MANAGING BUILDING DEPARTMENT PERMITTING FOR CUSTOMER SATISFACTION

by Yves Khawam, Ph.D.,

Low interest rates and rapidly rising real property valuations have forced building departments to contend with significant increases in permitting activity, resulting in longer turn-around times for permit issuance. This problem can be addressed by employing a quantitative framework to manage the permitting process so as to minimize the impact on customers.

Surveys consistently indicate that customer satisfaction is based on the quality, consistency and timeliness of review. Quality and consistency are more qualitative in nature and may be gauged by such measures as feedback from customers regarding inconsistencies, feedback from field inspectors regarding items missed on plans and litigation brought against the jurisdiction. Timeliness, however, is not only more easily quantified, but is in fact the key to effective permitting management because any slowdown impacts negatively on both quality and consistency of review. Timeliness may therefore be considered the overarching factor in maximizing customer satisfaction.

Prior to quantifying timeliness, it is important to keep in mind that the issuance of a building permit requires approvals from multiple departments exterior to the building department proper (i.e., zoning, environmental quality, wastewater, flood control and grading). Since each of these departments contributes to timely building permit issuance, they all need to be considered in measuring the permitting process throughput time. For the purposes of this article we will assume that the permitting process proceeds through the various departments in a sequential manner, as this is the case in most jurisdictions.

Metrics

Timeliness in permitting is the amount of time elapsed between permit application and issuance. In order to manage timeliness, we need to identify the following component metrics:

- the plan review workload (in hours) presently in other departments and approaching the building department,
- the plan review workload (in hours) presently out to customers and to be resubmitted with corrections,
- the plan review workload (in hours) presently in the building department, and
- the capacity of staff to execute workload.

These metrics may be further broken down into different types of reviews in order to refine the model (i.e., single-family dwelling, tenant improvements, shell buildings, porch additions). Prior to proceeding, however, we need to establish the amount of time required to complete each review type. This can be accomplished in two ways: plans examiners could be timed executing each type of review or, if there are dedicated plans examiners for general categories of review types, we could divide the total hours worked in one month by the number of reviews conducted and then extrapolate for types. While the latter may not be as precise a measure, it is certainly less obtrusive to the plans examiners and yields sufficiently accurate data for our purpose.

Armed with this information for both the building department and other permitting departments, we are now in a position to evaluate workload within the system as follows.

Workload

AWL_{BD}: actual workload (in hours) present in the building department and subject to department turn-around times

$$AWL_{BD} = [RT_1 \bullet \#RT_1] + [RT_2 \bullet \#RT_2] + \ldots + [RT_n \bullet \#RT_n]$$

HWL_{BD}: horizon work load (in hours) of permitted work approaching the building codes department and subject to other departments' turn-around times

$$HWL_{BD} = [RT_1 \bullet \#RT_1] + [RT_2 \bullet \#RT_2] + \ldots + [RT_n \bullet \#RT_n]$$

Note that each of the permitting departments is able to calculate its own actual workload and horizon workload. Capacity can be measured as follows for each department.

Capacity

NDC_{BD}: net daily capacity (in hours per day) of the building department

NDC_{BD} = [# of technical staff] • *ETJF* (effective time on job factor) • 7.5 hrs/day

where *ETJF* = [52 • 5 (workdays per year) - 11 (holidays) - 15 (vacation) - 5 (sick)] / [52 • 5] = 0.8808

In order to keep this model as simple as possible, queuing theory will be avoided by proposing the following workload capacity model.

Simplified Workload Capacity

$ATAT_{BD}$: actual turn-around time (in days) required to execute workload currently held by the building department $ATAT_{BD} = AWL_{BD} / NDC_{BD}$

$HPTAT_{BD}$: horizon projected turn-around time (in days) of presently permitted work approaching the building department and subject to other departments' or clients' turn-around times

$$HPTAT_{BD} = HWL_{BD} / [(ATAT_{Addr} + ATATZ_{on} + ATAT_{Tech} \ldots) F_{BD}] + RR_{BD}$$

where:

- F_{BD} is a baseline factor (in hrs/day^2) used to have $HPTAT_{BD}$ approximate $ATAT_{BD}$ based on average system capacity loading (this factor needs to be approximated for each participating department), and
- RR_{BD} is a weighted approximation (in days) of work returned to clients for correction based on average number of re-reviews and average amount of time required to execute.

In the interest of keeping this model as simple as possible, limited variability is assumed for turn around times of preceding departments $(HPTAT_{BD})$ because large turn-around variability would require a range of values for F_{BD}. However, this should not be problematic because the principal purpose is to forecast spikes in workload so as to trigger exterior help.

Acceptable Turn-Around Time

An ideal management model of the permitting process would provide for instantaneous service to maximize customer satisfaction. Unfortunately, this is not feasible in the real world because a system with limited resources cannot instantaneously cope with a large spike in workload without experiencing system slowdown. A dwell time cushion is therefore required to moderate workload over a given period. This begs the question of what constitutes acceptable turn-around time.

Most clients might consider acceptable turn-around time to be two days, but this may not be possible in light of available resources. A good approach is to pick a conservative interval—say, ten days—and then proceed to reduce that time period until the limit of the workload capacity model is approached.

Before we proceed, it should be noted that this model assumes that there is a method in place to channel-off excess capacity, either to another jurisdiction through an intergovernmental agreement or to exterior plan review contract services. It must also be stressed that reducing turn-

Building Department Workload Capacity

Days required to execute actual workload

Days required to execute horizon workload

Total BD Active Permits: 473

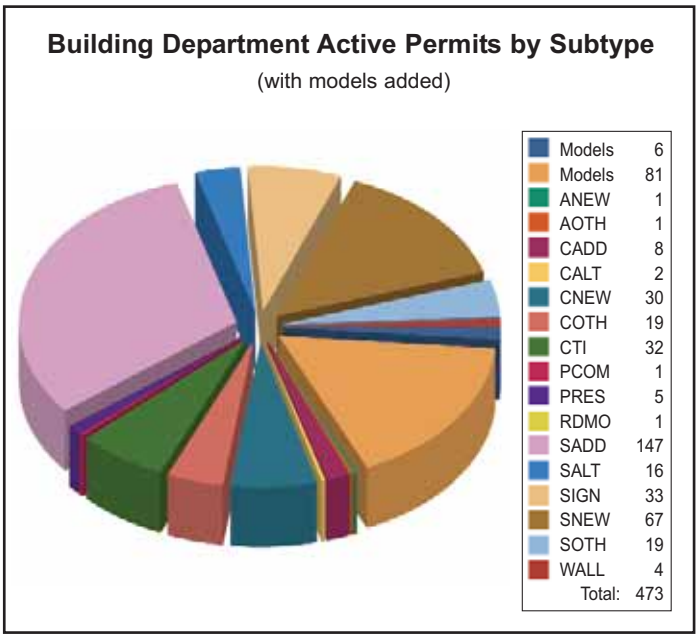
Actual Workload in BD: 1,012 hrs.

Horizon Workload: 540 hrs.

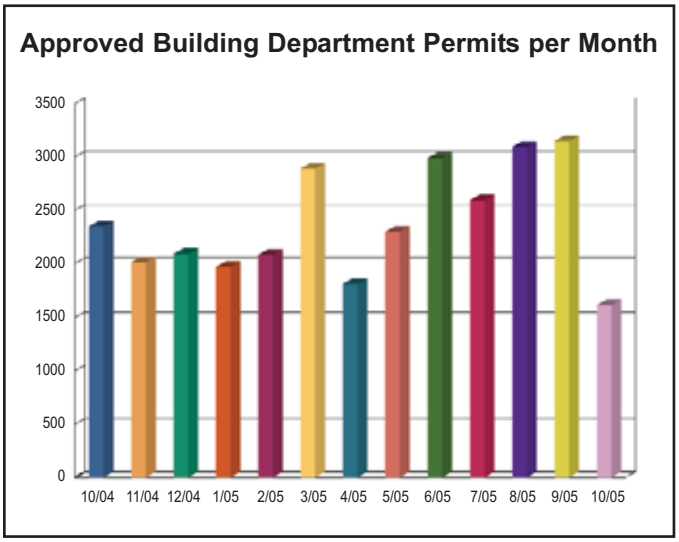
Net Daily Capacity: 103.50 hrs/day for turn-around time of 10 days

To meet turn-around time, 7 SFR plans will need to be sent out for external review.

Workload and capacity indicators.



Average number of building department reviews per plan on permits approved over the past four weeks: 1.55.



Volume and efficiency indicators (does not include building permits issued off model plans).

around time does not necessarily imply that fewer plans will be reviewed in-house because actual review time capacity for in-house staff does not change. What does change is that dwell time is reduced. The benefit is that more time may become available for plan review because examiners will be spending less time responding to phone calls regarding delayed plans and locating missing plans as a result of there being fewer plans within the system at any given moment.

"Timelines may be considered the overarching factor in maximizing customer satisfaction."

To continue, if we start with a 10-day turn-around time period we need to adjust our internal capacity (by hiring more staff) and/or adjust our workload (by sending out the backlog of plans for external review) so that $ATAT_{BD}$ = 10. An appropriate combination of these measures will need to be performed with every adjustment of the targeted turn-around time. Once the desired $ATAT_{BD}$ has been fixed, the infrastructure to manage the permitting system becomes established.

Dashboard Indicators

This model for managing workload capacity assumes that the jurisdiction employs a digitized permitting system to track approval of review types through the various permitting departments. This allows daily reports including the following "dashboard" indicators to be generated:

- the total number of permits in applied status by type (present month, previous month and last year's average month),
- the average number of reviews required for the approval of permits in the previous month,
- $ATAT_{BD}$ and
- $HPTAT_{BD}$.

The former two indicators aid in providing a snapshot of permitting status and the latter two are requisite to meeting established turn-around times by triggering adjustments when $HPTAT_{BD} > ATAT_{BD}$. For example, this would allow the building department to send out plans currently held within the 10-day turn-around time prior to a projected workload spike. Forecasting in this manner helps ensure that workload will not exceed capacity with respect to the established turn-around time and basic customer satisfaction will be met.

This places the department in a strong position to address further process improvement opportunities. The ability to measure workload and compare it to capacity can be also used to secure budgets in line with basic operational requirements and guide decisions about the expansion of in-house capacity so as to reduce the amount of work contracted. ◆

***Yves Khawam, Ph.D.**, is a Master Code Professional and a Building Codes Administrator for Pima County Development Services, Arizona.*