New Dimensions in Maintenance Zone Design

By Matt Adams, P.E.

The "zone" as a service delivery design concept is alive and well. Within the industry, at least half of our peers have experimented with the application or adopted it completely. The benefits are numerous, not the least of which is the pairing of specific resources within close proximity of specific service portfolios. Typically, the overall campus or institution is systematically cordoned into relatively equal sized tracks and then adjusted, balanced, and rationalized into maintenance service zones. I've discussed the standardized method of designing zones in previous issues. When the zones are designed to be of similar size in terms of workload, the implementation becomes somewhat easier (repetitive) and the measurement is also easier, at least from a comparative benchmark perspective. However, most of the benefits of implementing zones can be achieved without homogenous design. In fact, a potentially powerful application is available using varied and unique zone designs within the overall campus portfolio.

Any zone design effort is based on the business rules or design constraints imposed by the design team. New and progressive design rules offer a wider spectrum of benefits for zone implementation. Forgoing some of the logistical benefits due to layout features of the campus, a transition zone can still be introduced. A transition zone or extended commissioning zone is one where management desires to completely change the stewardship philosophy of the new facilities coming online. As opposed to coasting during the first five years of ownership with little or no maintenance, testing, or active warrantee management, this strategy aggressively manages these new assets. The term, "extended commissioning" is perfectly suited to this philosophy. In fact, a zone where new facilities are placed for the first five years could certainly be called the extended commissioning zone, or ECZ. Despite the lack of a normal zone perimeter with easy to recognize boundaries and small commutes, other equally or more powerful service goals are incorporated. Over time, the option to transition facilities from the ECZ to more conventional zones remains.

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PRIMARY DRIVERS

Zones do not necessarily have a physical shop within one of the component facilities. Once again, if there are compelling reasons to create a zone, the benefits can be realized without the logistical feature. Furthermore, a zone might not even have customer service as its primary focus! Before we sound like we have forgone the mantra of our business, let's make it clear that one or more other zones or service centers must prioritize customer service. Given this, there are other beneficial zone designs that provide very real returns. For example, the Enterprise Zone is one that many peers have been experimenting with lately. This zone represents another dimension of measurement and design. In this case, the system and its boundaries and controllability represent a zone. Based in the central power plant, chiller/boiler plant, or BMS hub, this zone is designed to maximize the stewardship and efficiency of the campus heating, cooling, and even electrical supply systems. Contrasting with more traditional organizational designs, this zone is expanded to reach from the purchased utility supply all the way into the buildings to the diffuser or light fixture. This asset stewardship prioritized zone is complimented by a more traditional customer service zone to insure both needs are met. This zone is measured more like a rural utility electrical cooperative. System performance and energy management are given top priority and the zone is designed specifically to achieve this. The logistical travel time parameters have little to do with this design. Organization and system control are the primary drivers.

So far, we have covered new zone designs that are based on either 1) asset types or as in the example given new facilities and 2) system control and boundaries. Each is a distinct departure from the traditional approach of putting

a composite mix of trades up close and personal with the customers. In other words, we have two new (for a total of three) zone design strategies: the original customer service; a stewardship design; and finally a system control design. Utilizing all three zone designs within a campus might seem potentially confusing. Who does what when, and who is in charge? These are all good questions and the trade staff will is correct to ask them. Peer best practice has shown that mixed zone designs require a high degree or policy and procedure coupled with a slow, transparent, and thoughtful implementation schedule.

IMPLEMENTATION

Next the enterprise zone is designed and implemented. In this case, much of the maintenance specifications will like exist, at least partially. The expanded control of this zone requires a cultural change within the plant department and between the traditional HVAC, Controls, and Central Plant service units. From the staff perspective, the most work is in the area of policy and procedure. This department must establish clear protocols with the work control desk as well as the traditional customer service zones. There is heavy emphasis on technology. Most importantly, this zone is measured more aggressively than the others in that it must generate extended life cycles and reduced net energy usage per square foot on campus.

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Finally, the customer service zones are designed by incorporating traditional business rules as much as possible. The composition of these zones is likely lighter due to the addition of the new zone designs that incorporate some behind-the-scenes service load.

Many campuses are difficult to split into equal maintenance zones. The geography of the campus can create difficulties. In addition, master plans sometimes create diverse mixes of facilities in close proximity, rendering the isolation of similar facility types into a zone very difficult. However, logistical considerations are only one of at least three valuable zone design philosophies that are available under current best practices.

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