

So What Is an Operational Emergency?

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Objectives

- Further explain the definition and requirements for Operational Emergencies, both non-classified and classified
- Clarify application of Order requirements to certain non-classified Operational Emergencies.
- Promote consistency in categorizing Operational Emergencies across the complex



Part I

Operational Emergency definition & background – classified and non-classified

So what *IS* an OE?

- Concept goes back at least to 1991
- Emphasis at that time on releases of hazardous materials
- Application to other events in 1995

So what *IS* an OE?

DOE O 151.1C, Section 4.a.(17) & Chapter V definition:

Major unplanned or abnormal events that...

- involve or affect DOE/NNSA facilities*
- causing or having the potential to cause serious health, safety or environmental impacts*

So what ***IS*** an OE? (continued)

- *require resources from outside the immediate/affected area or local event scene to supplement initial response*

AND

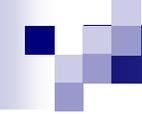
- *require time-urgent notifications to initiate response activities at locations beyond the event scene*

It's an Operational Emergency if..

- The event severity/ complexity and the expected or required response are consistent with the Operational Emergency definition, because...
- Emergency **Management** is **needed**
 - **NOT every event** that involves a functional response (fire, medical, hazmat, etc.) is an Operational Emergency.

Likely an Operational Emergency if....

- **Additional** response units/capabilities needed from outside the immediate/affected area or local event scene (more of the same) Examples:
 - **More** fire trucks
 - **More** ambulances
 - **More** hazmat teams
 - **More** RadCon techs



Because **More** Resources.....

→ higher level of coordination & communications (i.e., Emergency **MANAGEMENT**)

Likely an Operational Emergency if....

- **Different** or **specialized** response capabilities are needed (**more** but not the same). Examples:
 - Fire/rescue calls for HAZMAT support
 - HAZMAT team calls for augmented medical response
 - Security calls for local law enforcement & bomb squad
 - Fire/rescue calls for heavy lifting equipment
 - Local media request information on the event (public relations emergency)



Because **Different** Resources.....

→ **higher level of coordination & communications**

Likely an Operational Emergency if....

- Action at **other** locations to manage or mitigate impacts.
 - Actions at Site EOC
 - Mobilize site-wide resources
 - Obtain support from local offsite agencies (mutual aid)
 - Actions at DOE HQ
 - Obtain support from other Federal agencies or DOE sites
 - Action by offsite agencies
 - Shut water intakes
 - Evacuate/shelter population
 - Close roads/waterways

In other words.....

- It's probably an Operational Emergency if the response is complex enough that it **needs** ***Emergency Management!***
- OE declaration is intended to reflect event severity as indicated by complexity of response.
 - Complexity of response
→ Emergency Management

Classified Operational Emergencies

- DOE O 151.1C, Chapter V, C:

Operational Emergencies must be classified as either an Alert, Site Area Emergency, or General Emergency, in order of increasing severity, when events occur that represent a specific threat to workers and the public due to the release or potential release of significant quantities of hazardous materials from DOE/NNSA facilities/activities/operations....

Classified Operational Emergencies

- Classification applies only to events involving actual or potential “...*release or potential release of significant quantities of hazardous materials...*”
- Classification as Alert, Site Area Emergency, or General Emergency, depending on area/distance where protective actions may be needed.

Classified Operational Emergencies

- Alert: Protective Action Criterion exceeded only very near the point of release (not outside facility boundary).
- Site Area Emergency: Protective Action Criterion exceeded at or beyond the facility boundary but not beyond the site boundary.
- General Emergency: Protective Action Criterion exceeded at or beyond the site boundary.

Classified Operational Emergencies

- **Classifying** an emergency that involves actual or potential release of “...significant quantities of hazardous materials..” means that it is automatically **categorized** (reported) as an Operational Emergency.

Operational Emergencies that do not require classification

- DOE O 151.1C, Chapter V.2 lists **examples** of events that do not require classification
- EMG chapter on *Emergency Categorization and Classification* elaborates on each example (the **HQ expectation**)

Operational Emergencies that do not require classification (Health/safety)

- The discovery of radioactive or other hazardous material contamination from past DOE/NNSA operations that may have caused, is causing, or may reasonably be expected to cause uncontrolled personnel exposures exceeding protective action criteria.
- An offsite hazardous material event not associated with DOE/NNSA operations that is observed to have or is predicted to have an impact on a DOE/NNSA site, such that protective actions are required for onsite DOE/NNSA workers.

Operational Emergencies that do not require classification (Health/safety)

- An occurrence (e.g., earthquake, tornado, aircraft crash, fire, explosion) that causes or can reasonably be expected to cause significant structural damage to DOE/NNSA facilities, with confirmed or suspected personnel injury or death.
- Any facility evacuation in response to an actual occurrence that requires time-urgent response by specialist personnel, such as hazardous material responders or mutual aid groups not normally assigned to the affected facility.
- An unplanned nuclear criticality.
- Any mass casualty event.

Operational Emergencies that do not require classification (Environment)

- Any actual or potential release of hazardous material or regulated pollutant to the environment, in a quantity greater than five times the Reportable Quantity (RQ) specified for such material in 40 CFR 302, that could result in significant offsite consequences, such as major wildlife kills, wetland degradation, aquifer contamination, or the need to secure downstream water supply intakes.

Operational Emergencies that do not require classification (Environment)

- Any release of greater than 1,000 gallons (24 barrels) of oil to inland waters; greater than 10,000 gallons (238 barrels) of oil to coastal waters; or a quantity of oil that could result in significant off-site consequences (e.g., need to relocate people, major wildlife kills, wet-land degradation, aquifer contamination, need to secure downstream water supply intakes, etc.) [Oil as defined by the Clean Water Act (33 U.S.C. 1321) means any kind of oil and includes petroleum.]

Operational Emergencies that do not require classification (Security/safeguards)

- Actual unplanned detonation of an explosive device or a credible threat of detonation resulting from the location of a confirmed or suspicious explosive device.
- An actual terrorist attack or sabotage event involving a DOE/NNSA site/facility or operation.
- Kidnapping or taking hostage(s) involving a DOE/NNSA site/facility or operation.

Operational Emergencies that do not require classification (Offsite transportation)

- Any accident/incident involving an offsite DOE/NNSA shipment containing hazardous materials that causes the initial responders to initiate protective actions at locations beyond the immediate/affected area.
- Failures in safety systems threaten the integrity of a nuclear weapon, component, or test device.
- A transportation accident results in damage to a nuclear explosive, nuclear explosive-like assembly, or Category I/II quantity of Special Nuclear Materials.

Operational Emergencies that do not require classification (biohazards)

- Any actual or potential release of a hazardous biological agent or toxin outside of the secondary barriers of the biocontainment area.

Recognizing OEs by the *response*

- The specific events/conditions spelled out in the Order:
 - Do not comprise the entire universe of events that could be OEs.
 - Are *specific examples* (discrete points within the universe of events/conditions) that the Order intended to be categorized as OE.

Recognizing OEs by the *response*

- Some Order examples are quite explicit & quantitative.
Examples:
 - *Release of >5 x RQ,*
 - *Detonation of explosive device*
- Others require interpretation and interpolation to see where an event stands relative to the example
 - *Facility evacuation in response to actual occurrence with time-urgent response by specialist personnel*
 - *Facility damage with confirmed/suspected personnel injury*

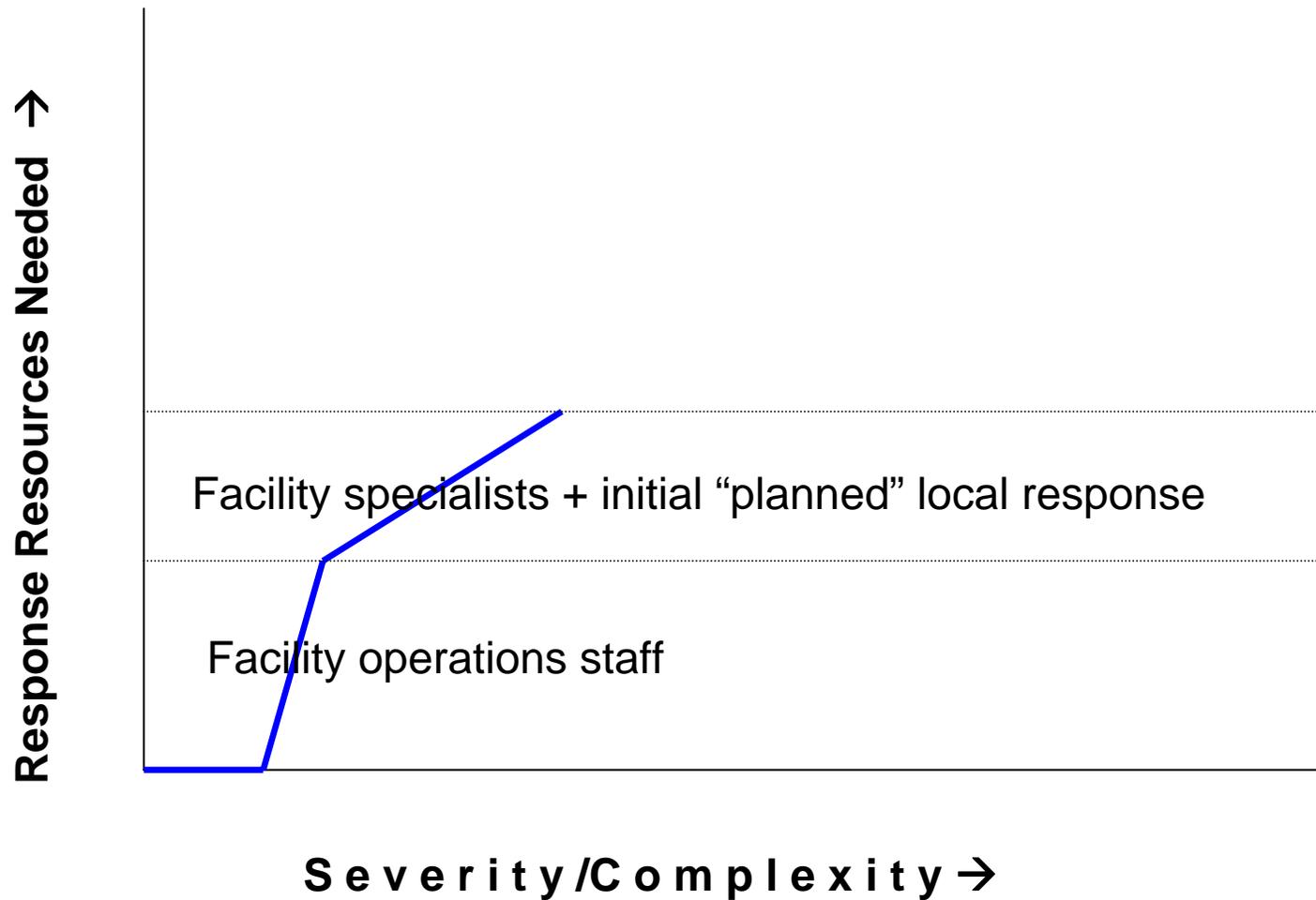
Recognizing OEs by the *response*

- Planned/expected *response* activity can indicate where *some* events would fall with respect to the Order examples.
- This approach:
 - Applies best to events for which Order examples are quite broad & general (fire, facility evacuation, etc.)
 - Correlates the *expected response* with OE definition by looking at the *need for Emergency Management*

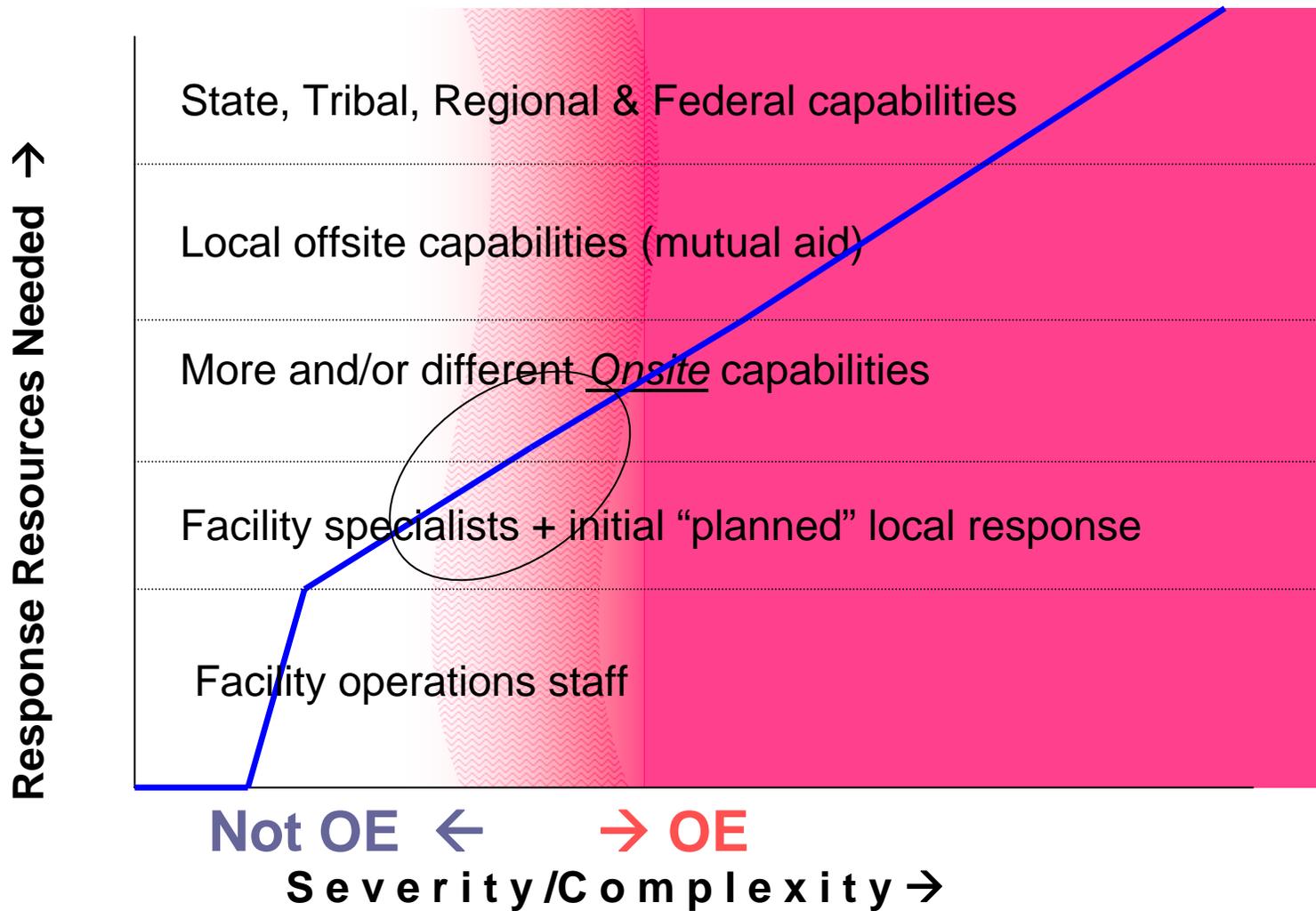
Recognizing OEs by the *response*

- Emergency Management staff needs to:
 - Use the Order examples as “benchmarks” or calibration points to categorize possible/expected OE events.
 - Do that “calibration” during planning, not response.

Response resources vs. event severity/complexity

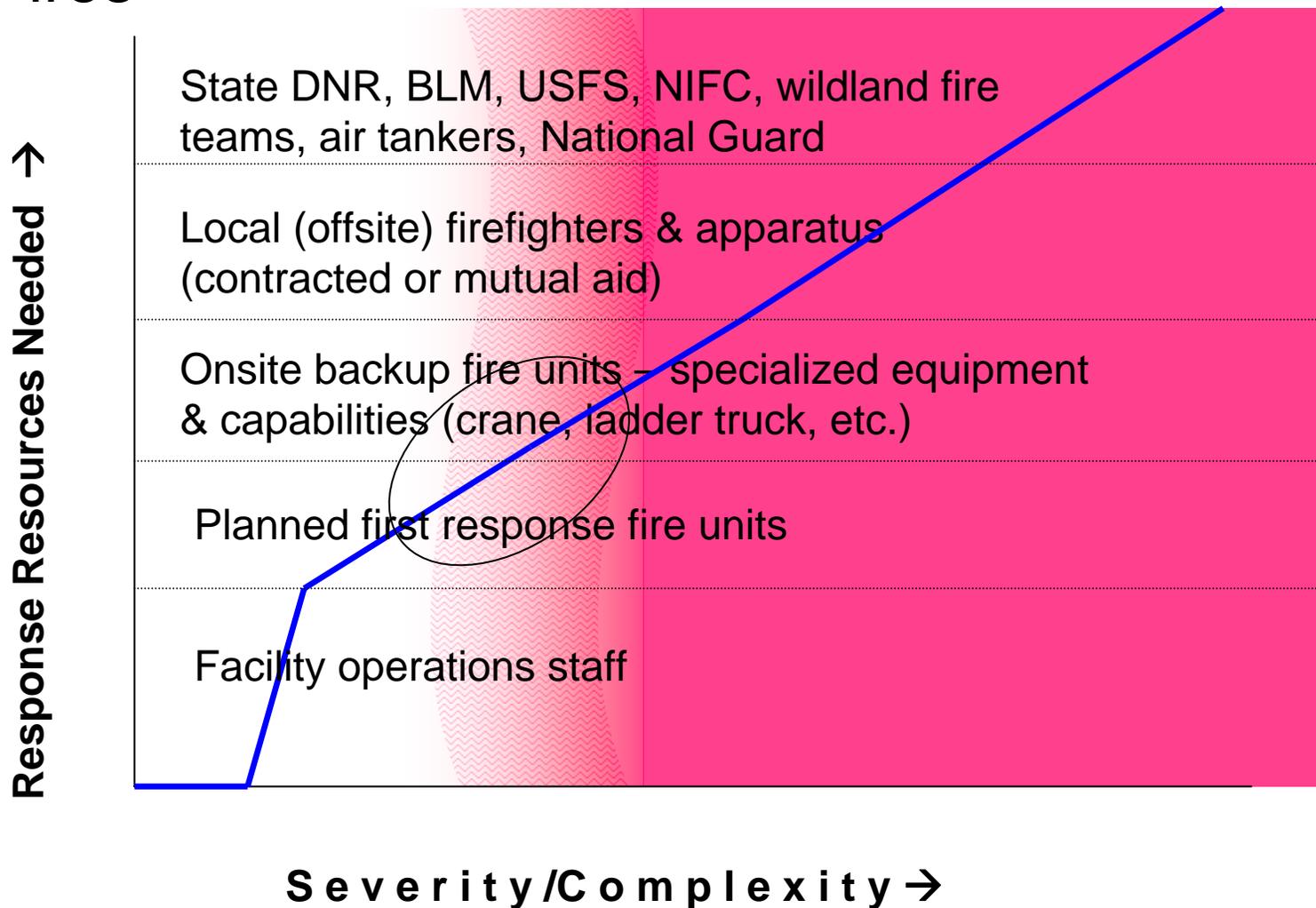


Response resources vs. event severity/complexity



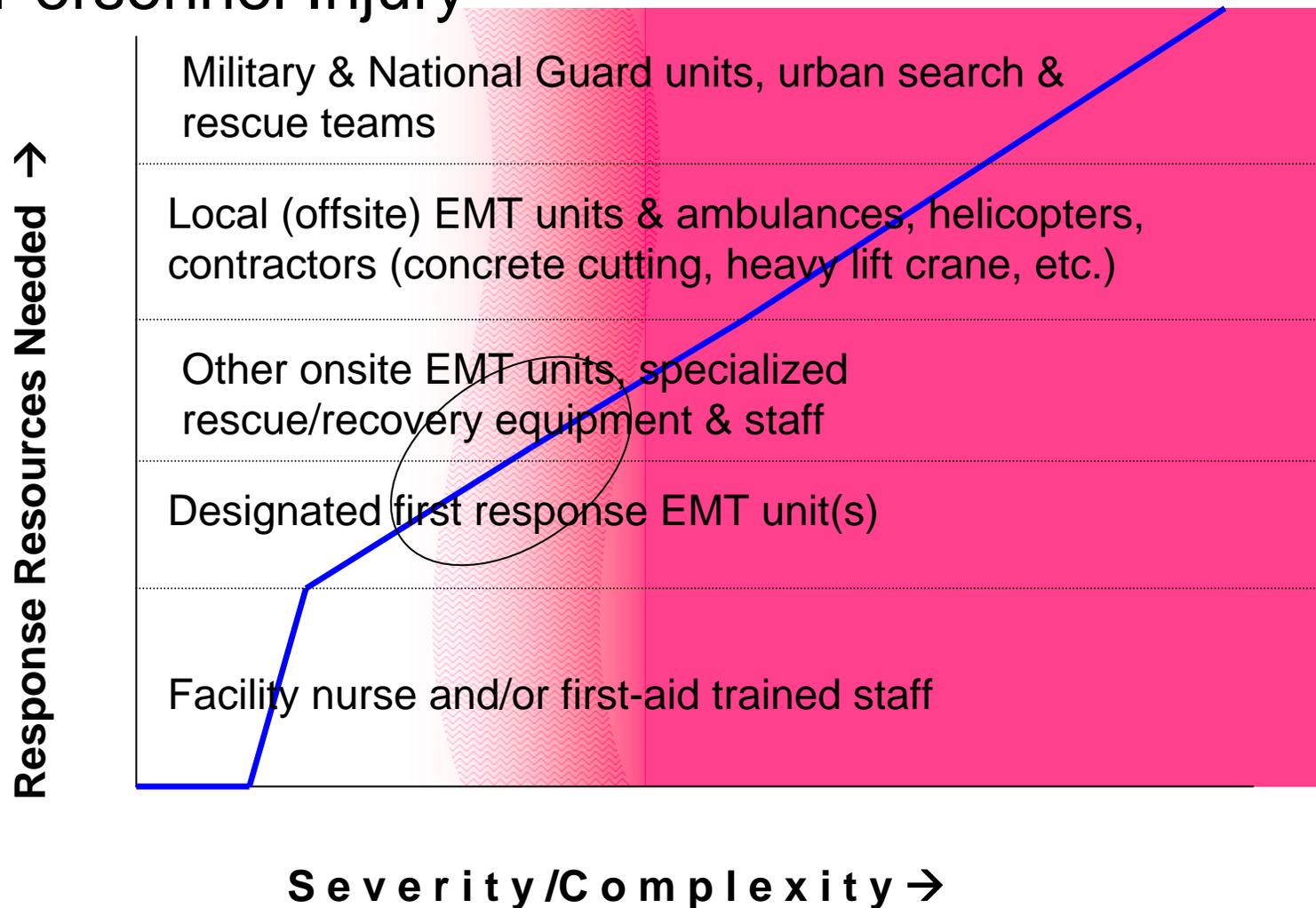
Response resources vs. event severity/complexity

-- Fires



Response resources vs. event severity/complexity

-- Personnel Injury



Recognizing OEs by the **response** – Categorization Criteria

- Examine how **your** site responds to different kinds of events
 - Sequence of resources & decisions as severity/complexity increase
- Identify specific response actions & decisions that will mark passage into Emergency Management space (the “tripwires”):
 - Specific teams/units/apparatus deployed
 - Requests for outside support
 - Special capabilities/assets mobilized

Recognizing OEs by the *response* – Categorization Criteria

- Test/compare thresholds
 - Level of event complexity/severity represented by threshold vs. Order examples
- “Flag your tripwires” in procedures, checklists, training
- Approved, well-understood criteria:
 - Improve consistency between decisionmakers
 - Increase objectivity (fact-based decisions)
 - Reduce tendency toward “conservative default”
 - OEs more consistent with Order definition/examples



Part II

Expectations regarding categorization of certain non-classified Operational Emergencies

OE Categorization experience

- More than 60 events have been categorized as Operational Emergency since 2000
- ~20% were classified as Alert or higher
- Event types represented
 - Grass fire (~15)
 - Other fire (~10)
 - Facility evacuation, various causes (~8)
 - Other (severe weather, power outage, hazmat)

From the Headquarters perspective

- Emergency events categorized inconsistently across the complex.
- Most tend to a conservative categorization of Operational Emergencies.
- There is little or no evidence that events are being under-categorized (OE events reported at less than OE level).

From the Headquarters perspective

- Some expected variability between sites
- Is the conservatism in categorizing some conditions excessive?
 - More OEs than Significance Category 1 events
- Conclusion: Office of Emergency Management needs to clarify HQ expectations regarding selected OEs and promote consistency in categorizing Operational Emergencies across the complex

Expectations for categorization of selected events

Disclaimer:

1. The event descriptions presented here were gleaned from ORPS reports and may not represent the full breadth and complexity of the situation as it was presented to the site authorities at the time of the occurrence.
2. The scenario described here may actually be a synthesis of two or more different reported events selected from ORPS **to illustrate the expectation regarding a particular aspect of OE categorization guidelines.**

Scenario #1: Wildfire OE

1. Down power line causes grass fire in perimeter area surrounding a DOE facility.
2. Initial response is by onsite (DOE) fire units
3. Offsite fire units respond under mutual aid agreement
4. Fire is extinguished in ~2 hours after burning <10 acres
5. No DOE facilities were directly threatened by fire
6. Property damage limited to fence posts and site boundary marker signs. No personnel injuries
7. Nearby road closed by local authorities due to smoke.

Scenario #1: Wildfire OE - expectations

1. OE is not required *just* because offsite units provide firefighting support or backup IAW plans and mutual aid agreements.
2. OE would be appropriate if fire involves or poses imminent threat to occupied structures (i.e., endangers human health/safety)

Scenario #1: Wildfire OE - expectations

3. Size and duration of the fire are not an accurate reflection of safety degradation. OE should be based on actual or expected health, safety or environmental impact.
4. Personnel injury or deaths – for wildfire, OE is warranted only if “mass casualty” criteria are met.

Scenario #2: Wildfire OE

1. Lightning starts fire offsite which spreads onto DOE site.
2. DOE fire units respond along with multiple offsite agencies. Unified command is established.
3. Fire causes power line failure, interrupting electrical supply to part of the site. Several DOE facilities are shut down and evacuated due to loss of HVAC and other essential services.
4. Fire is still active after 8 hours. Front is several miles from nearest DOE facility.
5. State officials close main highway access to site due to smoke and equipment on roadway.

Scenario #2: Wildfire OE - expectations

1. OE is not required ***just*** because DOE joins unified command for offsite/onsite fire.
2. However, coordination of multiple agencies in onsite firefighting, closure of access highway, evacuation of DOE facilities suggests a complex response → OE.
3. OE appropriate if there is substantial health/safety threat due to forced shutdown & evacuation of facilities.
4. Damage or imminent threat to substantial structures or facilities (not just fence posts, signs, or outbuildings). May warrant OE, and definitely will if accompanied by:
 - Threat to human health/safety
 - Actual/potential release of hazardous materials

Scenario #3: Fire/evacuation OE

1. Electrical fault causes smell of smoke and electric power failure to portion of a laboratory building.
2. Building is evacuated. Some experiments are compromised by HVAC shutdown and loss of power.
3. Onsite fire department responds. Firefighters find no flames or sparks, just the smell of smoke.
4. Workers are released to go home while repairs are done on electrical system.

Scenario #3: Fire/evacuation OE - expectations

1. Not an OE. The EMG specifically addresses this kind of “minimal” response by firefighters or other outside specialists.
2. OE might be justified if the power/HVAC failure caused a high degree of personnel injury or environmental hazard (e.g., exposure to toxics, release of pollutants).

Scenario #4: Fire/evacuation OE

1. A small amount of a reactive chemical overheated and began smoking during a laboratory operation.
2. Workers immediately exited the laboratory and the building was evacuated.
3. Site firefighters responded and the fire was quickly put out with a hand-held extinguisher.
4. No damage to the laboratory room or equipment.
5. No personnel injury or exposure to hazardous fumes/smoke.

Scenario #4: Fire/evacuation OE - expectations

1. Not an OE. The EMG specifically addresses this kind of “minimal” response by firefighters or other outside specialists.
2. Absence of personnel injury, continuing health/safety hazard, environmental release or facility damage all suggest that this event does not rise to the level of OE.
3. Could have been OE if:
 - Non-trivial damage to lab or building, and
 - Personnel death or injuries requiring treatment

Scenario #5: Alarm/evacuation OE

1. A laboratory building evacuation was triggered by an alarm on a toxic gas monitor.
2. Emergency responders determined that:
 - the gas cylinders were isolated,
 - air concentration of toxic gas was below detection limits
3. The alarm was judged to be false alarm.

Scenario #5: Alarm/evacuation OE

- expectations

1. Probably not an OE **unless** facility staff and/or responders have some **other** indication that hazardous materials caused or might have caused **significant health or safety impacts**.
2. In general, it is not expected that an OE will be declared for facility evacuations triggered solely by an instrument reading or alarm **until** some kind of confirmation of hazard has been made (personnel exhibiting symptoms, positive air samples, other confirmatory measurements)
3. Any evacuation labeled as “precautionary” is unlikely to be an OE.

Scenario #6: Severe weather OE

1. Severe thunderstorm with hail and funnel cloud observed. Most onsite operations are suspended and personnel ordered to shelter.
2. Lightning causes power outage.
3. Tour group on site placed in shelter until storm passed.
4. No injuries, facility damage, environmental degradation.
5. Electrical service restored by end of shift.

Scenario #6: Severe weather OE - expectations

1. Not an OE.
 - Tornado did not touch down
 - No facility/structure damage
 - No injuries or human health impact
 - Electric power restored promptly -- minimal lightning damage to distribution system
2. OE would have been appropriate if tornado had damaged an occupied structure (damage + threat to human health/safety)

Scenario #7: Hazardous material spill OE

1. Package containing bottles of chemical was delivered to facility, found to be leaking liquid.
2. Person handling the package gets some on skin, complains of symptoms.
3. Fire/rescue personnel provide treatment and transport to hospital.
4. Cleanup of spilled material done by facility staff.
5. No detectable release to the environment.

Scenario #7: Hazardous material spill OE - expectations

1. Not an OE.
 - No facility damage
 - Health/safety impact to only one individual
 - No detectable release to the environment
 - Small quantity of ordinary laboratory chemical (well below screening threshold)
2. This is an “ordinary HazMat incident” with personnel injury.

Scenario #8: Offsite transportation OE

1. LLW box being shipped from one site to another for disposal on flatbed truck.
2. During rest stop, driver noted a small amount of absorbent material leaking from the box.
3. Driver reported through non-emergency channels.
4. Local fire & police isolated truck, surveyed and found no contamination, did not extend protective actions beyond initial scene.
5. DOE shipping Site activated its EOC and declared an OE.
6. DOE RAP team responded, confirmed leak in container, found no contamination.
7. Leaking container repackaged for return to originator.

Scenario #8: Offsite transportation OE - expectations

1. Not an OE.
 - No protective actions initiated beyond immediate area
 - No contamination detected outside the waste package
 - Initial responders isolated the truck and awaited RAP Team (no apparent indication that the release was likely to get worse)

Scenario #8: Offsite transportation OE – expectations (continued)

2. OE **would** have been justified if initial responders extended protective actions beyond immediate area (assumption is that they have best understanding of the situation).
3. OE **might** have been justified if (for example):
 - Driver or local responders reported worsening situation
 - Inadequate local response capabilities

Summary (1)

1. Clarified the Office of Emergency Management's expectations regarding categorization of Operational Emergencies.
2. Promoted consistent categorization of Operational Emergencies, and demonstrated via examples from real reports.
3. Emphasized the concept of OEs as events that require emergency management.

Summary (2)

4. Declaration of an operational emergency should reflect event severity as indicated by the complexity of response.
5. For OE declarations, “conservative” does not necessarily equal “better”. Excessive conservatism in OE categorization can:
 - Diminish the perception of the seriousness of Operational Emergencies
 - Trivialize (marginalize) the concept of OEs as MAJOR events that NEED emergency **management**

READ THE **NEW** EMG.

MANY ISSUES THAT HAVE BEEN ADDRESSED HERE ARE COVERED IN SOME DETAIL.