The Next Level in Project Prioritization - Getting Beyond Point Scoring

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Project prioritization is central to effective asset management. As Figure 1 demonstrates, an effective project prioritization system neither originates projects nor manages them to effective completion. Rather, the system directs which projects will be selected for funding, thereby sending key signals in both directions as to what projects are needed and what performance is critical. That is, it tells the engineers and managers who develop possible projects (options) which project attributes are valued in the funding process, and it tells the engineers and managers who execute the funded projects what performance (in terms of cost and asset performance) was critical to the decision to fund them.

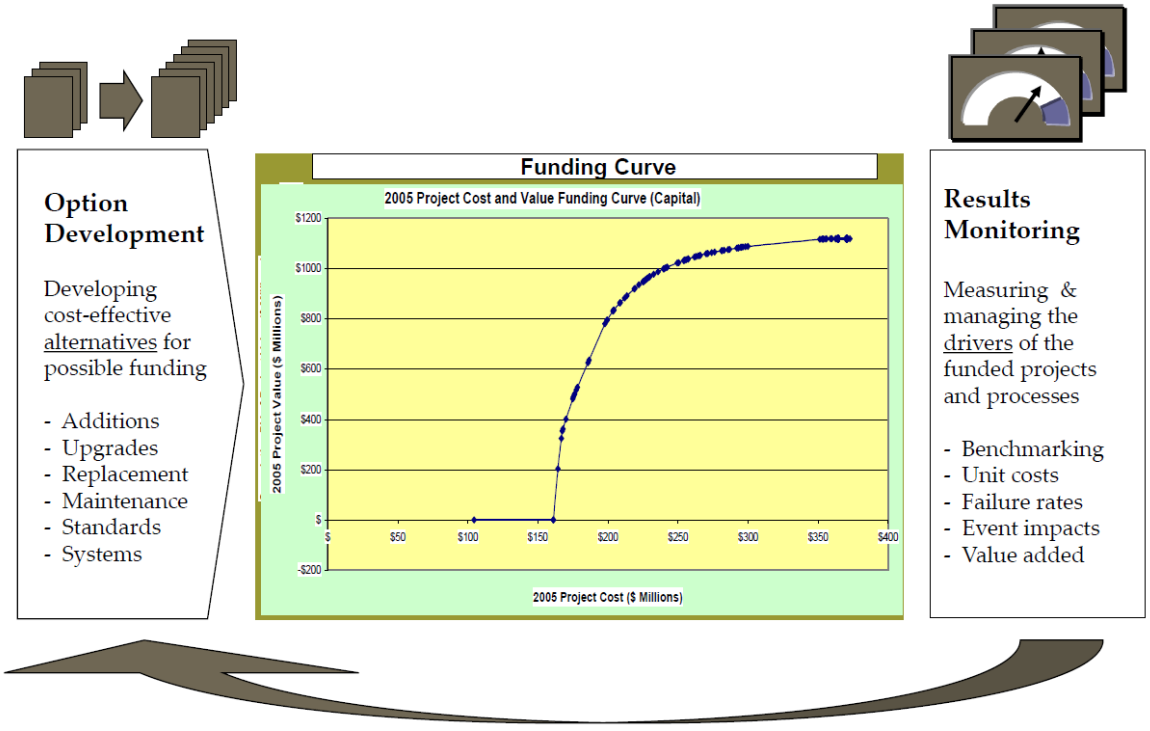

Figure 1

Some utilities do not use a project prioritization system. They simply use a set of rules, such as planning guidelines or standards, to suggest which projects should be done - and hope they have enough money and resources to do the work. Informally, if a project seems too large to do quickly, it is phased in over an arbitrary five- or ten-year timeframe. For most utilities, this approach will not work. Instead, utilities need a system to allocate scarce resources (funds and crews) over competing potential projects. Sometimes this is done within project categories, such as load relief (capacity) and reliability (outages, interruptions). But they still need a decision about how to fund the big categories or so-called 'buckets'. One way to prioritize projects either within buckets or across them is by point scoring. A team of subject matter experts and executives look at the various projects and give them a score that will assist in a forced ranking of the projects. This allows the group's judgments (and sometimes emotions) to be recorded and systematized.

In most cases, only the relative score matters. In some, a score above a certain level is judged to be 'Must Do'. (This language, used throughout this article, assumes the points are scores, i.e., the higher the better, rather than rankings, where a 1 means most important). This leads to one of the main problems in such systems

Problem #1: Too large a percentage of the capital budget gets labeled 'Must Do'.

Instead, when using the right discipline, only about half of a typical utility capital budget should be labeled "Must Do (in the sense that there really is no choice but to do the work). This capital budget 'Must Do' category would include three or four types of spending:

- Connecting the customer to the grid (not including grid reinforcement that can go with it)
- Mandated relocation of facilities due to road moves, etc.
- Restoration of failed equipment necessary to restore service
- Projects that are specifically required for safety or code compliance

The last item is where most companies go wrong. They try to label as 'mandatory' those projects that have a general statistical influence on safety or reliability, as opposed to projects that deal with specific cases of workplace safety or clear code violations.

The second main problem with point scoring systems is that they are designed only for ranking projects against one another…

Problem #2: Point scoring does not determine the right level of spending.

A utility can determine the right level of overall spending in a number of ways, including benchmarking, trending, and modeling the full value of the project. We have addressed the details of these three methods elsewhere. However, for the purposes of this article, suffice it to say that companies usually use point scoring to take a fixed amount of money and decide how to allocate it among competing projects. There is no way to assert that a project with a score of say, 50, should be funded and one with less than 50 should not be - unless you make the points mean more than just points. So it is important to make the points become estimates of value to the utility. More on this later.

To compound things, different panels of judges will award different scores.

Problem #3: Point scoring can be as arbitrary as a beauty contest.

One way to avoid this problem is to provide some guidelines for the scoring. For example, say a reliability project only gets a score of '50' if it reduces SAIFI by .005, a '60' for .01, and so on. This moves point scoring a step closer to what is needed, which is an estimate of the benefit to the utility. Companies can actually make good estimates of the value of avoiding an outage, a customer interruption, or a megawatt hour of outage at peak. Then, with good estimates of a project's impact on these measures, the company can arrive at an estimate of overall value to the utility. A new panel of subject matter experts would probably approach the problem like the scientific method: start with the provided estimates and then look for evidence to support or contradict the given numbers. This hints at the fourth major problem with point scoring.

Problem #4: Opinions are like noses- everybody has one.

One of the good things about point scoring is that it engages everyone in a dialogue about what they think is important. It allows people to air their opinions and prejudices, tell war stories, threaten to quit if they don't get what they want, warn that the sky is falling, and so on. Unfortunately, they rarely have a structure for resolving any differences of opinion. If, instead, the discussion is structured around obtaining better estimates of key parameters, like the impact of a project on SAIDI or SAIFI, or the value to the company of improving its SAIDI or SAIFI, or the cost of the project, or the cost of the maintenance to be done or to be avoided, then people can state their opinions in a more constructive form. Instead of saying, "I think this project is vitally important, and I would hate to be an

engineer/manager/executive of this company if we don't do this project", the project's proponent says, "I think the failure rate for this equipment is higher than what has been estimated so far, and here is why I think that." The latter is, at least in principle, verifiable and certainly well-structured and quantified. It is fact-based. The former is like a nose.

Speaking of affinities to the scientific method points to another flaw in point scoring…

Problem #5: Point scoring systems have no built-in tendency to get better.

Being fact-based does not just sound good. It has science on its side. Like scientists who claim to stand on the shoulders of giants before them, the utility that uses fact-based decision-making gives itself the chance to get better each time it uses the method. We refer to this as 'sharpening the pencil.' If a program to replace failure-prone equipment is based on a failure rate of 1 percent, the utility has to replace 100 units to avoid one failure. If by sharpening the pencil the managers are able to identify a sub-population that fails at 5 percent, then a failure can be avoided by replacing only 20 units, i.e., a savings of 80 percent! That is progress, and it happens best when you get people focused on the facts that drive the decisions. Notice that the key to the progress is to identify rigorous logical relationships that can be quantified with estimates that can be refined over time.

Problem #6: Point scoring ignores existing rigorous, logical relationships.

Companies use project prioritization to try to achieve an optimal allocation of resources. The presumption is that different projects provide different 'bang per buck,' and, like the graph in Figure 1, there are diminishing returns to funding projects. Therefore, you want to make sure you do the big-payback projects first and consider deferring (or not doing at all) the low-impact projects. Most companies do a reasonable job of prioritizing work within the various silos or buckets of funding, but may not properly allocate across different categories, e.g., load relief versus reliability. The customer doesn't care whether his or her lights are out because of a tree falling on the line or a line jumper burning up because of overload. There might be a difference in whether the outage happens at peak or during a storm, but that can be part of the estimate of value. The point is, there is a sound way to quantify the value of avoiding outages due to either type of spending. That's also true for generation plant forced outages versus transmission line capacity. Do any of the customers affected by the August 14 outage care whether it was the lack of availability at a particular plant or the capacity of transmission lines around one city? There is a way to make the two types of investment comparable, but with point scoring, how do you ensure that logical rigor is enforced?

Of course, a company could devise a point scoring approach that is logically rigorous, and wind up - as recommended - with a system that assigns the points based upon rigorous estimates of the chain of causality between the expenditure of project cost and the achievement of project benefit to the company. In the approach that we have used with many clients, we do this by making dollar estimates of the value to the company of various streams of benefits. (Alternatively, you can think of the dollars as various rigorously assigned points). By bringing all benefits back to dollar estimates of value to the company, we also facilitate the comparison of value across business units, which points to another drawback of point scoring…

Problem #7: Point scoring must be redone when you add categories or business units.

Two kinds of optimization typically must take place in project prioritization. The first is optimizing within a category, such as ranking feeder improvement projects. This can often be done in terms of a common metric for the category, such as customer minutes of interruption. For example, you can rank feeder improvements according to which ones yield the highest reduction in customer minutes of interruption per dollar spent.

In the same way, you can rank load-relief projects by the number of megawatts of overload they relieve or, even better, by the expected megawatt hours of overload-related outage they relieve. That could at least be compared with customer minutes of interruption (using average kilowatts per customer). You might still choose to value those outage minutes differently based on a belief that feeder outages are viewed less culpably than substation outages around peak. But then what do you do when you want to compare these projects to other categories like fleet, facilities, and information technology?

And what about comparison to generation or unregulated businesses? With point scoring, you can make those comparisons by facilitating a discussion about the relative importance of different parts of the business. The key word here is 'relative.' When other categories are added, you have to re-do the comparisons. On the other hand, if you go beyond point scoring and develop absolute values for each project, using them to assign relative value both within each category and between categories, then adding another category of projects can be done incrementally without upsetting the existing apple cart, so to speak. There are even more problems with a pure point-scoring approach…

However, these seven problems provide a good flavor for the need to get to the next level of project prioritization - the level beyond mere point scoring of projects. In reaching that next level, you are also closer to the goal of asset management: to

optimize the cost-effectiveness of a company’s investment in assets by utilizing facts and relationships about the performance of those assets.