OPALCO

DECATUR ISLAND COMMUNITY SOLAR PROJECT

FIRE MITIGATION PLAN

Decatur Island, San Juan County, Washington

Document Owner	OPALCO — Operations & Engineering
Document Status	For Review and Approval
Project Location	Decatur Island, San Juan County, WA
Revision Date	June 2026

CONTROLLED DOCUMENT — Review upon significant site changes

1. Purpose and Scope

This Fire Mitigation Plan (FMP) establishes OPALCO's requirements, procedures, and responsibilities for preventing, detecting, and responding to fire incidents associated with the Decatur Island Community Solar Project. The plan is written from the perspective of OPALCO as the owning utility and grid operator, addressing unique obligations that differ from those of a general contractor or property owner.

OPALCO's utility role creates specific fire-related responsibilities including: control and de-energization of generation and distribution assets; coordination with Washington Department of Natural Resources; protection scheme design and operation; remote monitoring and SCADA oversight; and public safety. This plan addresses each of these areas.

This FMP applies to all phases of the project:

- Construction (site preparation through commissioning)
- Operations and Maintenance (commercial operation)
- Emergency Response (active fire or equipment fault events)
- Decommissioning

2. Project and Site Overview

2.1 Facility Description

The Decatur Island Community Solar Project is a ground-mounted solar PV facility consisting of two arrays, a North Array and a South Array, adjacent to the OPALCO Decatur Substation on Decatur Island, Washington. The North Array site is accessed via a single-entry road via Decatur Head Drive. The South Array site is accessed via a gated single-entry driveway via Armitage Road.

Key electrical infrastructure on site includes:

- 3,807 bifacial 580W modules on fixed-tilt APA racking
- DC combiner boxes mounted on the north side of racking structures
- DC underground conduit routing from combiners to inverter equipment pads
- Two equipment pads: North (3 inverters + transformer + switchgear) and South (10 inverters + transformer + switchgear)
- Medium voltage (MV) cabling routed underground via directional bore from the South equipment pad to a centralize cabinet, then to the substation vault
- Low-voltage (LV) fiber communications routed in the same bore corridor

2.2 Grid Integration and OPALCO System Context

The solar facility shall feed the existing substation vault and integrate with the island's distribution system. This creates specific utility-level fire risk considerations:

- Energized MV and DC conductors remain live unless explicitly de-energized through OPALCO's control systems. Fire crews shall not assume equipment is de-energized.

- The existing vault south of the arrays contains energized equipment. Fire involving vegetation or structures near the vault shall be reported immediately to OPALCO Operations.

3. Fire Risk Assessment

3.1 Site Conditions

Decatur Island experiences dry summer conditions typical of the San Juan Islands rain shadow, with elevated fire weather risk from June through September. The site's forested surroundings and proximity to wetlands create a mixed fuel environment: forest litter and dry grass present seasonal ignition risk, while the wetland area to the east limits fire spread in that direction but may impede emergency access.

Site-specific risk factors identified from the project layout include:

- Grass and vegetation accumulation beneath panel rows — the primary continuous fuel path across the site
- Wetlands bordering the portion of the South Array, limiting water supply access from the south
- Single access gate or road — no secondary vehicle entry
- Island geography: no mutual aid fire response within 30 minutes under most conditions

3.2 Electrical Fire Risk — Utility-Specific Hazards

Hazard	Likelihood	Severity	Primary Control Measure
DC arc fault at combiner or string wiring	Medium	High	Rapid Shutdown system; arc-fault detection at inverter level; annual IR thermography
Inverter enclosure fire (overtemperature, fault)	Low	High	OEM thermal protection; SCADA alarm
Transformer thermal event	Low	High	Oil-filled transformer inspection; berm or containment around transformer base
Ground fault causing sustained arcing	Medium	High	Ground fault protection with fast trip times; grounding design review
Vegetation fire spreading to racking / wiring	Medium	Medium	Vegetation management program; defensible space around equipment pads
Substation vault fire (existing equipment)	Low	Critical	OPALCO Operations immediate de-energization; access restriction during fire

4. Prevention Measures

4.1 Electrical System Design and Protection

OPALCO requires the following protective design features to be incorporated into the system and verified at commissioning:

4.1.2 Protection Scheme Requirements

OPALCO Engineering shall define and approve the protection relay scheme for the facility. Minimum requirements from a fire mitigation standpoint:

- Ground fault detection on the DC system
- Overload and Short Circuit protection at the combiner level
- MV overcurrent and ground fault protection with coordination verified against the island distribution system
- Anti-islanding protection on all inverters, verified at commissioning and after any significant site modification

4.1.3 Remote Monitoring and SCADA

All inverters, protection relays, and switchgear shall be integrated with OPALCO's SCADA system prior to operation. SCADA integration shall include:

- Real-time alarm for any inverter, relay, or switchgear fault
- Remote open/close capability for all MV switching devices
- Inverter remote shutdown capability
- Ambient temperature monitoring per array
- Alarm notification to on-call OPALCO Operations staff within 2 minutes of any protection event

4.2 Vegetation Management

Vegetation management is OPALCO's primary defense against fire spread across the site. The following standards apply throughout the operations phase:

- Vegetation height under arrays shall not exceed 24 inches during fire season (June 1 – October 31)
- A 10-ft cleared and maintained perimeter shall be established around each equipment pad and transformer
- The access road right-of-way shall be maintained with vegetation cut to ground level on both sides

4.3 Physical Access and Infrastructure

OPALCO requires the following access and infrastructure standards for fire response compatibility:

- Access road: minimum 10-ft unobstructed width, all-weather compacted gravel surface, capable of supporting apparatus
- Gate: OPALCO Operations access only.
- Signage: site locations and contact and electric hazard

5. Emergency Response Procedures

5.1 Notification Protocol

Upon discovery of fire or smoke on or near the solar facility:

1. Call 911 immediately. State location as: Decatur Island Substation and Solar Site, 668 Decatur Head Dr., Decatur Island, WA.
2. Notify OPALCO Operations at the 24-hour emergency line: 360-376-3599. State: facility name, nature of event, whether equipment appears energized, request the hotline notify OPALCO management and whether anyone is on site.
3. The 24-hour emergency line will notify the OPALCO District General Foreman and/or OPALCO Manager of Engineering and Operations.
4. Do not enter the site or attempt to fight an electrical fire or a fire near energized DC or MV equipment.

OPALCO Operations, upon notification, shall:

- Confirm receipt and log the event
- Initiate remote de-energization of inverters via SCADA if safe to do so
- Open the MV interconnection switch if directed by incident command or if equipment integrity is unknown
- De-energize the feed from substation to the site if fire is in proximity to that equipment
- Dispatch a qualified OPALCO crew member to the site to serve as electrical safety liaison to fire command

5.2 De-Energization Sequence

The following sequence applies to full site de-energization. This sequence shall be reviewed and approved by OPALCO Engineering and included in Operations training materials:

5. De-energize via SCADA remote command or on site. Confirm all inverters report ‘offline’ or ‘fault’ state within 60 seconds.
6. Open the MV disconnects via SCADA or local manual operation.
7. Open the MV interconnect switch where appropriate.
8. Confirm isolation: verify no voltage on MV conductors. This step shall be performed by a qualified OPALCO lineworker before fire crews enter within 10 ft of MV equipment.
9. Notify Incident Commander that MV system is de-energized. Provide written clearance tag or OPALCO Hold Tag on the disconnect.
10. Note: DC conductors from panels to combiners remain energized whenever panels are exposed to light, even after inverter shutdown. Fire crews shall treat all panel-side DC wiring as energized at all times unless panels are fully covered or darkness has eliminated generation.

5.3 Roles and Responsibilities During an Emergency

Role	Responsibilities
OPALCO Operations (24/7)	Receive emergency notification; execute remote de-energization; dispatch crew to site; maintain communication with Incident Commander; log all actions with timestamps
OPALCO Crew Member (On-Site Liaison)	Meet fire apparatus at gate; brief Incident Commander on system layout and hazards; perform or supervise electrical isolation; provide hold tags; remain available throughout incident
OPALCO Engineering	Available by phone for technical consultation on protection schemes, system behavior, and re-energization criteria
Site Lead / O&M Contractor	Initiate notification chain; provide site access; assist with evacuation; do not attempt electrical isolation without OPALCO authorization
WA DNR Fire	Command fire suppression operations; request de-energization via OPALCO liaison; coordinate with Incident Commander on re-entry
OPALCO Management	Coordinate public communications; notify regulators as required; authorize re-energization only after damage assessment and written clearance

5.4 Re-Energization After an Incident

Re-energization of the facility following a fire or electrical fault event shall not occur until:

- Fire Incident Commander has issued an all-clear and released the site
- OPALCO Operations has conducted a visual inspection of all MV cabling, switchgear, transformers, inverters, combiners, and DC wiring
- Any damaged equipment has been isolated, replaced, or confirmed safe by OPALCO Operations
- Protection relay settings have been tested and confirmed correct

6. Red Flag Warning Protocol

When the National Weather Service issues a Red Flag Warning for San Juan County, OPALCO shall implement the following elevated precautions:

- Hot work (welding, grinding, cutting, energized electrical) is prohibited on site for the duration of the warning without explicit written authorization from OPALCO Operations and a dedicated fire watch
- SCADA alarm thresholds for inverter temperature anomalies
- A minimum of one portable 20-lb ABC dry chemical extinguisher shall be staged at site entries

7. Training and Drills

7.1 OPALCO Operations Staff

All OPALCO Operations staff with potential to receive a fire notification or execute remote de-energization for this site shall complete:

- Annual review of this FMP, including de-energization sequence and notification protocol
- Tabletop exercise simulating fire notification, using SCADA interface to practice remote shutdown
- To be completed during annual fire safety training

7.2 O&M Contractor and Site Personnel

- O&M contractor shall demonstrate familiarity with system studown location and operation prior to first site access
- All site personnel shall complete fire extinguisher training annually
- Annual site training with OPALCO District Operations to review access roads, vegetation status, and equipment labeling

8. Inspections

8.1 Routine Electrical Inspections

- Infrared (IR) thermography of all DC connections, combiners, inverters, and MV connections: annually, during peak production
- Visual inspection of all conduit, wiring, and enclosures for signs of damage, corrosion, or pest intrusion: semi-annually
- Protection relay functional test: every 5 years at commissioning anniversary, by or coordinated with OPALCO Engineering
- Anti-islanding test: every 5 years at commissioning anniversary
- SCADA alarm and remote-control functionality test: every 5 years at commissioning anniversary

8.2 Site Inspections

- Monthly visual inspections for vegetation height, abnormal site conditions

9. Coordination with WA DNR

OPALCO shall coordinate with WA DNR and assisting fire district(s) prior to commissioning to:

- Conduct a pre-incident planning walkthrough of the site, including equipment pad locations, rapid shutdown initiators, water supply, and access road
- Gate access procedures
- Review and obtain written acknowledgment of this FMP

This coordination shall be repeated after any significant site modification and as request by the agencies.

10. Plan Maintenance

This Fire Mitigation Plan shall be reviewed and updated:

- After any fire event, electrical fault event with potential ignition, or near-miss on site

- After any significant change to site layout, equipment, or protection scheme
- After any change to applicable codes, local fire ordinances, or OPALCO internal standards

The document owner is OPALCO Operations & Engineering. Version history shall be maintained in the document footer. Superseded versions shall be archived and clearly marked as obsolete.

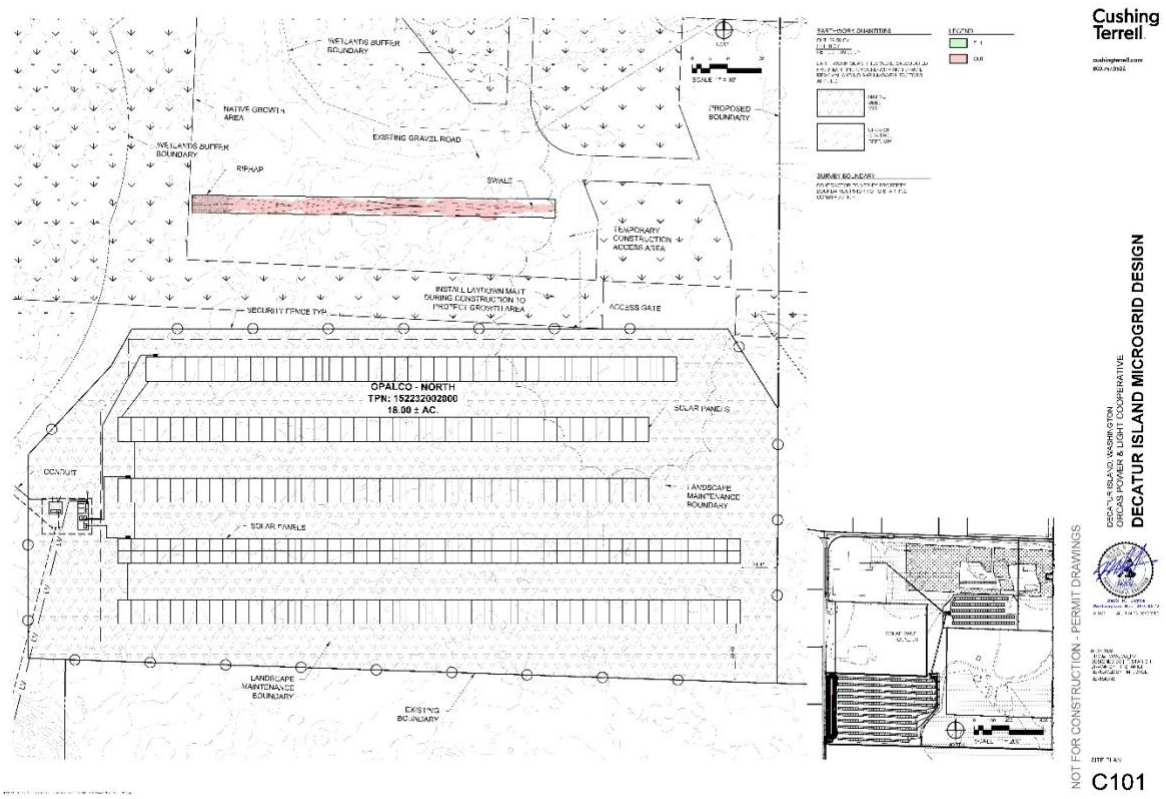
Questions regarding this plan should be directed to OPALCO Manager of Engineering and Operations.

Appendices

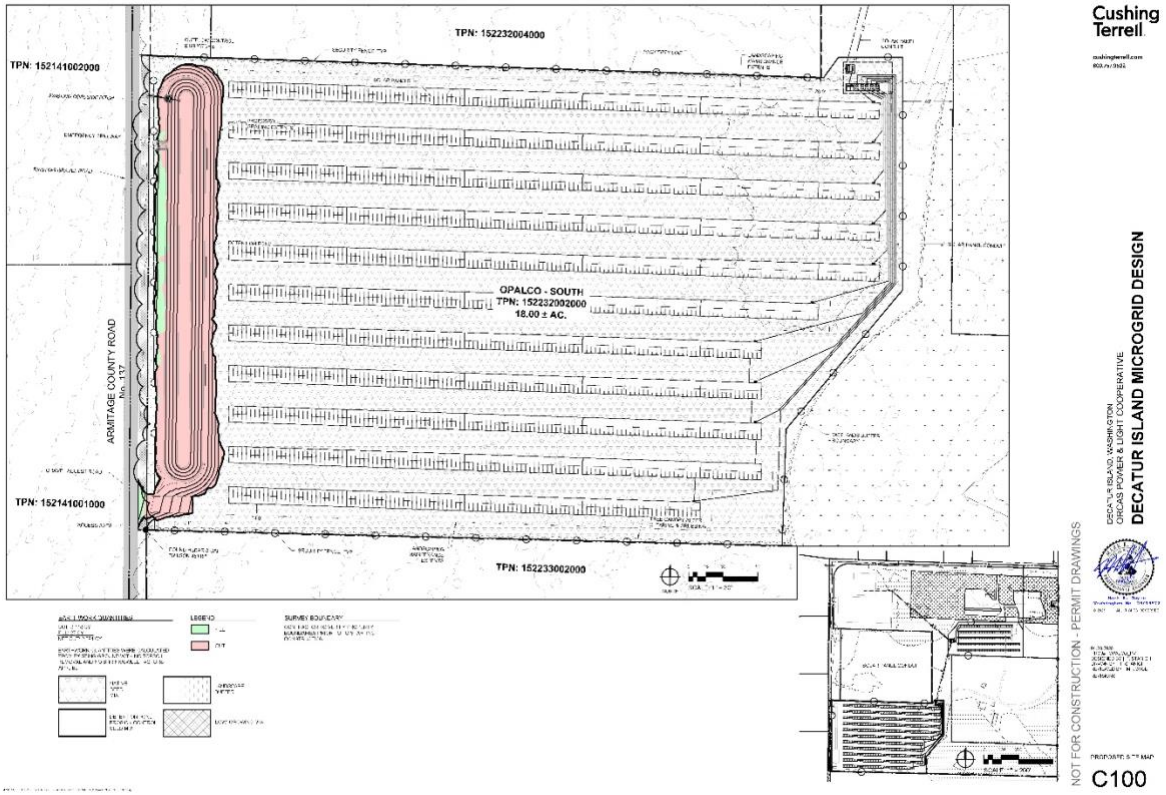
Site Design Map

To be finalized after “as-builts” are complete.

South Array



North Array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