

Emergency Power Generation Processes, Issues and Considerations

a report by

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There are so many detail items to remember when you are building new or doing a remodel of an existing structure it is hard to keep on track with all of them. The requirements for installation of new generators and boilers can often be forgotten in the fury of development of a project. One of the roles I have in our current project in Boise is the management of the Environmental Protection Agency and the Idaho Department of Environmental Quality permitting requirements. My Vice President in Missoula called these challenges "growth opportunities". I think I grew about a foot and a half with this challenge.

In Idaho, as in most states, there is a requirement to permit a project that has an impact on the pollution capacity of the facility. With our project we eliminated a 750Kw generator run on diesel, and added two new 1,200Kw diesel generators to manage the new hospital emergency power load. As part of the project we also increased the boiler horsepower from 350bhp to 450bhp on one boiler and increased from 800bhp to 1000bhp on two others. These changes in pollution creating devices created the requirement to permit the project through the Idaho Department of Environmental Quality and the US Environmental Protection Agency (EPA). Idaho is unique in that the state department on environmental quality manages these projects. Most states use the EPA directly to permit.

We have gone through this process in the past on our campus on smaller projects that required installation of new generators for emergency power, but nothing to the scale we have on our current project. We knew the permitting requirements from past experience and started on compliance early to meet time lines. I am glad we did because timelines for completion of the permit application and review process could easily delay a project. It is imperative that you file for a permit to construct as early as possible to avoid project delays and fines for non-compliance.

The complexity of this process is typically out of the reach of most facility managers. I throw my hat in

that ring. The application process mirrors most governmental regulation in its complexity and the vagueness of its codes and compliance needs. Trying to read and research the requirements for the application is frustrating and time-consuming. In many cases one code requirement references another code, and another. Some references are not even in the same document. They often use cryptic language and acronyms known only by an elite few degreed environmental technicians. I think the EPA has actually developed an acronym for an acronym.

At some point most give up and hire an outside consultant to help them through this process. Get the cheque book out friend, if you think it is expensive to hire a plumber you are not going to believe what an experienced consultant in environmental permitting is going to cost. The cost will vary with the size and scope of the work but it is expensive and should be included in the budget for the project. Make sure the work is identified in construction documents as something that needs to be completed before any of the new equipment is tested and put online. There are fines for non-compliance along with bad press for your facility.

Two major events need to take place at the beginning of the construction process. First is the need to apply for a pre-construction permit. Not an easy chore if you don't even know what the generator brand and size is going to be yet, let alone what boiler burner or boiler installation you are going to use. It isn't unusual at the beginning of a project to have this type information still in the design phase and unavailable. The second event that needs to occur is the application for a tier I or tier II permit. You will need to maintain this even after the construction is complete on a project.

We took the smart path on this project and contracted out the work for permit processing and the air modeling needed to support the application. It was a larger process than I could have imagined in the beginning. The data needed to apply include all the pollution sources on your campus, height of stacks, hours of run time, type of fuel, content and

grade of fuels, maps and other specific data about your operations. It is simply amazing how much information is required to complete the 16-page application.

There are specific reporting requirements for this permit that you need to take into consideration in project development as well. The reporting requirements can include:

- The amount of fuel consumed when running on natural gas and oil.
- The quality of the fuel will need to be verified; usually a low sulphur fuel will be mandated.
- Opacity testing of discharge stacks will be needed when running on oil.
- Verification of maintenance and repairs of equipment will need to be documented.
- Make sure you take these requirements into account when designing your system to automate as much as possible with the project.

The NFPA continues to increase run times for testing. Local power grids recommend we shift load to generators when peak loads are in place, and the EPA wants to reduce allowable run times for generators. To strengthen communities we need to bring health services to them. If the public has to travel out of the city for healthcare the reduction of pollution generated from a facility is offset by pollution generated from the fuel consumed to travel to a facility regulated out of the urban core. As cities grow the need to reduce pollutants drives decision-making and standards. As the standards grow to manage the change they continue to escalate healthcare costs and restrict site locations. I feel the balance is somewhere in the middle.

Our final draft is currently in with the state for approval. We needed to do the modeling twice because of a first draft requirement on the generator testing limiting our run time to four hours. We are now required by the Joint Commission to run our generators for four hours under load every three years. The tight timeline would not allow us to bring the generator up to temperature and cool it down in this time frame so

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Green buildings are a hot topic in construction today. Everyone wants to protect our environment and manage buildings efficiently in support of clean air and water. I support the EPA vision and mission in this effort 100%. I would love to see a diverse multi-disciplined group review the process to make it more efficient and effective. The application process along with supporting documentation is so difficult it must be outsourced for completion. Reporting requirements are confusing and overbearing. Both take time and money away from healthcare for compliance.

Along with this process, other global issues need to be discussed to set a direction for the future. There are conflicts between EPA and the National Fire Protection Agency's (NFPA's) 110 directions on managing generators. The EPA would like to run a generator only when normal power is unavailable.

we had to go back with new modeling to verify the pollutant level for a six-hour run period. We should be fine once we get all the final reviews done. We will not be allowed to run our generators for peak load reduction due to the restrictions on total run times. We started this process almost a year ago and are almost complete. As you can see, timing is important. With the early start on this we met the permit timelines and will be able to keep this process from impacting our project completion dates.

Permit applications, processes and reporting requirements will vary with each state and project. My advice is to start early and involve a professional contract service to help you, budget money for the work in your project budget and make sure you include the cost of equipment to comply with reporting needs in your budget as well. ■