MEMORANDUM OF AGREEMENT
Between OPAL AI, INC. and the **CITY OF GRASS VALLEY, CALIFORNIA**

Regarding FireVision Wildfire Risk, Mitigation, and Response Pilot

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This Memorandum of Agreement (hereafter "**MOA**"), made and entered into this ____ day of _____, **2026**, but effective as of _____ (hereafter the "**Effective Date**"), by and between:

- **OPAL AI, INC.** ("**Opal AI**"), whose business and mailing address is:
  4676 Admiralty Way, Suite 503, Marina del Rey, CA 90292; and
- **CITY OF GRASS VALLEY, CALIFORNIA**, a political subdivision of the State of California, (hereafter collectively the "**City**").

Opal AI and the City are each sometimes referred to individually as a "**Party**" and collectively as the "**Parties**."

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1. PURPOSE

1.1 The purpose of this MOA is to establish the terms and conditions under which Opal AI and the City will collaborate to configure, pilot, and evaluate **FireVision** as a wildfire risk, mitigation, and response decision-support tool for the Grass Valley region.

1.2 This MOA is intended to outline responsibilities, data needs, expected technological developments, and collaboration processes. It may be supplemented by separate agreements or statements of work relating to funding, procurement, or long-term operations. **FireVision** is also intended to support targeted mitigation planning for the parcels and blocks that matter most, clear and explainable risk communication to residents and stakeholders, and provision of evidence-based analytics that can support engagement with insurers and regulators.

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2. SCOPE OF COLLABORATION

2.1 The Parties will collaborate to:

- Configure and deploy a **FireVision platform instance** for the Grass Valley pilot area.
- Integrate NASA and other remote-sensing, meteorological, and geospatial data with **local data** provided or facilitated by the City, where available.
- Test and refine FireVision's technical components, including FuelVision fuel mapping, FPI, wildfire simulation engines, WUI vulnerability analytics, uncertainty analysis, and AI decision-support tools.
- Use FireVision outputs to support planning, exercises, and as appropriate, real-world wildfire preparedness and response efforts.
- Gather City feedback to inform improvements and readiness for broader operational deployment.

- Translate risk insights into actionable mitigation work plans by providing ranked work queues at parcel and neighborhood scales, prioritized treatment polygons and access improvements, and exportable GIS/CSV lists that allow the City and its partners to track progress over time.

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3. TECHNOLOGY TO BE DEVELOPED / DEPLOYED BY OPAL AI

For the City pilot, Opal AI intends to deploy and further mature the following FireVision components (as supported by the NASA Phase II work):

3.1 FuelVision Advanced Fuel Mapping

Opal AI will configure **FuelVision**, an advanced vegetation fuel mapping framework that:

- Uses multi-sensor Earth observation data combined with digital elevation models and land cover data.
- Produces **high-resolution fuel maps** (≤ 30 m spatial resolution) for the pilot area.
- Estimates key fuel properties such as type, load, moisture indicators, and fuel depth.
- Updates fuel conditions more frequently than static annual maps, aiming for quasi–real-time refresh using new satellite observations.

3.2 Fire Potential Index (FPI)

Opal AI will configure a **Fire Potential Index (FPI)** to provide short-term wildfire risk forecasts for the pilot area:

- Combines fuel conditions with **meteorological forecasts** (e.g., HRRR) including wind, temperature, and relative humidity.
- Incorporates vegetation indices (e.g., NDVI) and terrain features (slope, aspect, elevation).
- Produces an index (e.g., 0–100 scale) with hourly predictions out to approximately **48 hours**, together with uncertainty metrics (confidence ranges, ensemble spreads).
- Is designed to be fine-tuned and validated for local conditions in Grass Valley using historical fire data and City-supplied information.

3.3 Wildfire Simulation Engines

Opal AI will integrate and configure **wildfire simulation tools**, including:

- **A simulator** for wildland fire spread, coupling detailed wind modeling with probabilistic fire spread to estimate direction, speed, and behavior in complex terrain.
- Early-stage or evolving **WUI simulation capabilities** to better represent ember transport, structural ignition risk, and spread across built-up areas.

These tools will be incorporated into FireVision so that users can run **scenario simulations** for hypothetical ignitions and, when possible, for actual events.

3.4 WUI Vulnerability and Risk Analytics

Opal AI will extend FireVision's **WUI vulnerability analysis** for the pilot area, including:

- Parcel- and structure-level risk indices that combine environmental exposure (fuels, slope, prevailing winds) and built-environment factors (where data are available, such as roof type, vegetation proximity, structure spacing).
- Community wildfire risk and exposure analytics that produce clear, explainable metrics at parcel, block, and neighborhood scale, including (a) near-term FPI-style metrics for wildland areas, (b) mid-term mitigation-readiness layers for WUI areas using fuels, topography, and structural drivers, and (c) exposure mapping that highlights structural vulnerabilities, defensible-space conditions, housing density, critical facilities, access/egress constraints, and high-consequence clusters.

3.5 Uncertainty Analysis

Opal AI will implement **multi-level uncertainty analysis** across:

- Input datasets (e.g., satellite-derived fuel estimates, meteorological forecasts).
- FPI outputs, including confidence intervals or probability ranges.
- Simulation outputs (e.g., ensemble fire spread footprints or arrival time uncertainty).

The goal is to expose **confidence information** to end users, so City staff can understand the reliability of predictions and prioritize decisions accordingly.

3.6 FireVision Web Platform and AI Decision-Support

Opal AI will provide a **secure, web-based FireVision platform** for users in the City that:

- Displays fuel maps, FPI layers, simulations, and WUI vulnerability maps on an interactive map interface.
- Supports **scenario planning**, including selection of ignition points, weather conditions, and mitigation actions, where technically available.
- Integrates an NLP pipeline to connect structured data, reports, plans, and historical incidents.
- Provides **AI agents** which allow users to visualize and get responses referencing FireVision's data layers.
- Includes "action-first" decision-support features such as interactive dashboards (accessible via standard web browsers and compatible with ArcGIS-based workflows), exportable GIS and CSV outputs for execution and tracking, and ranked lists of parcel-level and neighborhood-scale mitigation actions based on impact versus effort proxies.

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4. City REQUIREMENTS AND CONTRIBUTIONS

The City's obligations are subject to available staffing, budgets, and applicable laws and policies. To the extent feasible, the City will:

4.1 Data Provision (If Available)

Provide, or help Opal AI access, the following **local datasets**, where such data exist and are shareable under applicable law and agreements:

1. **Parcel and Structural Data**
    - Parcel boundaries and building footprints.
    - Attributes such as occupancy type, year built, construction class, or other relevant structural information, where available.
2. **Infrastructure and Critical Facilities**
    - Road networks, key intersections, and designated evacuation routes.
    - Locations and, as appropriate, attributes of critical infrastructure (e.g., utility assets, communications sites, water infrastructure such as hydrants and tanks, emergency shelters and facilities).
3. **Local Weather and Sensor Data**
    - Time-series from local RAWS sites and other City-maintained weather stations, if any.
    - Any additional environmental sensors the City wishes to integrate (e.g., local cameras, air quality sensors, etc.), subject to technical feasibility.
4. **Local Fire and Mitigation History**
    - Local incident records and perimeters not captured in state or federal datasets.
    - Data on fuel treatments, defensible-space inspections, and mitigation projects (preferably in GIS-ready formats).
5. **Planning and Policy Documents**
    - Community Wildfire Protection Plans (CWPPs), emergency operations plans, evacuation plans, and related documents.
    - Other planning materials (e.g., safety elements, hazard mitigation plans) relevant to wildfire risk and community resilience.
6. **High-Resolution Street-View Mapping Data (Mobile Mapping LiDAR & Imagery)**
    - High-resolution, street-level mapping data (e.g., mobile-mapping LiDAR point clouds and/or 360-degree imagery) collected by the City of Grass Valley or their contractors for relevant corridors and facilities within the pilot area.
    - Access to such data in mutually agreed digital formats so that Opal AI can process these datasets within FireVision to derive asset geometries, attributes, vegetation and access characteristics, and condition indicators.

Data formats and exchange methods (e.g., GIS shapefiles, geodatabases, secure file transfer, cloud buckets, or APIs) will be determined jointly.

4.2 Feedback and Participation

The city will, to the extent feasible:

1. **Designate Points of Contact**

- Identify at least one **technical point of contact** (e.g., GIS/IT staff) for data coordination and platform access issues.
- Identify at least one **operational point of contact** (e.g., Fire, OES / Emergency Management, or Public Works representative) to provide operational context and feedback.

2. **Participate in Co-Design and Testing**
   - Participate in **co-design sessions** to align FireVision features with City workflows.
   - Engage in **user testing**, including structured evaluation of the web interface, maps, alerts, and scenario tools.
   - Provide feedback on usability, data interpretation, and decision-support value.
3. **Provide Ongoing Feedback**
   - Offer periodic feedback (e.g., through review meetings, surveys, or email) regarding:
     - Accuracy and usefulness of FPI and simulation products.
     - Relevance of WUI vulnerability outputs.
     - Suggestions for improvement to better support city planning and operations.
4. **Use of Outputs in Planning / Exercises**
   - Where feasible, incorporate FireVision outputs into planning documents, tabletop exercises, and drills to evaluate how the platform supports real-world decision-making.

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5. DATA RIGHTS AND PROTECTION

5.1 **Ownership.** Each Party retains ownership of its own pre-existing data and any data it generates outside the scope of this MOA.

5.2 **License to Use City Data.** The City grants Opal AI a non-exclusive, royalty-free license to use City supplied data solely for:

- Configuring, operating, and improving FireVision for the City's pilot area; and
- Research and development related to FireVision and wildfire analytics, provided that any external publications or public-facing materials using City data are appropriately **aggregated, anonymized, or de-identified**, unless otherwise agreed in writing.

5.3 **Use of FireVision Outputs.** The City may use FireVision outputs (maps, dashboards, reports, risk indices) for internal planning, preparedness, mitigation, and communication purposes consistent with applicable law and any subsequent licensing or subscription agreement.

5.4 Confidentiality and Security. Each Party shall use reasonable administrative, technical, and physical safeguards to protect any non-public data provided by the other Party and shall comply with applicable privacy and security laws. For its hosted services, Opal AI will employ encryption in transit and at rest, role-based access controls, and privacy-by-design processing for any street-level imagery or point-cloud

data (focusing analytics on vegetation, access, and structure context rather than personal identification features).

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6. FUNDING

6.1 This MOA **does not itself obligate funds** from either Party.

6.2 Any specific funding arrangements, cost sharing, or paid subscriptions will be addressed in a separate **contract, purchase order, or statement of work** consistent with applicable procurement laws and policies.

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7. TERM

7.1 This MOA shall commence on the Effective Date and remain in effect for **six (6) months** , unless earlier terminated as provided herein or extended by mutual written agreement.

7.2 The Parties intend that the primary FireVision pilot activities will occur during the core wildfire season, **beginning in April and ending in October** of the applicable year, with specific start and end dates for the pilot period to be confirmed via email by the Parties.

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8. AMENDMENTS

8.1 Any Party may request an amendment to this MOA.

8.2 Amendments shall be in writing and signed by authorized representatives of both Parties.

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9. TERMINATION

9.1 If any Party determines that the MOA terms will not or cannot be carried out, that Party shall promptly consult with the other Party to attempt to resolve the issue or develop an amendment.

9.2 If, within thirty (30) days (or another mutually agreed period), the Parties cannot reach an amendment, either Party may terminate this MOA upon written notice to the other Party.

9.3 Provisions relating to **data rights, confidentiality, intellectual property, and limitation of liability** shall survive termination as applicable.

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10. ASSIGNMENT

10.1 Neither Party may assign or transfer any interest, right, or obligation under this MOA without the prior written consent of the other Party, except that Opal AI may assign its rights and obligations to a successor entity in connection with a merger, acquisition, or sale of substantially all assets, upon written notice to the City.

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11. LIMITATION OF LIABILITY AND DISCLAIMER

11.1 FireVision is a **pilot** and research-stage decision-support system. Opal AI does not warrant that predictions, maps, or simulations will be error-free or guarantee prevention of loss of life or property.

11.2 All operational decisions, including but not limited to evacuations, resource deployments, and infrastructure management, remain the sole responsibility of the City and its partner agencies.

11.3 To the extent permitted by law, neither Party shall be liable to the other for any indirect, incidental, consequential, or special damages arising from or relating to this MOA or the use of FireVision.

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12. MISCELLANEOUS

12.1 **Governing Law.** This MOA shall be governed by the laws of the State of California, without regard to its conflict-of-law rules.

12.2 **Entire Agreement.** This MOA constitutes the entire agreement between the Parties with respect to the FireVision pilot described herein and supersedes all prior understandings on that topic.

12.3 **Severability.** If any provision of this MOA is determined to be invalid or unenforceable, the remaining provisions shall continue in full force and effect.

SIGNATURES

IN WITNESS WHEREOF, the Parties have executed this Memorandum of Agreement as of the Effective Date first written above.

OPAL AI, INC.
By: _____
Name: _____
Title: _____
Date: _____

CITY OF GRASS VALLEY, CALIFORNIA

By: _____
Name: _____
Title: _____
Department: _____
Date: _____