Agenda

- Definition, Causes, Recent Statistics
- Wildland Firefighting Agencies & Centers
- National Fire Potential Outlook for Summer 2019
- Recent National Fires
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- DOE ORPS Wildfire Events
- Past Wildfire Incidents at DOE
- DOE Requirements, Guidance and FEMA Assistance
- Executive Order 13855 - Overview
- Reducing Risk and Impact of Wildfires
- Wildfire Safety While Traveling
- Wildfire Emergency Preparedness
What are Wildfires?

• A wildfire or wildland fire is an **unwanted, unplanned, uncontrolled fire burning in a natural area** (forest, grassland or prairie) with combustible vegetation and typically occurs in wildland or rural areas.

• Can be characterized in terms of the cause of ignition, their physical properties, the combustible material present, and the effect of weather on the fire.

• Depending on the type of vegetation present, a wildfire can also be classified more specifically as a brush fire, bushfire, desert fire, forest fire, grass fire, hill fire, peat fire, or vegetation fire.

• Wildfire behavior and severity result from a combination of factors such as available fuels, physical setting, wind and weather.
Causes of Wildfires

• The National Park Service estimates that:
• 90% of wildfires in the U.S. are caused by humans i.e. man-made causes, including:
  – Burning debris, yard waste
  – Unattended campfires
  – Cigarettes
  – Fireworks
  – Arson (may account for up to 30% of wildfires)
  – Equipment Failure, Transformer Sparks, Powerline Arcing
  – Engine Sparks, Car crashes, Train sparks
• 10% of wildfires in the US are caused by Mother Nature
  – Lightning, lava from volcanic eruptions
Recent U.S. Wildfire Statistics

According to the National Interagency Fire Center (NIFC):

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of US Wildfires</th>
<th>US Acres Burned</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019 (Jan 1- June 10)</td>
<td>16,361</td>
<td>355,014</td>
</tr>
<tr>
<td>2018 (Jan 1 – June 10)</td>
<td>25,347</td>
<td>1,800,000</td>
</tr>
<tr>
<td>2018</td>
<td>58,083</td>
<td>8,800,000</td>
</tr>
<tr>
<td>2017</td>
<td>71,499</td>
<td>10,000,000</td>
</tr>
</tbody>
</table>

According to Verisk’s (Analytical Company) 2017 Wildfire Risk Analysis:

- 4.5 million U.S. homes were identified at high or extreme risk of wildfire, with more than 2 million in California alone.

- Losses from wildfires have totaled $5.1 billion over the past 10 years.
Wildland Firefighting Agencies & Centers

• **The National Interagency Fire Center (NIFC)**
  - Forest Service (USFS), U.S. Department of Agriculture
  - U.S. Fish and Wildlife Service (FWS), U.S. Department of the Interior
  - National Park Service (NPS), U.S. Department of the Interior
  - Bureau of Land Management (BLM), U.S. Department of the Interior
  - Bureau of Indian Affairs (BIA), U.S. Department of the Interior
  - National Association of State Foresters (NASF)
  - National Weather Service (NWS), U.S. Department of Commerce
  - Office of Aircraft Services (OAS), U.S. Department of the Interior
  - U.S. Fire Administration (USFA), U.S. Department of Homeland Security

• **National Interagency Coordination Center (NICC)**
  - NICC provides Predictive Services, including the National Significant Wildland Fire Potential Outlooks (next slide)
Wildfire Predictive Service
National Fire Potential Outlook: Summer 2019

For more information: https://www.predictiveservices.nifc.gov/outlooks/outlooks.htm
# Recent National Fires

<table>
<thead>
<tr>
<th>California Wildfires</th>
<th>Suspected Cause</th>
<th>Fatalities</th>
<th>Acres Burned</th>
<th>Structures Destroyed</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mendocino Complex</td>
<td>Spark or hot metal fragment came from a hammer that was driving a metal stake into the ground</td>
<td>1</td>
<td>Over 459,000</td>
<td>280</td>
<td>July 2018 - Largest fire in state history</td>
</tr>
<tr>
<td>Carr</td>
<td>Spark from steel rim of wheel (tire blown) scraping the pavement</td>
<td>8</td>
<td>Over 229,000</td>
<td>1,604</td>
<td>July 2018</td>
</tr>
<tr>
<td>Woolsey</td>
<td>Poorly maintained electrical equipment</td>
<td>3</td>
<td>Over 96,000</td>
<td>1,643</td>
<td>November 2018</td>
</tr>
<tr>
<td>Camp</td>
<td>Electrical transmission lines</td>
<td>86</td>
<td>Over 149,000</td>
<td>18,804</td>
<td>November 2018</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other Notable Wildfires</th>
<th>Suspected Cause</th>
<th>Fatalities</th>
<th>Acres Burned</th>
<th>Results</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow Bluff Fire - Florida</td>
<td>Under investigation</td>
<td>0</td>
<td>Over 600</td>
<td>I-95 shutdown for 2 days</td>
<td>May 2019</td>
</tr>
<tr>
<td>Montana Wildfires</td>
<td>21 large, active fires potentially caused by lightning</td>
<td>2</td>
<td>1,295,000</td>
<td>120 homes destroyed</td>
<td>September 2017</td>
</tr>
<tr>
<td>Okanogan Complex – Washington</td>
<td>Lightning strikes</td>
<td>3</td>
<td>Over 304,000</td>
<td></td>
<td>August 2015</td>
</tr>
</tbody>
</table>
Wildfires – The New Normal?

Video link:

25 wildfire events were reported in ORPS from January 1, 2013 to July 15, 2019.

<table>
<thead>
<tr>
<th>Site</th>
<th>Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hanford</td>
<td>2</td>
</tr>
<tr>
<td>INL</td>
<td>1</td>
</tr>
<tr>
<td>LANL</td>
<td>3</td>
</tr>
<tr>
<td>LBNL</td>
<td>1</td>
</tr>
<tr>
<td>LLNL</td>
<td>2</td>
</tr>
<tr>
<td>Moab</td>
<td>1</td>
</tr>
<tr>
<td>NNSS</td>
<td>3</td>
</tr>
<tr>
<td>NREL</td>
<td>2</td>
</tr>
<tr>
<td>Paducah</td>
<td>2</td>
</tr>
<tr>
<td>Pantex</td>
<td>2</td>
</tr>
<tr>
<td>SNL/ALB</td>
<td>3</td>
</tr>
<tr>
<td>SR</td>
<td>1</td>
</tr>
<tr>
<td>SPR</td>
<td>1</td>
</tr>
<tr>
<td>WIPP</td>
<td>1</td>
</tr>
</tbody>
</table>
LANL Wildfires and Lessons Learned:

- **2000 Cerro Grande**
  - Started as a controlled burn but became uncontrolled due to high winds and drought
- **2011 Las Conchas**
  - Aspen tree caught fire after falling on power lines
- **OES on LANL Wildfires, August 14, 2012**
  - [https://www.energy.gov/sites/prod/files/2014/05/f15/OES_2012-03.pdf](https://www.energy.gov/sites/prod/files/2014/05/f15/OES_2012-03.pdf)
Past Wildfire Incidents at DOE

Resulting from Site Activities (2018)

- Strategic Petroleum Reserves
  - Charcoal briquettes were improperly discarded in a grassy area without being fully extinguished
- Sandia National Laboratory – Albuquerque
  - Boom of a truck came within arc flash restricted area boundary distance and severed an aluminum cabling line that initiated a fire in dry grass
- Moab Project Site
  - Grass fire resulted from welding a metal plate onto a railcar

Naturally Occurring (2018)

- Nevada National Security Site
  - Lightning
- Paducah Gaseous Diffusion Plant
  - Power line fell
Requirements:

- DOE O 420.1 C, Chg. 2 Facility Safety
- Attachment 2, Chapter II., FIRE PROTECTION
- Section 3. Requirements –part g.
- **Wildland Fire.** An integrated site-wide wildland fire management plan, consistent with the *Federal Wildland Fire Management Policy*, must be developed, provided to the DOE Head of Field Element for approval, and implemented in accordance with the relevant portions of the NFPA 1143, *Standard for Wildland Fire Management*. 
DOE Wildland Fire Protection Guidance

- DOE’s wildland fire management guidance is located in Chapter 8 of DOE-STD-1066-2016, *Fire Protection*.
  - 8.4.1 Identification of DOE Policies
  - 8.4.2 Firefighter (and public) Safety
  - 8.4.3 Fire Management and Ecosystem Sustainability
  - 8.4.4 Response to Wildland Fire
  - 8.4.5 Use of Wildland Fire
  - 8.4.6 Rehabilitation and Restoration
  - 8.4.7 Protection Priorities
  - 8.4.8 Wildland Urban Interface
  - 8.4.9 Planning
  - 8.4.10 Science
  - 8.4.11 Preparedness
  - 8.4.12 Suppression
  - 8.4.13 Prevention
  - 8.4.14 Standardization
  - 8.4.15 Interagency Cooperation and Coordination
  - 8.4.16 Communications and Education
  - 8.4.17 Agency Administrator and Employee Roles
  - 8.4.18 Evaluation.
FEMA and Wildfire Assistance

- FEMA provides wildfire assistance to States, local and tribal governments for the mitigation, management and control of wildfires

- Fire Management Assistance Grant Program
  - Provides a 75% Federal cost share, State pays remaining 25% for actual costs

- Fire Management Assistance Declarations
  - In 2018, 42 Declarations were issued throughout the U.S.
  - 3 Declarations issued thus far in 2019
Executive Order 13855

- **EO 13855-** *EO on Promoting Active Management of America’s Forests, Rangelands, and other Federal Lands to Improve Conditions and Reduce Wildfire Risk, December 21, 2018*

- **Policy**
  - Shared Management Priorities
  - Coordinating Federal, State, Tribal, and Local Assets
  - Removing Hazardous Fuels and Increasing Active Management of Vegetation
  - Improving Emergency Responder Access
  - Reduce Wildfire Risk

- **Goals**
- **Wildfire Strategy**
- **Collaborative Partnerships**
Reducing Risk and Impact of Wildfires on DOE Facilities/Businesses

- Sources of Wildfire Ignition
  - Embers
  - Direct Flame Contact
  - Radiant Heat (*energy transferred through air to other objects when materials burn*)

- Have Coverage in Place
- Train Employees on Safety Protocol and Procedures
- Establish an Evacuation Plan
- Create a Wildfire Emergency Kit
- Know the Fire Hazard Severity Zone (FHSZ)
- Building Construction
  - Maintain Defensible Space
Reducing Risk and Impact of Wildfires on Homeowners

• Defensible space
  – Maintain 0-5 ft. of defensible space with noncombustible materials
  – Maintain 5-30 ft. of defensible space by removing shrubs, thin trees, & dead vegetation

• Use fire resistant building materials
  – Roofing materials – tile, slate, sheet iron, aluminum, brick, or stone
  – Treat combustible materials like wooden panels, fences, sheds, etc.

• Regularly clean roof and gutters

• Soak stove or fireplaces ashes in a pail of water before disposing

• Store gasoline in approved safety cans away from occupied buildings

• Have at least two entrance/exit routes
Wildfire Safety Tips: Traveling, Camping, National Parks

- Know Current Wildfire Conditions/Fire Restrictions
- Stop the Wildfire Before it Starts- Contact Authorities
- Have a Contingency Plan
- Have Insurance
- If you’re in danger....
  - If there is a fire, keep calm and cooperate. If you are asked to evacuate, do so immediately. Don’t try to outrun the fire. If possible, get yourself submerged in a body of water (pond, river) as fast as you can. If there is no water, low area with as little vegetation as possible. Lie low to the ground and cover yourself with wet clothing. Protect your lungs as best as you can and stay down until the fire passes.
Wildfires are unpredictable, yet inevitable.

To effectively prepare for wildfires, proactive emergency preparedness is essential at DOE, at home and while traveling.

What lessons learned can you share about your experience with wildfires and emergency preparedness at your site, at home, or while traveling?
Additional Resources

National Wildfire Potential Outlook Resources
- https://www.predictiveservices.nifc.gov/outlooks/outlooks.htm

Executive Order 13855

Operating Experience Summary, August 14, 2012
- https://www.energy.gov/sites/prod/files/2014/05/f15/OES_2012-03.pdf

Reducing Risk from Wildfires
- https://disastersafety.org/wildfire/protect-your-home-from-wildfire/
- https://disastersafety.org/wildfire/what-to-do-if-a-wildfire-is-approaching/
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