FROM: Brook Brown

RE: Agenda item 15: Diagram comparing parallel plane and segment models

I have attached a very simple diagram to compare the two residential height models under discussion – the parallel plane model and the segment approach. In this diagram, the segment approach divides a lot into three segments, then uses the average of the high and low point per segment to establish the maximum height per segment.

Here are my observations:

The difference in max height under the two models is the hash-tagged area – this area will be greater the steeper the slope of the lot. In other words, the segment approach gives an "adder" per segment, equal to ½ the change in the segment elevations. The current height allowance allows up to an additional 10 feet on the downside wall, so using the segment approach would allow a greater maximum height than the current method on a lot where the change in elevation from the high point to the low point within a segment is greater than 20 feet, unless a cap on the maximum height were applied. In this sense, this model could have worse outcomes than current code, as the current height method caps the "adder" to 10 feet across the entire buildable area.

On the good side, the segment model does cause the building height to more closely mirror the slope of the lot than the current code when the change in elevation across the buildable area is less than 20 feet.

Under the segment model, where the change in elevations does not occur uniformly across a segment, the "adder" for any one segment could be dramatic. In a sense, the parallel plane method "smooths" the changes in elevations as the allowable height is determined by a continuous plane, and not by individual distinct points along the building line of the segment, as in the segment approach, which points could outliers to the overall contours of the lot, and thus could lead to gaming.

The segment approach requires that the segments be defined, (here, by width in feet) and could be seen as very rigid or unworkable on lots where the "segments" do not neatly fit the actual contours of the lot. In parallel plane, the maximum height is a 3-D plane over the buildable area as a whole, there are no rigid segments, and the allowed height is a plane that follows the actual contours of the lot. Doing so can also be seen as setting the maximum height by what is most observed/expected from the standpoint of the adjacent lots.

The segment approach, which sets a maximum height per segment, with three segments, triples the calculations that are done for determining maximum height as compared to the current maximum height under our code.

Bottom line: My conclusion is that the parallel plane does a better job at controlling height and is actually more flexible – no rigid "segment" widths…. Also, the segment approach could be much more complicated/costly to design than parallel plane for a relatively flat lot. **Note:** A

segment concept might be helpful to define when and how much relief might be granted on very steep slopes in a special exception. (Example: If the slope in a given segment "width" has a change in elevation greater than x feet, and would preclude a workable transition (stair) between floors, then an allowance of an added x feet could be applied to allow a transition to the lower segment, but would not be allowed to extend more than x feet of the lower segment width.)

.