FIREARC

EdgeScan™

WUI Perimeter Visibility for Communities, Fire Chiefs, and Decision-Makers

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EdgeScan makes the Wildland–Urban Interface visible, current, and human-readable — so FireSmart stops being abstract guidance and becomes an obvious, local, fixable reality.

The Opportunity

Wildfire preparedness across Canada continues to advance. FireSmart guidance is widely adopted. Communities are investing time, funding, and leadership into resilience planning.

As that work evolves, one opportunity becomes clear.

Between landscape scale risk modelling and structure level mitigation lies the community edge. The Wildland Urban Interface is where directional exposure meets physical condition. It is the most consequential line in wildfire resilience, and often the least directly observed.

Satellite imagery shows broad fuel patterns. Plans describe priority actions. Checklists guide behaviour. What most communities have not seen is their perimeter as a continuous, current, shared visual record.

Not as a line on a map.
Not as a planning boundary.
But as a real edge.

Where does the forest end.
Where do structures begin.
How do fuels connect across that line today.

Strategic perimeter intelligence at landscape scale is now achievable. HaloScout and HaloScan resolve directional exposure across 10 to 15 kilometres. As risk approaches the community boundary, the questions become more specific.

What sits at our edge right now.

EdgeScan answers that question.

It creates a continuous visual record of the community perimeter so that FireSmart measures can be understood in place, not in theory but in context.

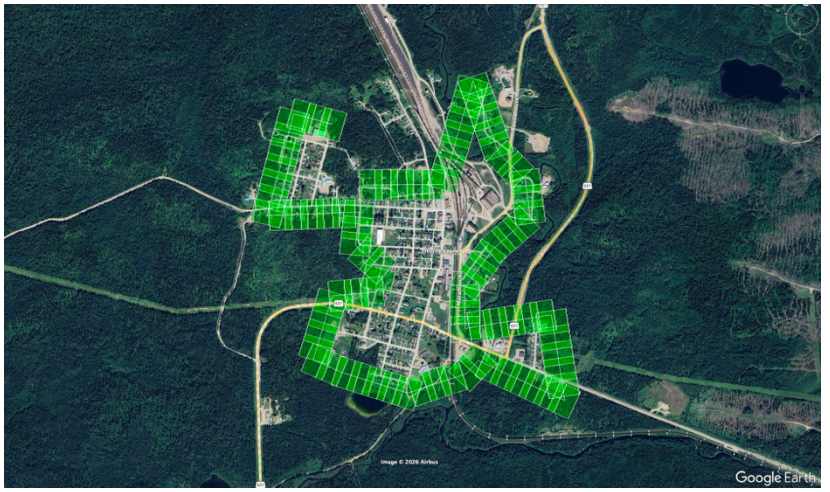
When communities can see their edge clearly, FireSmart becomes easier to apply, easier to explain, and easier to prioritize. Funding requests are grounded in visible evidence. Mitigation sequencing becomes practical and defensible. Conversations shift from abstraction to recognition.

EdgeScan does not replace existing systems.

It strengthens them by making the edge visible.

What EdgeScan Is

EdgeScan™ is FireArc's WUI perimeter visibility system. It turns an abstract, poorly understood boundary into a shared, visual, inspectable reality that communities, fire chiefs, planners, and residents can all reason from.



EdgeScan does not predict fire behaviour. It does not replace FireSmart planning or Community Wildfire Protection Plans. It

resolves the foundational visibility gap that those processes depend on but cannot efficiently generate on their own.

Using three complementary capture modes — desktop satellite analysis, drone-based perimeter survey, and GPS-tagged ground capture — EdgeScan creates a continuous, multi-resolution visual record of the community's edge. Each mode addresses a different failure point in existing WUI assessments:

Capture Mode	What It Reveals
Desktop EdgeScan	Existing aerial and satellite imagery traced to a continuous WUI perimeter path. Produces a narrated visual journey of the community edge — fast, scalable, and orientation-ready.
Drone-Based EdgeScan	High-resolution current conditions beyond what satellites can see. Confirms structure adjacency, fuel continuity, ladder fuels, and vegetation–structure connectivity at operational detail.
EdgeCam Ground Capture	GPS-tagged street-level photos and video of the last line of defence. Documents Home Ignition Zone conditions, access and egress constraints, and WUI features invisible to any aerial view.

Together, these three layers produce something no single data source can: a shared picture of the community's last line of defence that is visible, current, and human-readable — at any scale of audience.

EdgeScan and the Nine BlindSpots Framework

EdgeScan operates within the FireArc Nine BlindSpots framework — a structured methodology for identifying where wildfire risk persists due to unresolved uncertainty rather than lack of effort or intent.

The Nine BlindSpots represent the systemic failure points that repeatedly undermine wildfire preparedness, response, and recovery when they are addressed out of order or left implicit. EdgeScan is designed to resolve the BlindSpots that live at the interface itself:

- Structure adjacency and Home Ignition Zone conditions invisible to orbital imagery
- Fuel continuity across the WUI boundary — where forest connects to fence, deck, or shed
- Access and egress vulnerability along evacuation corridors
- The disconnect between FireSmart guidance and locally-confirmed reality
- Community trust gaps that prevent adoption when risk cannot be shown, only described

By anchoring perimeter capture to the Nine BlindSpots framework, EdgeScan ensures that the visibility it creates is organized around questions that matter — and that its outputs translate directly into prioritized action rather than remaining descriptive or advisory.

EdgeScan and the FRIZ™ Framework

EdgeScan operates at the perimeter layer of the FRIZ™ (Fire Risk Identification Zones) system — FireArc's cell-based decision framework for wildfire risk, governance, and resilience.

Where HaloScout™ establishes the directional exposure geometry at 10–15 km scale, EdgeScan verifies conditions at the boundary itself. It is the confirmation layer — the point at which satellite-derived risk assumptions are tested against ground-level and drone-captured reality.

HaloScout may identify a southwest approach corridor as the dominant threat to a community. EdgeScan confirms what that corridor actually encounters when it reaches the edge: how fuels connect to structures, where Home Ignition Zone conditions exist, and what the actual state of last-line defences is at the moment of capture.

> **Insight compounds rather than fragments. EdgeScan perimeter data refines the same FRIZ cell structure that HaloScout established — without requiring the community to start over.**

EdgeScan perimeter data refines the same FRIZ cell structure established at landscape scale, allowing satellite-derived exposure to be confirmed at the boundary without requiring the community to start over.

Communities moving toward full FRIZ expansion, SmartMoat fuel break design, or structured mitigation sequencing will find that EdgeScan perimeter capture is the step that makes all subsequent analysis defensible.

How EdgeScan Works

1. Desktop EdgeScan — Baseline Visibility

Using existing aerial and satellite imagery, EdgeScan traces a continuous perimeter path around the community and produces a narrated visual journey of the WUI boundary. This is not a static map. It is a shared perimeter story — visible from a council chamber, useful in a grant application, and accessible to audiences with no technical background.

Desktop EdgeScan is fast, low-friction, and deployable before any field mobilization. It solves the most common starting problem communities face: the WUI exists as a line on a plan, but no one has actually seen it as a continuous system.

2. Drone-Based EdgeScan — Verification Layer

Drone flights along the same perimeter path dramatically increase spatial resolution and capture current conditions — not the 2–5 year-old imagery that most satellite assessments rely on. At drone altitude and speed, EdgeScan begins to confirm what satellites cannot see: under-canopy fuel conditions, ladder fuel continuity, structure–vegetation connectivity, and building material and hardening cues.

This is where assumptions become evidence. The drone layer is the verification step that protects downstream spending — confirming that mitigation priorities identified at satellite scale are real, current, and correctly located before resources are committed.

3. EdgeCam Ground Capture — Last-Line Reality

By driving the community perimeter with GPS-tagged cameras capturing consistent outward-looking imagery, EdgeCam creates a street-view-like record of the community's final defensive edge. This layer documents:

- Home Ignition Zone conditions at the structure level
- Fence lines, decks, woodpiles, sheds, and propane tanks — the features maps never show
- Access and egress route conditions along evacuation corridors
- Road width, vegetation encroachment, and turnaround constraints

EdgeCam produces the most human-readable layer in the system. Residents can recognize their own properties. Fire chiefs can brief with it. Councils can see what the edge actually looks like — not what it was assumed to look like.

What Makes EdgeScan Different

It makes the WUI a shared reality, not a theory. Most wildfire preparedness conversations fail not because of lack of effort, but because participants cannot agree on what the edge looks like. EdgeScan creates a single, discussable visual record that everyone — residents, fire services, councils, planners, and ministries — can see and reason from together.

It reframes FireSmart as recognition, not instruction. The shift from "you should reduce fuels within 30 metres" to "here is the exact stretch of forest edge where fire would first touch our town" changes behaviour. People act faster on what they recognize than what they are told.

It is directionally flexible. EdgeScan is typically outward-looking, tracing the WUI from community to forest. But it can be bidirectional or distance-bounded — capturing conditions a defined number of metres inside or outside the interface depending on where the dominant risk question lies. Internal fuel continuity, approach corridors, and ember pathways may each require a different capture geometry.

It produces durable, reusable evidence. A single EdgeScan deployment creates a visual record that can be used in public meetings, grant applications, council briefings, training sessions, and before-and-after mitigation comparisons. One field operation becomes a multi-year evidence asset.

It reduces the educator burden on FireSmart coordinators. FireSmart officers currently walk kilometres of interface, explain risk repeatedly, and attempt to convince sceptical property owners one by one. EdgeScan acts as a force multiplier. One perimeter record replaces repeated explanation — shifting the conversation from persuasion to problem-solving.

It governs escalation to deeper analysis. EdgeScan shows not just what conditions exist, but where uncertainty at satellite scale was warranted and where it was not. Communities know precisely which sectors require additional field investigation, engineering assessment, or full FRIZ expansion — and can sequence their spending accordingly.

FireSmart provides clear, evidence-based guidance for reducing structure ignition risk. What communities often lack is a shared, visible understanding of where those measures matter most within their own perimeter.

EdgeScan creates that context.

By documenting real conditions at the Wildland–Urban Interface, EdgeScan helps FireSmart coordinators move from generalized instruction to locally grounded engagement. Residents can see the edge. Councils can see sector differences. Fire chiefs can prioritize from confirmed evidence.
EdgeScan does not add a new doctrine. It strengthens the delivery of the one already in place.

What EdgeScan Produces

EdgeScan is not "more imagery." It produces shared understanding — the precondition for every FireSmart action, mitigation decision, and community preparedness investment that follows.

A Visual Perimeter Narrative

A continuous, narrated record of the community edge that fire chiefs can brief with, councils can understand, and residents can recognize themselves in. Not a technical dataset. A shared story about a shared risk.

A Home Ignition Zone Risk Amplifier

Not telling people what to do in theory — showing them where and why action matters. EdgeScan confirms the locations where FireSmart Zone 1 and 1A conditions are most acute, and makes those conditions visible without requiring interpretation by a fire science professional.

A Durable Evidence Foundation

EdgeScan outputs are designed to evolve. The initial capture provides qualitative perimeter visibility. As the community invests in mitigation, the same perimeter record becomes a before-and-after comparison asset. As analytical capacity grows, the EdgeScan

dataset can support structured risk classification, material-based scoring, and condition-based monitoring over time.

A FireSmart Adoption Accelerator

Risk that is visible is risk that communities can act on. EdgeScan eliminates the most common obstacle to FireSmart adoption: the gap between abstract guidance and locally confirmed, visually demonstrable reality. When residents can see the edge — their edge — FireSmart actions make sense, feel relevant, and are easier to take.

What You Receive: The EdgeScan Deliverable

Every EdgeScan deployment produces shared understanding, not just raw imagery. Outputs are designed to be read, discussed, and acted on by any audience—from frontline fire coordinators to municipal councils to individual property owners. There are no black boxes and no single, abstract risk numbers.

Your comprehensive deliverable is organized into the following actionable components:

1. The Continuous Perimeter Record

Every EdgeScan deliverable is organized around the community's WUI perimeter—the continuous boundary where wildland fuels meet inhabited structures, roads, and infrastructure. We trace this boundary as a continuous journey, matching the path a fire would encounter.

- **Narrated Perimeter Video:** Produced from satellite and aerial imagery to establish your baseline.
- **High-Resolution Drone Imagery:** Organized by sector and distance to verify current conditions.
- **EdgeCam Ground Record:** GPS-tagged ground-level capture of the community's last line of defence.
- **Navigable Data:** You will clearly see the *Segment* (where a condition exists), the *Capture Mode* (how it was confirmed), and the *Severity* (relative urgency). All three capture layers share the same spatial framework, allowing you to move seamlessly from satellite context to ground-level evidence.

2. Sector-by-Sector Summaries

Following the captured imagery, you receive a plain-language summary for each perimeter sector that translates visual evidence into findings:

- **Observed Conditions:** What was found, at what resolution, and when.
- **Home Ignition Zone Indicators:** Proximity of combustibles to structures, ignition-ready features, and fire-path connectivity.
- **Access & Egress Observations:** Road conditions, turnaround constraints, and evacuation route vulnerabilities.
- **FireSmart Priority Actions:** Specific, locally confirmed changes to reduce ignition risk in each sector.

3. Explicit Uncertainty Flags

A distinguishing feature of EdgeScan is the explicit identification of what was *not* confirmed. We do not claim to have resolved conditions we could not directly observe. We flag conditions requiring further investigation, such as:

- Dense canopy cover blocking drone visibility of surface and ladder fuels.
- Inaccessible ground capture gaps.
- Sub-surface or structural conditions (e.g., roof material, ventilation points, ember entry paths) requiring physical inspection.
- **Note:** These flags are not limitations; they govern escalation, identifying exactly where deeper investigation is warranted before committing resources.

4. Recommended Action Sequence

Each deliverable concludes with a prioritized decision pathway organized by sector and urgency to guide your mitigation investments:

- **Immediate Priority:** Acute ignition risks requiring near-term FireSmart action.
- **Near-Term Priority:** Significant conditions allowing a slightly longer planning horizon.
- **Monitoring Priority:** Moderate or seasonal conditions benefiting from periodic re-capture.
- **Baseline Maintenance:** Sectors where current community-wide measures are sufficient.

5. Community & Council Engagement Materials

To ensure the findings drive action, adoption, and support, your package also includes:

- **Resident-Facing Visual Materials:** Suitable for open house boards, community websites, and FireSmart workshops.
- **Council Briefing Package:** Key findings and recommended next steps tailored for leadership.
- **Mitigation Framework:** A before/after documentation framework to track ongoing comparison over time.

Deployment

EdgeScan can be deployed for individual communities, regional FireSmart initiatives, and multi-community pilot programs. Desktop EdgeScan delivers results within days of engagement. Field deployments (Drone + EdgeCam) are conducted as a single, complete mobilization — no partial visits, no incomplete evidence sets.

When FireArc mobilizes to a community, Drone and EdgeCam capture are delivered together. Separating them increases cost while reducing insight — both are needed to answer the full FireSmart question at the interface.

EdgeScan is especially valuable as the perimeter verification step following a HaloScout engagement — confirming sector priorities before communities commit mitigation funding and resources.

Who EdgeScan Serves

EdgeScan serves anyone who needs to see the WUI clearly before making decisions that depend on it:

- Municipal leaders responsible for FireSmart program delivery and community preparedness
- Fire chiefs and emergency managers who brief councils and coordinate response planning
- FireSmart coordinators who need evidence to accelerate resident adoption and overcome scepticism
- Communities at the wildland–urban interface investing in mitigation and requiring defensible grant applications
- Emergency management offices overseeing multi-community preparedness portfolios
- Critical infrastructure operators whose assets sit at or near the WUI

EdgeScan is especially valuable where decisions must be explained and defended, resident trust must be earned rather than assumed, and limited budgets require evidence before commitment.

Relationship to Existing Planning

EdgeScan does not replace Community Wildfire Protection Plans, FireSmart assessments, or emergency management processes. It resolves the upstream perimeter visibility gap those processes depend on but cannot efficiently generate on their own.

By confirming actual conditions at the interface before longer planning efforts begin, EdgeScan helps FireSmart plans, CWPPs, and mitigation strategies start with evidence-based focus rather than

assumption — and ensures the resources committed to those plans are correctly targeted.

EdgeScan can also serve as a training and engagement tool for FireSmart practitioners. By equipping coordinators with structured perimeter visibility methods, communities can build internal capacity to maintain and update their WUI understanding over time.

Investment

Product Ladder

Stage	Offering	Purpose	Typical Price
1	**Desktop EdgeScan**	Shared understanding	$1.5k–$3k
2	**EdgeScan Field Package (Drone + EdgeCam)**	Verified, defensible evidence	$9.5k–$13.5k
3	**Training & Licensing**	Scale and capacity	$1.5k–$2.5k/person

This sequencing maps to FireArc's SmartMoat doctrine:

Clarity → Confidence → Commitment → Capacity

Desktop EdgeScan

$1,500-$3,000 per community. Below most sole-source thresholds. Fundable through FireSmart, EMO, or climate-adaptation programs. **Pricing is scaled for a single, contiguous WUI perimeter of up to 20 linear kilometers.** Delivers shared understanding before any field commitment is required.

EdgeScan Field Package (Drone + EdgeCam)

$9,500 – $13,500 all-in, delivered as a single, complete field mobilization. Tiers based on perimeter complexity: $9,500 for small perimeters or targeted sectors; $11,500 for full community edge; $13,500 for complex terrain or multiple high-risk sectors.

Training & Licensing

$1,500 – $2,500 per practitioner (certification and materials). Annual renewal at $250–$500. Community bundle pricing available. Certification builds local EdgeScan capacity without creating dependency on FireArc field deployment. Certification is never required to purchase EdgeScan services — it is an option, not a gate. It's also a path to building capacity among FireSmart practioners.

FireArc EdgeScan™

You cannot shape the terrain before the fight begins if you cannot see where the edge is.

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