FEMP Re-tuning Challenge
Frequently Asked Questions

1. **With regard to realizing utility savings, what is required for a building to be eligible to undergo re-tuning through the Re-tuning Challenge?**

   Answer: In order for a building to be eligible to undergo re-tuning through the FEMP Retuning Challenge, energy cost savings realized by the re-tuning effort must directly benefit the federal government.

2. **Is 50001 Ready a requirement to participate in the Challenge?**

   Answer: 50001 Ready is not a requirement to participate in the Challenge or for the site to be selected, but it is preferred by FEMP. 50001 Ready provides a great framework for having a very successful energy management program and re-tuning should be a part of your overall energy management program. While sites have achieved savings from active energy management programs, some have realized even more savings when they incorporate 50001 Ready. FEMP is happy to provide free training and support to become 50001 Ready and be recognized by the Department of Energy (DOE).

3. **What are some factors that make a building a good candidate for re-tuning?**

   Answer: Some of the general considerations factors for a good candidate building for re-tuning include:
   1. Large buildings (at least 100,000 sf; 300,000+ sf ideal)
   2. BAS is in good working condition.
   3. Cost savings improve with higher baseline energy cost
   4. High baseline energy consumption relative to similar buildings in similar climates
   5. Digital controllers, actuators, thermostats
   6. Modern BAS (updated within the last 5-8 years)
   7. Control of systems like chiller, boiler, lighting via BAS
   8. Variable speed pumps and fans
   9. Single-duct AHUs
   10. Presence of dedicated outdoor air-handling systems (DOAS)
   11. Not a “mission critical” building
   12. Little to no previous attempt at re-tuning or control-centered energy savings projects
   13. No ongoing ESPCs
   14. No ongoing BAS upgrades

4. **Is this open to US territories?**

   Answer: Yes, the Re-tuning Challenge is open to US territories.

5. **Is there only one re-tuning study available per federal agency?**

   Answer: There is not a limit on the number of sites per agency. However, the overall number of sites that apply, along with the diversity of these sites, will be taken into account

in the site selection process. A limited number of sites will be selected based on their ability to support the Re-tuning Challenge requirements.

Another consideration in the selection process is which sites present the best opportunities not only for re-tuning, but also for reaching out within that agency and the local agencies that are able to participate in training. What FEMP is trying to do with this is not just re-tune one or two buildings at each site and walk away and we're done. It's to provide the maximum outreach and training to federal agencies. As we evaluate sites for selection, we will also look at the ability for a site to host other agencies' staff for training. This capability is highly preferred. With this effort we are trying to not just re-tune buildings, but to re-tune, train, educate and pass knowledge to all agencies whether their sites are selected or not.

6. **Is there a quota on the number of sites being chosen for this challenge?**

   Answer: The number of sites selected will be based on the available funding. At this time we anticipate up to 5 sites will be selected.

7. **About how many buildings do you plan on studying during this challenge?**

   Answer: The number of sites selected will be based on the available funding. At this time we anticipate up to 5 sites will be selected. For each site selected two buildings will receive re-tuning. One building at the selected site will receive re-tuning from the FEMP Re-tuning Team. Additionally, representatives from the site/agency who attended the re-tuning training session will perform a re-tuning assessment at another building on the site or within the agency. The FEMP Re-tuning Team will provide ongoing (remote) assistance with this task as necessary, including review of recommendations and proposed control strategies.

8. **Are mission critical buildings eligible? Is a building with "mission critical" spaces eligible?**

   Answer: Mission critical buildings are not eligible for the Retuning Challenge. However, a building that has "mission critical" spaces can be eligible and will be evaluated on a case-by-case basis. An example consideration is whether the air handling units that serve the non-mission critical spaces do or do not also serve the "mission critical" spaces.

9. **How does re-tuning differ from retro-commissioning?**

   Answer: Think of re-tuning as a subset of re- and retro-commissioning to consider when you have building automation systems. Retro-commissioning and re-commissioning can encompass a lot of procedures. They may include HVAC, lighting and other control systems, water or even envelope systems. When we hear of re-commissioning we tend to think of that in terms of functional testing to make sure that all of the equipment is working correctly. Not all buildings need that level of commissioning. There may be cases where buildings really need to have a re-commissioning focus or retro-commissioning type focus on the controls systems. In those cases, that's where re-tuning is applicable.

10. Will re-tuning be performed onsite?

Answer: Yes, the site visit and training will include identification of controls improvement measures geared toward energy savings. The FEMP Re-tuning Team will engage the site staff in discussions about each of the identified measures and settle on a list of measures that all interested parties agree should work in principle and that the site is interested in pursuing. Progress on implementing these measures may take place during the site visit.

11. Will the re-tuning activity involve making adjustments to the HVAC systems?

Answer: Yes, re-tuning will involve making adjustments to the HVAC systems. Because adjustments will be made to the HVAC system, it is critical that (at a minimum) the vast majority of the systems and components (VFDs, sensors, actuators) must be in proper working order. We do not want to encounter a situation where we visit a building where the sensors are not reliable and things are overridden because they have not been commissioned or require repair.

12. Also, does re-tuning include looking at water?

Answer: We will look at water if at least hourly interval metering data is available. This level of data is necessary to identify any problems or opportunities.

13. Do we need to request interval data from our utility? Or can we fill out the form allowing FEMP to get the interval data directly from the utility?

Answer: If the building does not have an advanced meter with interval data available, this data will need to be obtained from the servicing utility. If there is a process by which we can gain access to the utility meter data, we can perform the tasks required to get the interval data.

14. Is remote access to the BAS required?

Answer: No, remote access is not a requirement. Remote access is desirable. Without remote access, re-tuning becomes an iterative process. A representative from the site will need to provide the required data. This process requires more communication by email which takes more time and effort than data acquisition via remote access.

15. Does re-tuning get into the programming of the BAS or are just set points, setbacks, etc. looked at?

Answer: Re-tuning involves getting into the programming which is why a BAS contractor may be required to get involved, especially if it is a BAS for which we do not have in-house expertise in programming. (Note: We do have expertise for many common systems like JCI and Niagara.)

16. When implementing multiple new reset strategies for a building, how do you determine which is the most effective, and how do you structure the programming to prevent different strategies from competing in a negative feedback loop?

Answer: It's a building specific determination of which one is going to be more effective and there is no easy answer to that part of it. Regarding the question of competing measures, the example that comes to mind is supply air temperature reset and static pressure reset can be two resets that effect the amount of cooling that is delivered to a zone. There may be the potential for those to compete with each other. The best way to avoid them getting into any kind of competition is to just use different feedback variables for those two resets if they are both being implemented. Then there are sequences that you see where the same feedback variable is being used and in that case there is a staging approach where you require a higher threshold for the same variable to go into the next one. For example, static pressure reset might be the first stage for 30% average cooling demand then as you get up to 50% you start to do a higher temperature reset or something of that nature. Generally we use different feedback variables for anything that might compete but it's not very common that we run into that.

17. Will HVAC design deficiencies be examined?

Answer: Building Re-tuning focuses on operations-based efficiency improvements. If during the re-tuning process potential HVAC design deficiencies are identified, the re-tuning team will make these observations known to the host site.

18. Do buildings need to be federally owned (as opposed to leased)? What makes a site eligible?

Answer: There can be a number of arrangements regarding ownership. The key here is that the federal agency realizes the cost savings from re-tuning. So if the federal site owns the building and is paying the utilities, then clearly they would receive the benefit from the energy savings. The other case would be a leased building and [or] a full service lease where utilities are paid [as part of the lease], unless there's a way to get some sort of equal lease payment consideration, then the answer is no, the government would not receive the benefit and the site would not be eligible. But if they are in an arrangement where the government is paying the utility bill, then yes, that site would be eligible.

19. If meters are installed but not working on a site, can your team help with troubleshooting broken meters?

Answer: This is beyond the scope of the FEMP Re-tuning Challenge so troubleshooting broken meters or other equipment is not covered.

20. We have a number of PM/ maintenance contractors, and some of them have installed their own BAS systems at a few sites. Are these sites eligible?

Answer: As long as PNNL can be granted access to the BAS at least while onsite, and that someone (either PNNL, the maintenance contractor, or a separate controls contractor) can be authorized to make control changes to the BAS as part of this process, the sites can be eligible.

21. We have staff from several sites who are interested in attending a re-tuning training session. What training will be available?

Answer: For selected sites a re-tuning training session will be scheduled concurrently with the FEMP Team site visit. Other staff personnel can attend this meeting. Also, re-tuning resources including training materials are available at https://buildingretuning.pnnl.gov. Training materials include an online interactive training that has been developed for both large and small commercial buildings. Also, a large building classroom training session that was recorded is available.

22. Question: Is knowledge and/or implementation of the 50001 Ready approach required for participation?

Answer: No. The 50001 Ready approach is a self-guided approach for facilities to establish an energy management program and self-attest to the structure of ISO 50001, a voluntary global standard for energy management systems in industrial, commercial, and institutional facilities. Additional information on the 50001 Ready approach is available at energy.gov/50001Ready.

23. Question: Where can I find out more about Re-tuning?

Answer: Building Re-tuning resources, including training materials, are available to all at https://buildingretuning.pnnl.gov. Training materials include an online interactive training that has been developed for both large and small commercial buildings. Also, a large building classroom training session that was recorded is available.

24. Question: Will sites that apply 50001 Ready receive added site selection consideration?

Answer: Yes. While applying 50001 Ready is not a requirement for re-tuning or selection as part of the Re-tuning Challenge, sites that have applied or agree to apply 50001 Ready will be given a priority. 50001 Ready support is available at no cost through FEMP.