Junction Box FAQ 13-0006

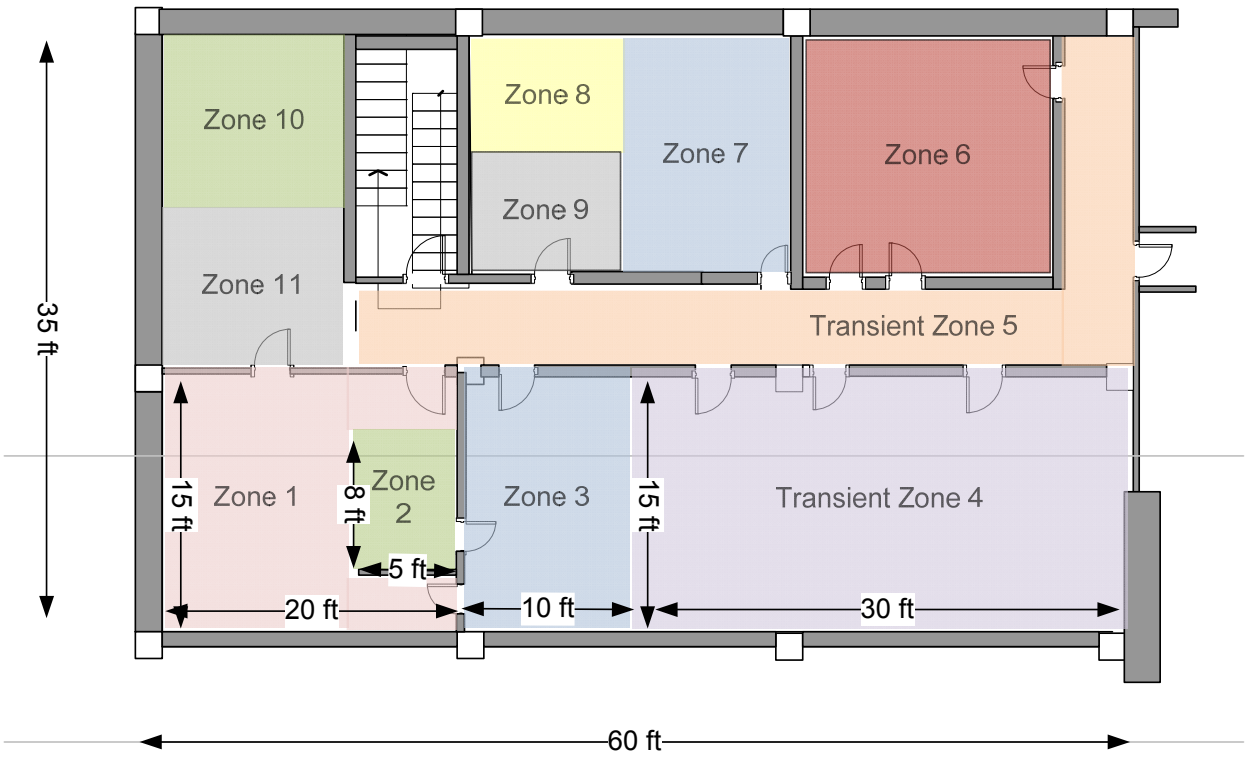
Clarification needed

Step 3 Subsequent Screenings (optional)

1. Consistent with the counting and apportioning guidance in Section 2 of this FAQ, there are two methods that can be used to apportion the frequency of junction boxes to specific scenarios within a fire zone. These methods are:

   In the case the junction box frequency is apportioned at the fire zone level as described in Chapter 6 of NUREG/CR-6850 based on a consistent indicator for the amount of cable (e.g. cable loading, number of cables, cable lengths, etc), the specific count of junction boxes in the fire zone may not be available. It is then practical to apportion the junction box frequency to the same locations where transient fires are located within the fire zone. Under this approach, the apportioning factor will be based on the same floor area ratio used for the transient fires. This approach requires rigorous mapping of junction boxes that are identified as Fire PRA targets to individual scenarios. The analyst maps the target junction boxes (those junction boxes that are Fire PRA targets within the fire zone) based on their location to the different transient fire scenarios in the Fire Zone following the same process used to map cable trays or conduits to fire scenarios. All the Fire PRA target junction boxes should be accounted for. The junction box fires are then assigned the same floor are ratio as the transient fires where they are mapped to. In practice, this approach suggests that every transient fire location in a Fire Zone will also include the risk contribution of junction box fires, which is calculated using the junction box with the highest CCDP mapped to the scenario. It should be noted that the ignition source screening techniques for transient fires will not apply for junction boxes. That is, even if a transient fire can be screened based on zone of influence considerations, junction box fires within that portion of the fire zone would still need to be considered.

The below file was created using Visio if alterations/clarifications need to be made. An example depiction for this case would be helpful.



Fire Zone	Area	Fractional Value	Junction box specific frequency
Zone 1	**260 ft^2**	**260 ft^2/ 1800 ft2.144**	Area wide Frequency x Fractional Value
Zone 2	**40 ft^2**	**.022**	
Zone 3	**150 ft^2**	**.083**	
Zone 4	**450 ft^2**	**.250**	
Zone 5	**Etc.**		
Zone 11			
Total	**1800 ft^2**		

Questions-

1. How will the targets be identified in this method, what cables/conduits in the corresponding transient fire zones are mapped to the postulated junction box?
2. Is this new method simply adding the junction box fire frequency (apportioned on fire area) to the targets sets that are damaged within the zone of influence of the modeled transient fire for each case
3. The note was added that “even if a transient fire can be screened based on zone of influence considerations, junction box fires within that portion of the fire zone would still need to be considered.” In this case how will the targets be identified without knowing exactly what cables are included in the junction box.