



## White Paper

Date: October 21<sup>st</sup>, 2021

TO: FIRESCOPE Board of Directors  
23300 Castle Street  
Riverside, CA 92518-2200

FROM: Standard Wildland Preplan Working Group

SUBJECT: Standard Wildland Preplans

### **REQUESTED ACTION:**

**The Standard Wildland Preplan Working Group seeks Board of Director approval to develop a statewide wildland preplan program based on the recommendations provided in this white paper.**

### **APPROVAL:**

**The FIRESCOPE Board of Directors approved the requested action on October 21st, 2021.**

### **SUMMARY**

The threat of wildfire continues to challenge fire agencies across the state of California. Multiple California fire agencies have been implementing wildland preplans to maximize their outcomes without the stress of an emergency event. Wildland preplans are vital in coordinating the efforts of fire, law, and cooperating agencies during large scale incidents. The current preplans are being developed independently and the content varies greatly between agencies. In a state that is progressive with statewide mutual aid, the greatest short coming is that these preplans are not accessible by outside agencies. The initial guiding principal is the development of a standard wildland preplan with a desired evolution into an all-hazard concept.

### **BACKGROUND**

In October 2019, the Task Force recommended the creation of a working group consisting of members from the Geographical Information Systems (GIS) Specialist Group, the Emerging Information Technology (EIT) Specialist Group, and wildland response operations personnel from various agencies to develop a standardized wildland preplan. The following recommendations were proposed for the working group to consider:

- Identify the end users of the preplans. One of the users of the documents will be incoming strike teams.



- Develop standard content that supports the needs of the end user.
- Identify if the preplans will be completed at the local level or would a contractor develop a stronger product. This would be determined by the level of complexity and the need for standardization.
- Identify a platform that would enable statewide responding agencies access to the standardized preplans during emergency events.
- Include the ability to maintain and update the preplans.
- Evaluate the feasibility to incorporate future preplans into an All-Hazard format.
- Identify costs associated with the development and maintenance of the product, and coordinate with Cal OES for funding options to ensure standardization and statewide access.

## FINDINGS

In 2020, a working group consisting of representatives from FIRESCOPE EIT, GIS, and fire operations personnel met to discuss the recommendations. The working group discussed the recommendations in detail and are providing a response and additional recommendations.

*Question # 1 - Identify the end users of the preplans. One of the users of the documents will be incoming strike teams.*

### Recommendation #1

**The primary stakeholders for these preplans should be first responders who are responding to a wildland fire emergency. These first responders may include individual units, strike teams or incident managers. The design and delivery of these preplans must consider the use of the targeted users.**

Some key requirements have been identified to support

end users: Easy access to PDF files

- Mobile web map application on tablets and smartphones
- Desktop web map
- Ability to download plans and save to local device
- View geospatial PDFs in PDF viewers
- View in applications that agencies are currently using (interoperability)

*Question #2 - Develop a standard content that supports the needs of the end users.*

### Recommendation #2

**There are three parts to the recommendation on how to develop a standard content that supports the needs of the end users. This included essential elements of information, symbology, and formatting.**











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Essential Elements of Information - The preplans should contain a standard set of essential elements of information. To assist in determining what the essential elements of information should include, a survey of stakeholders was conducted to receive feedback on priority information. Based on feedback and discussion, the following essential elements of information should be part of a standard:

- Standard base map type
- Quality street name data
- Access constraints
- Water Sources
- Safety zones
- Values at risk
- Aerial hazards
- Proposed dozer lines
- Jurisdictional boundaries

Symbology - The subcommittee recommends utilizing the adopted symbology from the National Wildland Coordinating Groups Geospatial Operations Standard. When an adopted symbol standard is not available, a standard may need to be developed.

The following table represents recommended symbology based on essential elements of information:

Water Source	
Water Tank	
Safety Zone	
<u>Helispot</u>	
Gate	
Aerial Hazard	
Values at Risk	
Bridge	
No turn around	
Unimproved landing area	



Format/Template -The subcommittee recommends a standard format and template be developed for a print service. The following formatting elements should be provided for:

- Title-block references, naming conventions
- QR Code references
- Source document (PDF)
- Mapping application
- Base map - streets, imagery, topology
- Text describing tactical or critical information
- Map product size - foldable map
- Geographic extent of planning area
- Georeferenced map product

*Question #3 - Identify if the preplans will be completed at the local level or would a contractor develop a stronger product. This would be determined by the level of complexity and the need for standardization.*

#### Recommendation #3

**The level of ability for an agency to support development of preplans varies amongst agencies. Some agencies may have substantial resources to support, while others have none. A statewide solution will need to consider the various levels of capability. The local knowledge that goes into the preplan is critical to providing useful information. Many agencies will need support to translate that local knowledge into a statewide standard and sharing solution. It is recommended that a statewide host agency be identified to provide the necessary technology infrastructure and support the local fire agencies with standards, guidance, workshops, training, and subject matter expert support if needed. This could be provided through agency program staff or vendor hosted services. A statewide program must consider how to support those agencies with staff or funding to successfully implement the program objectives.**

It should be noted that many local agencies have expended significant resources and effort to develop their own local version of preplans. A first step may include collecting these existing plans and making them immediately available to the fire community. A long-term plan could include migrating these existing plans into a statewide format.

*Question #4 - Identify a platform that would enable statewide responding agencies access to the standardized preplans during emergency events.*

#### Recommendation #4

**To best support a high degree of interoperability, technology options and solutions, the subcommittee recommends the use of Esri applications as the core infrastructure. Esri has developed several solutions that could easily support the development of a statewide, multijurisdictional, multidisciplinary platform.**



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- Esri's ArcGIS Online (AGOL) platform for editing
  - Universally Accessible - Agencies provide user level access.
  - Interoperable - Agencies access/edit data with existing in-house applications.
  - AGOL can access agency hosted "print services" which automates map fileproduction.
  - Agencies bring their own user level access accounts.
- Esri's Server platform to host Print Service
  - Standard products exported on demand from centrally hosted Print Service
  - Agencies activate as needed to export new products or replace old
- Esri systems are device agnostic.
  - Mobile devices, Desktops, Laptops.
- Esri systems are operating system agnostic
  - Windows, iOS, Apple, Android

The use of Esri infrastructure allows agencies to easily integrate mapping services into existing agency owned applications. Many agencies have procured, deployed, and trained personnel on applications already in use by agencies. This level of interoperability would leverage existing applications already in use by agencies.

*Question #5 - Include the ability to maintain and update the preplans.*

## Recommendation #5

**The recommended Esri platform provides the means to maintain and update the plans in an efficient manner using services. These services can provide a statewide hosted technology solution that can update existing plans, create new plans, update PDF files, and add new PDF files. The host agency may consider contracting with professional services to develop the solution. During the maintenance phase, considerable support is likely to be required to keep the system up to date and to provide the contributing agencies with the required support. A FIRESCOPE subcommittee should remain in place to support ongoing updates to best practices and technical solutions. The host agency would manage the required technology updates.**

A statewide technology solution could contract with professional services to support development. It is recommended that the technology solution utilize Esri feature services to support easy updates to plans, creation of new plans, updating PDF files, and adding new PDF files.

*Question #6 -Evaluate the feasibility to incorporate future preplans into an All-Hazard format.*





Recommendation #6

**The recommended Esri platform supports the development of additional statewide services that could provide special data for all types of hazards. For the mission of the Wildland Preplan Working Group, the efforts should solely focus on development of the wildland plan program.**

*Question #7 - Identify costs associated with the development and maintenance of the product, and coordinate with Cal OES for funding options to ensure standardization and statewide access.*

Recommendation #7

**The subcommittee recommends the development of functional and technical requirements to support a scope of work. The scope of work document should be developed utilizing the subject matter experts involved in responding to the recommendations in this paper. A collaborative effort will ensure the desired outcome will be achieved. This information could be used by a host agency to determine allocation of agency resources or support a procurement process in selecting an outside vendor.**

CONCLUSION

There are technology solutions that can support the objective of statewide sharing of wildland preplans as described in this paper. This paper provides recommendations on standard content for essential elements of information, symbology, and formatting. The level of ability for agencies to support development of preplans can vary. To support participating agencies, a robust technology infrastructure and program support from a host agency or vendor is recommended. To best support a high degree of interoperability, technology options, and solutions, the subcommittee recommends the use of Esri applications as the core infrastructure. An Esri infrastructure would easily support the ability to maintain and update these plans. To develop a statewide solution, a host agency would need to be identified to support the program. The host agency could develop the program utilizing agency resources or through a vendor hosted approach. It is recommended that the Wildland Preplans Working Group be utilized as subject matter experts to advise the host agency on best practices and standards for the development and maintenance of the program.

There are likely a variety of funding sources that could support the development of a statewide solution, such as sources for grant funding. However, the stakeholders should be prepared to develop long-term funded solutions for sustainment of any program.

**Board Approved: October 21<sup>st</sup>, 2021**