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Comment Received From: Luke Morton
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Solar Pool Heating 800_3

Additional submitted attachment is included below.

Dear Commission:
A minor quibble with the CASE report studying pool and spa heating and the corresponding code language.

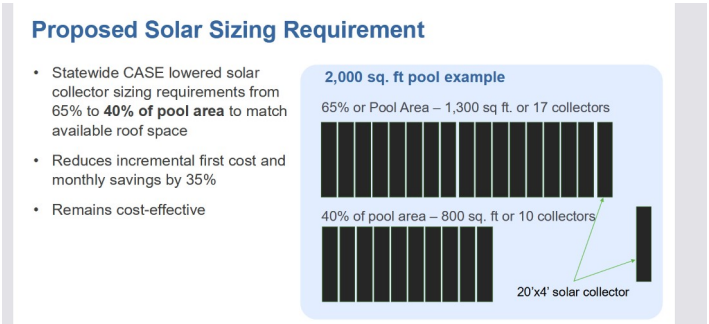
The proposed code (with 2028 amendments) indicates the following:

> **800.3** *[Section 110.4(c)]* **Heating source sizing.**
>
> Heating systems or equipment for *pools* and/or *spas* shall meet one of the sizing requirements of 1 through 5 below:
>
> 1. ***Solar pool heating system.*** A *solar pool heating system* as the primary heating system ~~and~~ with a ~~may have a. T~~ supplemental heater ~~can be~~ of any energy source. ~~with a~~The solar collector surface area ~~that is~~shall be equivalent to the following:
>
> 1.1. For *nonresidential* and *multifamily buildings*, 65 percent or greater of the pool and/or *spa* surface area.
>
> 1.2. For *single-family buildings*, 60 percent or greater of the pool and/or *spa* surface area.

To resummarize the requirements-- the solar pool heating system is to be 60/65% greater than the pool surface area.

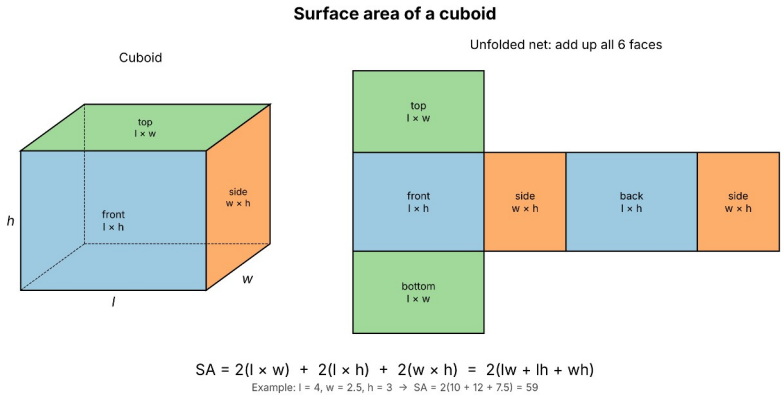
Ok-- CASE Report Presentation on slides 8 and 9





The slides show a retrofit study based on satellite imagery of pool areas as well as subsequent study of the solar pool thermal calculations based on the measurements of pool areas, just for a study of magnitude, which seems like a perfectly reasonable test. The only problem is that I believe it does not correctly apply the code language.

The code clearly says ‘surface area’, am I right? Let’s consider a standard rectangular pool of a constant depth. The surface area of that pool is cuboid, and if I remember my primary schooling, that’s described in the following diagram:



The studies of retrofits seem to indicate that only the <u>top surface</u> of the pool exposed to ambient air was used for the calculation (i.e. ‘pool area’ in plan view), and not the entire exterior surface area of the pool adjacent to ambient air or ground. That would imply that the calculations for solar thermal collectors in the report, as well as their underlying costs are off by at least a factor of 2 (assuming a depth of 0). On the good side, a solar collector system may result in significantly more recovery in the winter months, but perhaps at the cost of possible summertime stagnation, so that will factor into the cost-effectiveness too.

(facepalm)

I sent this comment into the CASE team quite a while back to consider this correction in their report, but it appears that no action was taken. Unless I’m completely understanding what ‘surface area’ means in the code, then I think this means this part of the proposed code requires a re-analysis for cost-effectiveness. Or, the existing 2025 language needs to be changed (not currently in the proposed language) to indicate that the calculation is based on ‘surface area exposed to ambient air’ or something.

Cheers,
(and as CONSOLation, RIP Calcerts)

Luke Morton