Interview with Kenny Floyd Transcript

Virgil

Since the time you have been at the NIH, what are the most notable or significant advancements that were made at the NIH in regard to conserving energy?

Kenny

So first and foremost, the focus on energy conservation started in the early 2000s, when we started to look at energy saving performance contracts that the Department of Energy had put out and starting to use those to make upgrades to our facilities. A lot of the improvements that were made initially were changes to the lighting, going from one kind of light to another, and I think initially we were going from T-8s to T-5s. Then, later on, we went to LED lights.

But all that required some changes to not just the light tubes, but the ballast within the lights themselves, which was good in a way too, because some of the ballast that we had still had PCBs and we had to remove those and dispose of those properly.

Virgil

Right.

Kenny

So that was probably the top, most significant thing that happened, but as we started looking at other things that we needed to be doing to reduce energy use around the campus, we started looking at whether or not we could use energy setbacks. We started implementing that in some of the buildings. Most of our buildings are on the Building Automation System (BAS), and all the settings for the spaces come from the BAS, so you don't control the temperature in your area, it's controlled from the BAS.

We figured that people aren't here at nighttime for the most part and that we could set back the buildings at night time and then ramp them back up in the morning. The only problem with that, some of our older buildings didn't come back as quickly as we were hoping. Trying to set that so that it would end up being back to temperature by the time people started arriving was a little bit challenging and probably delayed or slowed down that process for a while.

More recently, some of the things that have been going on: we've been focusing more on some of our major facility systems, specifically the chillers at our Central Utility Plant. We've been going to variable frequency drives, which allows us to only ramp up part of the chiller and not have the chiller turned on completely. We have 6000-ton chillers and, you can imagine, once you've used up the capacity that you have online, you got to start up another 6000 tons. That's a significant amount of energy that's being used! Now with the variable frequency drives, you can bring another 100 tons or 200 tons or whatever we actually need versus using the full capacity of the chiller, which is what we had to do previously.

Another significant thing that happened a few years ago: we built this chilled water storage system. It's a large tank across from building 13 and 29 that stores chilled water and the value there is twofold. It helps to minimize the number of chillers that we have to have online at one point in time [and] it also gives us some flexibility in that we can just draw more of that chilled water that's already stored instead of starting up another chiller. That provides flexibility, but then we can also maximize the generation of chilled water at nighttime when the energy is cheaper for NIH and save money by generating chilled water at nighttime versus during the day.

I know it's a mouthful and that's a lot. You might have some questions, so I'll wait and see.

Virgil

So just for edification: the chilled water that we're talking about is for climate control and cooling buildings and things like that?

Kenny

Yeah. All the buildings here at NIH are on steam and chilled water. Steam gets circulated into all the buildings, and then in the buildings [themselves], they get circulated within these lines into the various areas, and there's both steam and chilled water. They use those together to regulate what the temperature is in a space.

Virgil

It's pretty cool. I don't think it's always been like that. Did they change over from more conventional methods at some point?

Kenny

They've been using that method since I've been here at NIH and I came in the 80s.

Virgil

Gotcha.

Kenny

[laughter] Just goes to show you how old I am, that might have been before you were born!

Virgil

[laughter] It definitely was!

So that's pretty interesting: you have these different things that you're doing with chillers with the cold water and then also the different changes that you made with lighting systems for energy conservation. What were some of the drivers for this? Were they culture shifts that made this happen or was it "the technology's new" or was it "the policy says we have to do it"?

Kenny

Some of the drivers were actual laws that were put into effect by Congress. Some of them [were] executive orders that were promoting [for] us to be more efficient in our buildings. Another part of it too was just financial for NIH. We need to find ways to minimize the cost to the NIH of operating these facilities, which [is] pretty significant. They support all the research that's done here. They're very important and therefore they have to be maintained and be ready for the research that's being conducted.

Virgil

Gotcha. Have you seen that any of these changes have brought about any further changes? So let's say we make this shift with the lighting or with the chillers and it has an impact on our energy efficiency. Does that have a snowball effect in any areas: "Oh, OK, now that we've made progress here, it's easier to make progress in other environmentally-focused areas" or is it more of piecemeal, piece-by-piece progress?

Kenny
It's really been more of a piecemeal thing. But the program that we have in place right now is: we do an assessment of 25% of all of our buildings each year. We assess them for opportunities to do additional energy improvement projects whether we're replacing motors or we're replacing condensate return or whatever it is that that they might do. But they do go through with a DOE contractor that will identify the things that we might be able to do. [Then] our energy engineer consults with some of the other people on the Division of Facility Stewardship and they decide which projects might make sense.

Sometimes we'll do projects that may not have as big of a return, but they have other value to us. Either they fix something that needs to be fixed, even though it's not going to give us a big energy return, we'll might still do that. Or in the case of solar panels, when we first started putting in some of these solar panels around the campus, the return on investment (ROI) was not very high. Typically, the ROI that we're looking for these contracts is less than 10 years.

Greg Leifer always tried to do much better than that. [laughter] So he always tried to get the biggest bang for the buck for NIH and I think he's done a fantastic job. We're fortunate to have somebody with so much experience. He worked for the electric company before coming to NIH and got pretty seasoned over there before he came here, and he's done a lot of good work here.

Virgil
That's awesome, that's good to hear and that's encouraging to have people like that on our team!

Kenny
Yeah, it is.

Virgil

With these building assessments, do you know around what time we started doing those? Era-wise.

Kenny

We started off [in] the early 90s [by] doing facility assessments to look at where we needed to do improvement projects or replacement projects, assessing our buildings to determine where we needed to put our repair and improvement dollars to fix the building.

So, you can either maintain the building with maintenance dollars or you can do replacement when things get so bad that they need to be replaced instead of just repaired again. Because if you're repairing it three times in one year, it's probably not worth repairing. We probably should just go ahead and replace it.

That's how that started. Then when the energy requirements came along, we just kind of rolled that into these other assessments that were already being done. We hired an architecture-engineering firm to do the assessments and they also used some of our maintenance staff to identify things that they need to incorporate into their assessment.

Virgil
Gotcha. That’s cool the hear!

Kenny
Yeah.

Virgil
So then, we've made a lot of this progress and I'm pretty sure it's had a pretty good impact on the NIH. How has the climate of energy efficiency challenges changed since you've come in till now?

Kenny
You're not old enough to remember when Jimmy Carter was the president, although he's still alive. [laughter] But he was famous for being president when we had the gasoline crisis in the United States where we had long lines to get gas for your car. You could only get gas on the odd or even month, depending on what your license plate had on it. You couldn't go to the gas station every day, and even if you did, the lines were so long that it was really hard to get your vehicle gassed up.

Therefore people really conserved a lot in the 70s to try to reduce the amount of fuel that they need. At that time, our cars were not as energy efficient as they are today. They weren't even close! [laughter]

Virgil

Right! [laughter]

Kenny
If you use the word gas hogs, yeah, that's probably what we mainly had, gas hogs. But because of that gas crisis, it was not just gasoline, it was a fuel crisis. So it also translated into buildings and the federal government was trying to reduce the energy use in their buildings [so] they would turn the temperature down. Jimmy Carter had a fireside chat where he had his sweater on and he talked about, "people just need to buckle down and wear sweaters and not keep their temperatures as high as maybe they'd like to".

The same kind of thing was how we started off. We were trying to encourage people to reduce on site. We were looking at doing setbacks but the way the systems were set up and the way we operate at NIH was not very conducive to really incorporating those in a manner that could be successful. On top of that, [with] some of our buildings, the envelope of the building was not sealed as well as maybe some homes are today.

If you build a home today, they sealed the home fairly well, but back when these buildings were built, the envelope wasn't as critical. In fact, they probably wanted it to breathe some, so they probably figured a little bit of leakage is good back when they first built. That presented a lot of problems with trying to get temperatures back to where they need to be if we did setbacks at night. We did a number of setbacks in a variety of buildings and most of those ended up getting reversed. Later on, we were able to more successfully do that, but we also had to make some improvements to some of our systems in order to be able to more successfully implement that.

Other challenges were just getting people to get on board with the concept. NIH is a facility that has had a lot of funding and they never worried about trying to be as efficient as they could be. The focus was always on trying to get the most research accomplished to get to the end goal of solving whatever, whether it's AIDS or cancer or whatever the affliction was. That was always the primary goal and still is one of the primary goals.

But we also need to think about the energy conservation and being more efficient in the way we do things and not polluting the environment so much, because the pollution ends up being part of why we have to do all this research.

Virgil
Exactly, yeah. It comes back around.

Kenny
Yep.

Virgil
Would you say that would be probably the most significant current challenge that the NIH has with energy efficiency, just trying to get that culture of efficiency instilled, or would you say it's something else?

Kenny
I think what we need to be focused on right now is doing more with less. What I mean by that is that instead of just buying everything that we need and having plenty of stuff on hand in stock and then maybe not using it and turning around and throwing it out at a later date, we need to focus on more [of] a just-in-time approach. You purchase what you absolutely need and you have the ability to bring in more as you need to, but you don't have everything on hand taking up space and possibly going out of date before you could actually use it.

That, and more attention to proper management of our materials, especially our chemicals. We're doing a decommissioning program right now where we're spending upwards of 5 to 10 million a year for cleaning up contaminants from our labs. Now, a lot of it is historical that's been there for a while, but there's some buildings where the building isn't that old and yet we've still got the same kind of issues going on. So, making sure things get cleaned up when they get spilled and trying to minimize the amount of really toxic materials that we have in our sites.

Virgil
Gotcha. So it sounds like, for the most, part as time has gone on, we've gone from a big macro scale of trying to make buildings more efficient all that sort of stuff, and we still have that now. But we're also zooming into the individual: how can labs, how can specific researchers, improve their energy efficiency. Moving forward into the future, how do you think NIH can even further improve in that sector? What do you think [are] probably the key areas to hit?

Kenny
Well, I think we're gonna have to look more closely at our research operations and look for ways to reduce the energy use. If you go in probably 90% of the labs on campus right now, you walk in *any* lab, you're going to find almost every piece of equipment turned on. You're going to find that there might be one or two pieces of equipment in use and the rest of them are just on.

Virgil

Mm-hmm.

Kenny
We shouldn't be operating in that fashion. I think it's been done out of convenience and maybe to help speed up their ability to keep the research moving, which I can understand. But at what cost? The cost of doing that impacts the NIH and the one thing I always hear every year is: “Man, we really need more money!” That's what we need – we need more money. Well, if we're more efficient with the money we have, we can do a lot more.

Virgil
Absolutely.

Whenever I go into these interviews, firstly, I'm always impressed by the information that the person has to share, and this is the same in this case. But also I recognize that I don't know very much and so there are certain questions that I don't know to ask. So is there anything else that I haven't hit on at all in this that you would like to share or any final points you'd like to put in there?

Kenny
One of the things that we need to keep in mind is that energy conservation isn't the other person's job. We all have a role and we need to take it seriously. We can't just expect that, "oh, well, that Division of Environmental Protection, they're going to manage that" or "the Division of Facility Stewardship, they're going to manage that, and I don't have to worry about it".

Everybody needs to be a participant in this and recognize that they have a role. It's just like the research that goes on here: it's not all done by the people in the labs. Yeah, it is done by the people in the labs, but there are other people supporting them to get that research done. If they didn't have the people from Radiation Safety supporting them, or from Occupational Safety, or from the Waste Group that collects all of the waste and takes it away so they don't have to worry about it - they couldn't get their job done. They couldn't do it if they didn't have the housekeepers!

We all have a role to play and we all need to participate in trying to make things more efficient across the organization from an energy perspective and also from the ability to get the job done.

Virgil
That was excellent.