qualified
- CSA N286.7 Compliant
- CSA B51 Vessels, Piping & Fittings
- CSA N285.0 Certified, including Vessels & Piping, Parts, & Sub-Assemblies, Support Structures, Supports, Fittings & Material Supply

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Westinghouse is an active member of the following technical committee & organizations:

- Society of Fire Protection Engineers
- National Fire Protection Association
- Underwriters Laboratories
- National Research Council of Canada
- Fire Safety and Emergency Preparedness
- Canadian Fire Alarm Association



Fire Protection System Design

Westinghouse's Fire Protection Team supports the design of fire detection and fire suppression systems across a wide variety of installations. Westinghouse's expert team provides customer-specific solutions for the numerous specialized detection applications that can be designed and installed, including flame detectors, high-sensitivity aspirating smoke detection, linear heat detection, and beam-type smoke detectors. Suppression systems include wet and dry sprinklers, interlocked pre-action systems, deluge systems, clean agent suppression systems, and fire water distribution systems.

Westinghouse Fire Protection Capabilities

With over 35 years of Fire Protection specific experience, Westinghouse offers a full suite of design services, and provides factory certified technical support services during installation and commissioning activities. In addition to providing software programming of all Fire Protection modifications, Westinghouse supports the ongoing maintenance of existing systems by assisting with troubleshooting and repairs in the event of equipment failures.

Westinghouse personnel perform Code Alternative Solutions to address applications of existing Code requirements which are not feasible or cannot be practically implemented or added. This supports clients with schedule recovery and lowers cost on capital projects.

Westinghouse also customizes innovative solutions for customer-specific challenges that require out of the box thinking. These solutions may include the use of performance-based approaches, which Westinghouse routinely performs and receives Authority Having Jurisdiction (AHJ) acceptance on all occasions.

Additionally, Westinghouse engineers and technicians are well-connected in the Fire Protection industry and regularly participate as Subject Matter Experts in technical committees across North America and internationally.



Types of System Design

Fire Suppression System Design:

- Automatic systems (includes water-based, clean agent, and dry power)
- Standpipe and Fire Pump systems
- Manual fire protection systems

Fire Detection System Design:

- General fire alarm systems, general device and panel layout
- Control panel programming for detection, notification, and initiation
- Auxiliary interfacing with dampers, fans, elevators, and other equipment
- Power Plant and Facility Networking

Case Studies



Fireworks Terminal Replacement at Bruce B Nuclear Generation Station

Customer: Bruce Power

Westinghouse's experts updated soon-to-be obsolete software and hardware for the Fireworks Computer Terminals at Bruce B NPP. The colour graphics annunciation system, known as Fireworks, provides primary annunciation of events in the station FPS to the main control room (MCR). Westinghouse completed a design report, software qualification reports, and failure modes and effect analysis. The design report discussed the required system interfaces, software qualifications, long lead items, training requirements, and human factors. The team completed software qualification as well as failure modes and effect analysis reports for both the Fireworks system and the EST3 data gathering panel application software. Additionally, the team completed the detailed engineering phase of this project which included all hardware design, system programming, firmware upgrades, as well as field installation of all system software updates.



Video Imaging Detection at Darlington Nuclear Generation Station

Customer: Ontario Power Generation

New construction at Darlington NPP required a fire detection system to cover large open space areas. Given the large open spaces, Westinghouse proposed the design and installation of Video Imaging Detection System (VIDS). This system employs proprietary software to analyze live video feeds in real-time to identify flame, smoke, oil-mist, or potential intrusion (considered to be a single, "all-in-one" detector solution). The video imaging detection combines enhanced resolution and picture clarity of a standard network camera with built-in flame, smoke, and motion detection capabilities. VIDS are configured to employ an EST3 Control Unit to monitor both the video imaging detection as well as any remaining standard spot-type smoke, flame, or heat detectors. A few advantages of such system includes lower number of field devices thus reducing annual operational costs, immediate decision making at MCR without field verification, improved life safety for responders and field staff, and post-event analysis to assess cause of event.





Code Consulting Services

Westinghouse’s Fire Protection experts support efficient and safe solutions to meet minimum fire code and standards as building infrastructure quickly evolve to include new technologies and design concepts. In consultation with the customer, Westinghouse’s team provides technical expertise to ensure business needs are met while still achieving the intent of the codes. Westinghouse recognizes that in order to provide customers with design flexibilities, alternative design solutions is a must in many situations. Westinghouse experts have developed many alternative solutions within the commercial, industrial, and nuclear industry.

Westinghouse Fire Protection Capabilities

With over 35 years of Fire Protection specific experience, Westinghouse offers code consulting across the USA and Canada. Westinghouse Fire Protection experts support both fire protection and life safety design or review at all stages of the project, including new construction, renovation, and decommissioning.

Codes and standards vary across jurisdictions and may cause challenges for building owners, design engineers, architects, and Authorities Having Jurisdiction (AHJ). At Westinghouse, Fire Protection experts work with customers to produce code compliance reports that outline the fire and life safety criteria as prescribed by the code, identify any potential non-compliances, and suggest remedies to achieve compliance. Compliance can be in the form of a prescribed solution or an alternative solution using a performance-based approach.

Westinghouse operates in accordance with the expectations of the AHJ, which simplifies the review and acceptance process of code compliance reports and potential alternative design solutions.



Code Consulting Assessments

Typical Code and Life Safety Reviews:

- Accessibility & Barrier-Free Condition Assessments
- Code Compliance Review (CCR)
- Egress Studies (Evacuation Analysis)
- Fire Impact Evaluation
- Sound Notification Assessments

Advanced Support:

- Alternative Solutions (Performance-Based Designs)
- Fire Modeling
- Experimental Assessments
- Support with AHJ Discussions

Case Studies

Code Compliance Review for the Solidification Process Facility

Customer Canadian Nuclear Laboratories (CNL)

Westinghouse performed a Code Compliance Review (CCR) for the Solidification Process Facility, at CNL's Whiteshell Laboratories. A CCR for each building was performed by evaluating the design, construction, and operations of the facility against the applicable requirements of the National Building Code of Canada (NBC), National Fire Code of Canada (NFC), CSA N393 (Fire Protection for Facilities that Process, Handle, or Store Nuclear Substances), and the standards referenced therein. Westinghouse reviewed design and construction materials to ensure current construction and operational codes and standards were met, allowing CNL to continue striving towards the maximum level of employee and public safety.

The scope of this project also included a Fire Hazard Assessment to determine the adequacy of the fire protection measures, postulate plausible fire scenarios and the associated consequences, verify that loss limiting criteria were not exceeded, identify where fire hazards exist, and provide cost effective recommendations to mitigate any hazards that pose a risk of exceeding those criteria.

Accessibility for Ontarians with Disability Act (AODA) Assessment

Customer: Ontario Power Generation (OPG)

Westinghouse engineers conducted multiple field assessments to evaluate approximately forty of Ontario Power Generation's buildings to ensure compliance with the current Accessibility for Ontarians with Disability Act (AODA). Each building was evaluated on the inclusive environment which includes common building elements, exterior and interior environments, system and controls, and special facilities and spaces. The assessment was conducted to ensure each building could be entered and navigated by anyone; this considers various types of disabilities including but not limited to auditory, visual, learning and physical disabilities.

Westinghouse completed several site investigations and conducted a detailed report for each building including the level of accessibility. Additionally, compliance recommendations were provided with an estimated cost for any required building upgrades.





Fire Protection Program Optimization

Westinghouse’s Fire Protection Team supports the optimization of Fire Protection Programs (FPP) at many nuclear facilities. FPP optimization is performed while still meeting the business needs of customers and completed in accordance with the applicable regulatory commitments. To assist with reduction of operational and construction costs, FPP optimization can include utilizing risk-based assessments and performance-based approaches rather than only meeting prescriptive requirements as defined by codes of record. These optimization efforts not only reduce operational and construction costs, but also increase work efficiencies and allow organizations to better distribute resources across their facilities to support other services.

FPPs are required at nuclear facilities and include many elements such as Management of Combustibles, Control of Hot Work, Inspection, Testing, and Maintenance of Fire Protection Systems. The requirement for a FPP is generally listed within a utility’s operating license and provisions for this program are defined within a jurisdiction’s adopted nuclear standards.

Westinghouse Fire Protection Capabilities

As the OEM for over 60% of North American utilities, Westinghouse has extensive expertise with the design of nuclear stations and nuclear technology. This experience assists Westinghouse experts when studying and evaluating a FPP, allowing for greater flexibility compared to the typical prescriptive FPP framework.

Over the past 35 years, the Westinghouse Fire Protection Team has performed many plant and facility condition inspections, providing considerable insight on how FPPs are utilized and applied in the field by work groups and field staff. These inspections generate a wealth of operational experiences and lessons learned which informs future FPP optimization initiatives.

Furthermore, Westinghouse’s benchmarking efforts allow for FPP optimization with industry data therefore adding real practical measures and credentials to the proposed solutions. As an industry leader, Westinghouse has a proven record of successful new solution implementation at various facilities.



Impacts of Optimizing a Fire Protection Program

FPP optimization can:

- Reduce operational burden and field oversight
- Allow for prolonged inspection, testing, and inspection on fire protection systems
- Take credit of fire and risk assessments to reduce plant costs

Case Studies

Chalk River Fire Protection Program Review and 2030 Vision

Customer: Canadian Nuclear Laboratories

Project - Chalk River Fire Protection Program Review and 2030 Vision
Customer: Canadian Nuclear Laboratories

Westinghouse's experts performed an evaluation of Canadian Nuclear Laboratories's (CNL) FPP with industry best practices and planned site changes in mind. This evaluation would support the development of a risk-based fire protection services model that addresses the current and future fire risk profile.

The risk-based fire protection services model addresses the current fire risk profile while also displaying the change in fire risk profile over time. In this specific instance, the assessment modeled the current state up to 2030. The developed model allows CNL to assess the degree in which independent buildings, as well as the site as a whole, meet the fire protection goals of the governing code and standards.

The risk-based model allows analysis of inspection, testing, and maintenance intervals to determine if it would be appropriate to increase the interval based on device performance. It also addresses the need of fire brigade personnel as the site develops into its final state in 2030, based on the risk at a given point in time. The added flexibility of the risk-based fire protection program allows cost savings, while maintaining regulatory requirements.

Implementing the results of Westinghouse's Fire Protection Program Audit enables CNL to efficiently deliver services, enable performance of site activities with an acceptable low risk of fire, and manage the total cost of delivery of the Fire Protection Program.

Ultimately, Westinghouse provided recommendations to update the current FPP, and additionally supported in updating FPP related procedures as part of a later scope.





Third Party Reviews

Westinghouse's Fire Protection Team supports with Third-Party Reviews (TPR) to ensure all designs and deliverables from a design vendor or utility are accurately prepared and meet the standards of the Authority Having Jurisdiction (AHJ). Westinghouse experts have experience reviewing fire suppression systems, fire detection systems, barrier design, emergency lighting, notification systems, fire modeling, in addition to performing alternative solutions (or performance-based designs).

New designs, modifications, renovations, refurbishments, or decommissioning at a plant may all impact a fire protection or life safety system which prompts a TPR. This review is added to the design submission package and sent to the AHJ for review and acceptance.

Westinghouse Fire Protection Capabilities

With over 35 years of Fire Protection specific experience within the nuclear industry, Westinghouse fire protection experts are familiar with technologies present at both American and Canadian utilities. Westinghouse's Fire Protection team participates in nuclear technical committees specifically addressing fire protection and life safety requirements. Moreover, Westinghouse Fire Protection engineers are licensed in various jurisdictions across both USA and Canada, and as such can seal engineering design documents and TPRs where applicable.

Westinghouse's Fire Protection team offers an extensive suite of nuclear services, automation, fuel, and new plant engineering to help reduce outage times, enhance safety, and increase operation efficiency. These offerings provide Westinghouse's Fire Protection experts with a competitive edge over industry competitors when TPR support is requested as Westinghouse leverages unique expertise from a wide range of disciplines.



Third-Party Reviews

Applicable across many areas including:

- Performance-based designs
- Fire Protection System modifications
- Plant modifications that impact fire protection systems
- High-risk profile projects

Case Studies

Design Modification Third-Party Review

Customer: Tetra Tech

Westinghouse was retained by Tetra Tech to perform a Fire Protection TPR of the design modifications undertaken to the existing fire protection systems installed within the Darlington Nuclear Generating Station. CSA N293, Fire Protection for Nuclear Power Plant, mandates TPRs for all changes that could impact fire protection systems within nuclear generating stations. The scope included a review of modifications to the fire sprinkler suppression systems, installation of fire rated dampers within the station's ventilation system, and installation of fire rated separations.

Westinghouse received the final draft design package containing engineering documents (drawings, calculations, specifications, and reports) and assessed the package to ensure the proposed design complies with the facility licensing requirements and applicable Codes and Standards.

Third-Party Review of Bruce Power's Modular Office Trailer Complex Alternative Solution

Customer: Hatch Associates Consultants

Westinghouse was retained by Hatch Associates Consultants to perform a TPR of the engineering design documents for multiple projects at Bruce Power. One example is a modification made by Hatch to the fire detection tie-in from the main component replacement trailer to the Bruce A station. Westinghouse reviewed the design package documents which included alternative solutions for fire water systems and fittings, fire detection and alarm system, and modifications to identify non-compliances and gaps to the Hatch design team. The review process was performed as highlighted by Bruce Power governance. A formal report was submitted that reviewed and accepted the dispositions of the design team. This was thereafter submitted to the regulator.



Innovative Solutions & Cost Efficiency Studies

Westinghouse understands that customers look for partner organizations that continuously work to develop innovative solutions to increase efficiencies and reduce costs. Westinghouse experts offer innovative solutions that allow customers to decrease spend on equipment or material, defer from using expensive prescriptive requirements, utilize alternative means of achieving the intent of codes and standards, and reduce operational activities mandated by governance through optimization.

Building, fire, and nuclear codes may impose strict prescribed requirements that greatly influence the capital funds of a new construction, renovation, refurbishment, or decommissioning project. Using performance-based approaches and risk assessments, Westinghouse supports customers with Authority Having Jurisdiction (AHJ) discussions, work planning, fire protection system selection, and fire program enhancements.

Westinghouse Fire Protection Capabilities

Westinghouse is well-positioned to support effective, first-of-a-kind and customized customer solutions through 35 years of Fire Protection specific experience, extensive nuclear technology knowledge, and involvement in technical committees that pertain to the development of Fire Protection codes and standards. These solutions may include the use of performance-based approaches, which Westinghouse routinely performs and receives AHJ acceptance on all occasions.

Innovative solutions and cost efficiency studies can be supported with experimental testing at Westinghouse’s laboratories and modeling expertise. Westinghouse experts regularly participate at Pressurized Water Reactor Owners Group (PWROG) meetings and are invited to present at CANDU Owner Group (COG) meetings to share state-of-the-art solutions and new performance-based approaches.



Innovative Solutions & Cost Efficiency Studies

Benefits of Innovation Solutions:

- Flexibility with engineering design
- Lower project capital costs
- Inspection, testing, and maintenance costs reduced significantly
- Meeting or exceeding minimum performance levels

Cost Efficiency Studies Benefits:

- Replacing prescriptive requirements with alternative solutions
- Decreasing workload on utility staff

Case Studies

Hamilton International Airport (YHM) Maintenance, Repair, and Overhaul (MRO) Expansion Project

Customer: KF Aerospace

The existing KF Aerospace facility in Ontario, Canada was undergoing a major expansion and upgrade, which resulted in the addition of a new aircraft maintenance hangar and a new training facility. These two new buildings were considered additions to the existing facility, creating one large, interconnected building. The Fire Alarm System was discontinued and required replacement, allowing for a new addressable system to be installed.

Westinghouse upgraded the Fire Alarm System into a modified two-stage operational system to sound an alarm tone in the building to notify the occupants to evacuate when a fire occurs in one of the existing interconnected buildings. The two other buildings on either side of the affected area, will receive an alert tone, notifying the occupants that there is a fire but to remain within the building.

Fire Panel Alarm and Annunciation Alarm Transmission and Receiving Centre

Customer: Bruce Power

To upgrade existing signal receiving configurations and infrastructure at Bruce Power, Westinghouse provided several alternatives to the existing configuration to achieve a level of compliance that would satisfy the objectives within the appropriate codes and standards. The options analysis was provided via Conceptual Engineering Report that summarized the breakdown of costs and recommendations based on the most cost-effective solution. The Westinghouse team then worked with Bruce Power to identify short and long-term goals, while supporting their evaluations to determine which option best suits their needs.

Westinghouse assessments considered associated costs such as labour and parts for the installation as well as the engineering costs for the recommendations. This aspect of the assessment was vital to the decision-making process and was integral to the success of this project.





Fire Protection Assessments

Westinghouse’s Fire Protection team has many qualified personnel with expansive fire hazard and building code knowledge. The expert team provides a set of analyses and assessments for evaluating potential fire hazards as well as identifying appropriate fire protection systems to mitigate effects of a postulated fire. Additional analyses can also be performed to identify life safety systems to better address occupant safety and egress from a building.

Recent fires in Beirut Port, Notre Dame Cathedral, and London’s Grenfell Tower showcased how critical it is to design buildings with appropriate fire and life safety systems to protect people, environment, structures, and commodities. As buildings are constructed, redeveloped for other purposes, renovated, or decommissioned, the fire profile may change. This is captured within multiple Fire Protection Assessments (FPA) including:

- Fire Hazard Assessments (FHA)
- Code Compliance Reviews
- Fire Risk Assessments
- Fire Safe Shutdown Analysis (FSSA, applicable to sites with nuclear reactors)

Westinghouse Fire Protection Capabilities

Westinghouse’s Fire Protection capabilities are expansive and address the full suite of fire protection assessments within a nuclear utility such as:

- Code Compliance for new building design
- Operational needs for combustible loading, ignition sources, hot works.
- Impact of operational vs. Impaired fire protection systems
- Optimization of inspection, testing, and maintenance of Fire Protection Systems, and
- Deterministic vs. Probabilistic Assessments to modifications within a nuclear facility

Westinghouse also performs analyses to demonstrate that nuclear power plants, facilities with nuclear substances, and Small Modular Reactors can achieve nuclear safety objectives and performance criteria as prescribed by nuclear codes mandated by the regulator.



Types of Fire Protection Assessments

Fire Hazard Assessments:

- Combustible Loading (Transient & Fixed)
- Identification of Ignition Sources
- Fire Modeling of Postulated Fire Scenarios

Code Compliance Review:

- Egress Analysis
- Life Safety Analysis
- Building Code Compliance
- Regulatory Gap Analysis

Fire Risk Assessments:

- Facility Fire Risk Profile
- Risk and Consequence Analyses
- Fire Risk Tool (FRISK)

Case Studies

Chalk River Laboratories' Fire Risk Tool

Customer: Canadian Nuclear Laboratories (CNL)

CNL is planning to redevelop their Chalk River Laboratories (CRL) campus, and in doing so the fire risk profile will be constantly changing in the upcoming years. As such, Westinghouse developed a risk-based fire protection services model to display the current fire risk profile of the CRL campus while also addressing the change in fire risk profile over time. The developed model allows CNL fire protection staff to assess the degree in which independent buildings, as well as the site as a whole, meet the fire protection goals of the governing code and standards.

The risk-based model allows analysis of inspection, testing, and maintenance intervals to determine if it would be appropriate to increase the interval based on device performance. It also addresses the need of fire brigade personnel as the site develops into its final state in 2030, based on the risk at a given point in time. The added flexibility of the risk-based fire protection program allows cost savings, while maintaining regulatory requirements.

Third Party-Review of Pickering NGS FPA

Customer: Ontario Power Generation (OPG)

As Pickering Nuclear Generation Station (NGS) is edging closer to decommissioning, temporary and permanent modifications have become less across the station. This prompted OPG to reaffirm the existing FPA for both Pickering Stations A and B. Westinghouse was retained to review the reaffirmation of both FHA and FSSA. The review included validation and verification of:

- Fire protection systems impact as a result of plant modifications
- Life safety systems impact as a result of plant modifications
- Updates to room summary reports
- Combustible loading and ignition sources
- New postulated fire scenarios
- Updates to floor plans identifying fire and life safety systems





Fire Modeling & Risk Tools

Westinghouse experts regularly perform detailed fire modeling of nuclear and industrial facilities using U.S. approved software as well as FATE™, Westinghouse's own in-house software. Fire analysis is a key component of assessing safety within nuclear facilities. Through deterministic and probabilistic fire assessments, Westinghouse experts have the specific background relating to fire dynamics, fire protection system design, nuclear safety, and computer programming to develop realistic fire scenarios based on existing conditions or postulated criteria.

Fire modeling services include:

- Plant walk-down to identify vulnerabilities and scenarios
- Scoping fire modeling with simplified tools
- Detailed fire modeling with public domain tools: FDS and CFAST
- Circuit failure analysis and cable selection
- Integration of fire modeling and risk assessments

Westinghouse Fire Protection Capabilities

Westinghouse's Fire Protection Team has more than 10 years' experience in model development, validation, participation in international exercises, and application to nuclear power stations and fuel cycle facilities. Benchmarking of Westinghouse's internal fire modeling software and tools allowed Westinghouse experts to understand code design and limitations of public domain tools such as FDS and CFAST. As a result, Westinghouse experts can correctly judge the applicability of results for individual scenarios and the impact of modeling uncertainties.

Using FATE™ software, Westinghouse calculates temperatures, pressures, flow rates and compositions for fluids, gases and structures associated with waste management process D&D. It is uniquely suited for nuclear facility operations because it combines models for fluid flow and heat transfer with models for aerosol transport and deposition, explosions and fire. FATE™ has been applied to dozens of United States Department of Energy (DOE) and commercial nuclear applications, and its predecessor code was awarded a DOE Silver Award for Technology Innovation at Hanford.



Software and Tool Types

Various products include:

- Fire modeling development
- Third-party review of fire models
- Cable selection and circuit analysis
- Smoke management
- Flow of gases, vapor, and particulates in a compartmentalized facility
- Thermal response of rooms and equipment
- Explosion hazards from flammable gases and entrained particulates (dust)
- Interface with PRA / Risk models

Case Studies

Risk Tool Developed to Illustrate Change in Fire Risk Profile at Chalk River Site

Customer: Canadian Nuclear Laboratories

Canadian Nuclear Laboratories (CNL) is planning to redevelop the Chalk River site over the next 10 years, with planned changes of the site to include decommissioning and demolition, infrastructure renewal, renovation, and new construction of buildings. Proposed changes will impact the fire risk profile across the site, and consequently may change fire protection and emergency response needs.

Westinghouse was retained to support CNL in the development of a risk-based fire protection services model to address the change in fire risk profile. Westinghouse experts developed a risk tool that allows the customer to assess the degree in which independent buildings and the entire site meet the fire protection goals mandated by nuclear codes and standards.

The risk tool permits the user to perform what-if analysis based on changes to buildings on-site. A couple examples of the 'what-if analysis' include:

- Impact to risk if a sprinkler system is unavailable in a specific building
- Impact to risk if fire separations removed within floor spaces

The Westinghouse risk tool was purchased by the customer, and it is now owned by the facility owner. Users have permissions to add, remove, and edit building characteristics as the site changes over the next 10-year period. This means CNL now has a tool which produces transparent and repeatable risk as well as consequence results of postulated scenarios allowing CNL management to make risk-informed decisions regarding their site. Additionally, CNL management is able to easily communicate their reasoning for any actions and measures taken.



Our Team



Thomas Swanson

Thomas, Fire Protection Product Engineer, leads product line development and growth efforts of Westinghouse's Fire Protection Program throughout USA, Canada, and Latin America. Thom's expertise includes product development, fire program design, code compliance, FPP audits, fire hazard assessments and alternative solutions for satisfying regulatory requirements.

Thom has been an active leader in the nuclear fire protection industry for over three decades serving in key leadership positions in the USA and internationally. He holds several degrees in fire science and emergency management and is also a certified Chief Fire Officer. Has been a contributing author to publications such as the Fire Chief's Almanac and the International Fire Service Training Association (IFSTA).

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Mark Peters

Mark, Director, Fire Protection, oversees a growing Division of eight staff providing a full suite of fire protection services, including designs, analyses, installation oversight, system programming and operations consulting to clients across Canada in both the nuclear and non-nuclear sectors. With over 30 years of experience, Mark is a Certified Engineering Technologist in the Province of Ontario and also holds a Limited Engineering Licence with PEO. Mark has been intimately involved in fire protection upgrades and program reviews across the Canadian CANDU fleet since 1999.

Mark also currently serves as a member of CSA, supporting the technical committees overseeing development of CSA N293 and N393, and served for four years as Vice-Chair of the Fire Services Advisory Committee for the City of Owen Sound.

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Grant Cherkas

Grant, Vice-President, Market Development and Chief Engineer for Westinghouse Electric Canada, is responsible for leading the deployment of Westinghouse products and services in the Canadian market. With over 29 years of experience, Grant is a registered Professional Engineer in the Province of Ontario and Manitoba. Grant previously worked at the Canadian Nuclear Safety Commission and has intimate knowledge of the regulator's expectations in the areas of fire protection, engineering, emergency response and safety analysis including NSA.

Grant has unique industry experience including extensive domestic and international experience in the nuclear, industrial, and highly protected risk fields. This experience includes working with national and international regulatory agencies in the provision and oversight of fire protection system designs and evaluations, assessments for fire and building code compliance, security related design modifications, pressure boundary and piping system designs, pressure boundary registration and development of emergency mitigation measures for design extension and beyond design basis events.

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Shaping Tomorrow's
Energy



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Together we advance technology
& services to power a clean,
carbon-free future.



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