

**DOE-2 Articles from the  
*Building Energy Simulation User News***

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**Simulation Research Group  
MS: 90-3147  
Lawrence Berkeley National Laboratory  
University of California at Berkeley  
Berkeley, CA 94720-0001**

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## FLOOR-WEIGHT

How is the "Floor-Weight" calculated for DOE-2.1E?

### Answer

If you mean how should one estimate the input for FLOOR-WEIGHT the canonical answer is to sum the weight of the floor, furnishings, and interior walls and divide by the floor area. Do this for each zone. The units are lb/ft<sup>2</sup> or kg/m<sup>2</sup>. However, FLOOR-WEIGHT is a deprecated feature in DOE-2 and we recommend using the custom weighting factor calculation. To trigger this calculation set the FLOOR-WEIGHT = 0.

## How is Height Determined for Wind-Speed Modification in DOE-2?

How is the space height is determined for calculating the effective wind velocities for computing infiltration and exterior film coefficients. Page 2.88 of the Supplement says that the SPACE keywords Z, VOLUME, and AREA are used. So what happens if you don't use Z, but do have wall heights and volumes and areas? Does it still get the right clues? Our question is how can I give DOE-2 the best handle on heights for spaces to do these calculations most appropriately?

For instance, what would tell DOE-2 that this attic's roof is at a 8 ft plus height?

```

$--- ATTIC/ROOF ZONE ---$
ATTIC-1 =SPACE          A = 1200.00 V = 2419.94 FLOOR-WEIGHT = 0
                        INF-METHOD = S-G
                        FRAC-LEAK-AREA = ATVENTA
                        ZONE-TYPE = UNCONDITIONED T=(TAVE TIMES 1.1) ..

$ROOF DIMENSIONS GO HERE...$
FRONT-RF-1 = ROOF      H = 31.18 W = 18.25 AZ = 180 TILT = 18.40
                        CONS = INS-RF-1 OUTSIDE-EMISS = 0.90 ..
FRONT-RF-1F = ROOF    H = 3.46 W = 18.25 AZ = 180 TILT = 18.40
                        CONS = INS-RF-1F OUTSIDE-EMISS = 0.90 ..
GABLE-1 = ROOF        H = 5.76 W = 17.32 AZ = 90 TILT = 90.00
                        CONS = NONINS-WL ..

REAR-RF-1 = ROOF      LIKE FRONT-RF-1 AZ = 0 ..
REAR-RF-1F = ROOF    LIKE FRONT-RF-1F AZ = 0 ..
GABLE-2 = ROOF        H = 5.76 W = 17.32 AZ = 270 TILT = 90.00
                        CONS = NONINS-WL ..
```

And that this living zone space has an 8 ft height?

```

$---MAIN CONDITIONED ZONE---$
HOUSE-1 = SPACE      A = FLRAREA
                    V = FLRAREA TIMES 8.00
                    S-C = COND-1 ..
```

```

$--- WALLS ---$
$ THE FRAMING AND NON-FRAMING FACTORS ARE MULTIPLIED BY THE WALL DIMENSIONS$
WALL1-1 =E-W          H=8.00  W=35.00  AZ=0  CONS=INS-WL-FWI-1 ..
DOOR-1-1 =DOOR        H=6.67  W=1.50  CONS=DR-CONS-1 ..
WIN-1-1 =WI           H=4.00  W=20.09 Y=2.67 G-T=GT_WIN-1
OVERHANG-A = 7.46  OVERHANG-B = 0.00  OVERHANG-W = 35.00  OVERHANG-D = 0.00
OVERHANG-ANGLE = 90  SETBACK = 0.33  S-SCH = FENS-1 ..

WALL2-1 =E-W          H=8.00  W=35.00  AZ=90  CONS=INS-WL-FWI-2 ..
DOOR-2-1 =DOOR        H=6.67  W=1.50  CONS=DR-CONS-1 ..
WIN-2-1 =WI           H=4.00  W=20.09 Y=2.67 G-T=GT_WIN-1
OVERHANG-A = 7.46  OVERHANG-B = 0.00  OVERHANG-W = 35.00  OVERHANG-D = 0.00
OVERHANG-ANGLE = 90  SETBACK = 0.33  S-SCH = FENS-1 ..

WALL3-1 =E-W          H=8.00  W=35.00  AZ=180  CONS=INS-WL-FWI-3 ..
DOOR-3-1 =DOOR        H=6.67  W=1.50  CONS=DR-CONS-1 ..
WIN-3-1 =WI           H=4.00  W=20.09 Y=2.67 G-T=GT_WIN-1
OVERHANG-A = 7.46  OVERHANG-B = 0.00  OVERHANG-W = 35.00  OVERHANG-D = 0.00
OVERHANG-ANGLE = 90  SETBACK = 0.33  S-SCH = FENS-1 ..

WALL4-1 =E-W          H=8.00  W=35.00  AZ=270  CONS=INS-WL-FWI-4 ..
DOOR-4-1 =DOOR        H=6.67  W=1.50  CONS=DR-CONS-1 ..
WIN-4-1 =WI           H=4.00  W=20.09 Y=2.67 G-T=GT_WIN-1
OVERHANG-A = 7.46  OVERHANG-B = 0.00  OVERHANG-W = 35.00  OVERHANG-D = 0.00
OVERHANG-ANGLE = 90  SETBACK = 0.33  S-SCH = FENS-1 ..

$-- CEILING HAS 15% FRAMING FACTOR, 10% RAFTERS OTHER IS R. CANS/ BOXES ETC--$
CEIL-1 = INTERIOR-WALL  TILT=0  CONS= CEIL-INS-1  AREA = CLNFRF  TIMES 1200.00
NEXT-TO= ATTIC-1 ..

```

## Answer

The wind-speed from the weather tape is multiplied by a correction factor <WSTMUL>.

$$\langle WSTMUL \rangle = (TP1 * (BLDHT) / 32.8) ** TP2 / (WSTP1 * (WSHGT / 32.8) ** WSTP2)$$

$$BLDHT = \langle ZZ \rangle + \langle ZVOL \rangle / \langle ZFLRAR \rangle$$

where

```

TP1 is DOE2 command, keyword: BUILDING-LOCATION, TERRAIN-PAR1
TP2 is DOE2 command, keyword: BUILDING-LOCATION, TERRAIN-PAR2
WSTP1 is DOE2 command, keyword: BUILDING-LOCATION, WS-TERRAIN-PAR1
WSTP2 is DOE2 command, keyword: BUILDING-LOCATION, WS-TERRAIN-PAR2
WSHGT is DOE2 command, keyword: BUILDING-LOCATION, WS-HEIGHT or WS-HEIGHT-LIST
<ZZ> is DOE2 command, keyword: SPACE, Z
<ZVOL> is DOE2 command, keyword: SPACE, VOLUME
<ZFLRAR> is DOE2 command, keyword: SPACE, AREA

```

So DOE-2 does not use wall heights (or Zs) in calculating the local wind-speed. For a multi-story building it is important to use the SPACE Z in the input in order to get the right correction factor.