SRE: When should I stop deploying?

If you have to ask?...

Generally, there are 3 moments when you should halt deployments:

1. You have exhausted your error budget. **Easy.**
2. The risk of making the change outweighs the risk of not doing it. **Medium.**
3. There is too much uncertainty in the system (and therefore risk). **Hard (if you have to ask).**

Let's say you have a change that will take x hours to roll out but recently the system has become too inconsistent and buggy. You are concerned that it will break down during the rollout and the system will collapse and the deployment will create more issues increasing the MTTR. You also think the change might fix the issue. **What should you do? Where should you start?**

First let's understand the probability of the failure occurring during the change. To do that we need to get the MTTBF (How often is failure occurring?). How long will the change take? Let's pretend the deployment takes 8 hours and the system is failing every 5 hours (1 hour to fix). We use the reliability function to calculate what is the probability of completing the deployment without issue: **exp (- time period in question / MTTBF).** The probability that it survives the deployment without failure is 20%, thus there is an 80% probability we will fail during the deployment.

If we have an error budget of 5 hours, we have until the about the 36th hour mark until we breach. Now let's factor in that it takes 4 hours to roll back the deployment (the probability of it failing during the rollback is 56%) and fix the issue so if things go wrong.

Ways of looking at it:

1. There is an 80% chance we will waste 12 hours and eat into 80% of our error budget. By the next mark we will be over our error budget so worst case is 15-17 hours.
2. The probability of 2 sequential deployments failing is 64%. There is a 64% probability we incur 8 hours of downtime or 5.12 hours of downtime.
3. …. Many other ways

What can we do:

1. Run parallel deployments.
2. Increase the MTTBF.
3. Shorten the rollout.
4. Shrink the rollback.