

# Wind Control for Wildfire Landscapes

May 18, 2025

#### Subject: Wind Control Strategies for Wildfire Mitigation in California and Other Fire-Prone Zones

#### Dear Board Members, Fire Chief, Sheriff, and Team,

I am writing to recommend a wind control and utilization strategy specifically designed for wildfire-prone areas like California. Effective wind management can slow the spread of wildfires, retain moisture, and support long-term ecological stability.

#### **Key Recommendations:**

#### 1. Terrain-Based Wind Control

- Regrade select slopes and ridgelines to interrupt high-speed winds.
- Plant dense, fire-resistant vegetation along wind corridors.
- Install permeable fences, stone walls, or gabion structures to reduce wind force.

#### 2. Wind-Powered Water Distribution

- Set up mechanical wind-powered misting and sprinkler systems that activate with wind to distribute moisture.
- Capture rainwater and runoff to hydrate local vegetation.
- Build artificial ponds and reservoirs fed by wind to support reforestation.

#### 3. Pre-Wildfire Wind Reduction

- Use low-flammability vegetation clusters to form natural fuel breaks.
- Create misting zones to boost humidity and reduce fire risk.
- Shape landforms to block and redirect wind.

#### 4. Post-Wildfire Wind Management

- Install erosion barriers like wattles and silt fences to stabilize terrain.
- Reseed with native shrubs and grasses that reduce wind speed and preserve moisture.
- Use biodegradable wind fences to aid recovery.

With California's focus on community hardening and updated Fire Hazard Severity Zone maps, these strategies will help turn wind into a tool for fire prevention, ecosystem restoration, and climate resilience.

I welcome your feedback and collaboration on refining this approach.

Sincerely,

#### SRI

A Proud Resident of City of Santa Clara



# Wind Speed Reduction Strategies to Slow Wildfire Spread

### **Before a Wildfire**

#### Strategic Windbreaks

- Fire-resistant tree rows
- Shrub barriers
- Staggered planting
- Berms and earthen mounds

#### **Artificial Wind Barriers**

- Permeable fences
- Stone walls
- Fire-resistant mesh
- Gabion walls

### **Topographic Modifications**

- Depressions to slow airflow
- Reinforced slopes for wind buffering
- Rock outcroppings

### **During a Wildfire**

### **Temporary Wind Barriers**

- Metal screens
- Water-soaked tarps
- Asset protection shields
- Fire-resistant blankets

### Water or Foam Application

- Water sprays to reduce winddriven flames
- Fire-retardant foam for suppression
- Gel barriers to slow fire spread
- Hydrated clay coatings

#### **Backburning in Low-Wind Zones**

- Controlled burns
- Firebreak creation
- Fuel reduction
- Pre-burned buffer zones

### After a Wildfire

#### **Erosion-Control Structures**

- Contour wattles
- Silt fences
- Check dams
- Riprap barriers

### **Revegetation with Wind-Slowing Species**

- Native shrubs
- Bunchgrasses
- Low-growing trees
- Fire-resistant perennials

### **Temporary Wind Fences**

- Biodegradable netting
- Wooden slats
- Post-fire stabilization barriers
- Living windbreaks



# 1. Topographic Modifications: Vegetative Fuel Breaks & Fire Breaks

## **1. Topographic Modifications:** <u>Vegetative Fuel Breaks & Fire Breaks</u>

### **Current State: Fuels Wild-fire**



Controlled Blasting



Future State: Rainwater Harvesting | Artificial Reservoir





### 2. CALIFORNIA RIVERS, PONDS, PONDS, RUNNING WATER, LAKES, STREAMS, AND RIVERS

### **Current Conditions for Selected Reservoirs**



### Map of California Lakes, Streams and Rivers

Goose

Clear Lake Reservoir

Bodega B

San Franci

San Mate

Monterey Bay

100 KM 100 Miles



Lake

Santa Barbar Channel

# 3. Windpump | Windmill pump ( Mist & Sprinkle)

## 2. Windpump | Windmill pump ( Mist & Sprinkle)

## CURRENT STATE: DRY

### FUTURE STATE: MECHANICAL WIND OPERATED MISTING AND SPRINKLING SYSTEM



## 2. Windpump | Windmill pump ( Mist & Sprinkle)

## **CURRENT STATE**

### FUTURE STATE: MECHANICAL WIND OPERATED MISTING AND SPRINKLING SYSTEM

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## FUTURE STATE: MECHANICAL WIND OPERATED MISTING AND SPRINKLING SYSTEM



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### FUTURE STATE: MECHANICAL WIND OPERATED MISTING AND SPRINKLING SYSTEM

# 4. Strategic Windbreaks and Shelterbelts

# Hardy, Fire-Resistant Trees and Shrubs

### **Fire-Resistant Trees**

- Live Oak (Quercus virginiana)
- Honey Locust (Gleditsia triacanthos)
- Southern Magnolia (Magnolia grandiflora)
- Ginkgo (Ginkgo biloba)
- California Sycamore (Platanus racemosa)
- Cork Oak (Quercus suber)
- Western Redbud (Cercis occidentalis)
- Black Walnut (Juglans nigra)
- London Plane Tree (Platanus × acerifolia)
- Tulip Tree (Liriodendron tulipifera)

### **Fire-Resistant Shrubs**

- Manzanita (Arctostaphylos spp.)
- Toyon (Heteromeles arbutifolia)
- Coffeeberry (Frangula californica)
- Lilac (Ceanothus spp.)
- Redbud (Cercis spp.)
- Mountain Mahogany (Cercocarpus spp.)
- Oregon Grape (Mahonia aquifolium)
- Sumac (Rhus spp.)
- Silverberry (Elaeagnus commutata)
- Bush Honeysuckle (Diervilla lonicera)

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# Strategic Windbreaks and Shelterbelts

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![](_page_15_Picture_3.jpeg)

# Fire-Resistant Trees |Fire-Resistant Shrubs

5.

# 5. Fire-Resistant Trees |Fire-Resistant Shrubs

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