

### i. Cost Effectiveness –

| a            | b                    | c  |                    | e  |                    | f  | g                                 |
|--------------|----------------------|--|--------------------|--|--------------------|--|-----------------------------------|
| Measure Name | Measure Life (Years) | Additional Costs <sup>1</sup> – Current Measure Costs (Relative to Basecase) |                    | PV of Additional <sup>3</sup> Maintenance Costs (Savings) (Relative to Basecase) |                    | PV of <sup>4</sup> Energy Cost Savings – Per Proto Building (PV\$) | LCC Per Prototype Building        |
|              |                      | (\$)   |                    | (PV\$)   |                    |  | (\$)                              |
|              |                      | Per Unit (/ft2)  | Per Proto Building | Per Unit   | Per Proto Building |  | (c+e)-f<br>Based on Current Costs |
| CZ1          | 15                   | \$0.61   | \$10,310           | NA   | NA                 | \$22,696   | (\$12,386)                        |
| CZ2          | 15                   | \$0.03 - \$0.31  | \$510 - \$5240     | NA   | NA                 | \$8,288  | (\$7,778) - (\$3,048)             |
| CZ3          | 15                   | \$0.03 - \$0.31  | \$510 - \$5240     | NA   | NA                 | \$5,620  | (\$5,110) - (\$380)               |
| CZ4          | 15                   | \$0.03 - \$0.31  | \$510 - \$5240     | NA   | NA                 | \$6,750  | (\$6,750) - (\$6,240)             |
| CZ5          | 15                   | \$0.03 - \$0.31  | \$510 - \$5240     | NA   | NA                 | \$8,078  | (\$7,568) - (\$2,838)             |
| CZ6          | 15                   | \$0.03 - \$0.31  | \$510 - \$5240     | NA   | NA                 | \$14,520   | (\$14,010) - (\$9,280)            |
| CZ7          | 15                   | \$0.03 - \$0.31  | \$510 - \$5240     | NA   | NA                 | \$12,187   | (\$11,677) - (\$6,947)            |
| CZ8          | 15                   | \$0.03 - \$0.31  | \$510 - \$5240     | NA   | NA                 | \$13,641   | (\$13,131) - (\$8,401)            |
| CZ9          | 15                   | \$0.03 - \$0.31  | \$510 - \$5240     | NA   | NA                 | \$6,505  | (\$5,995) - (\$1,265)             |
| CZ10         | 15                   | \$0.03 - \$0.31  | \$510 - \$5240     | NA   | NA                 | \$7,581  | (\$7,071) - (\$2,341)             |
| CZ11         | 15                   | \$0.03 - \$0.31  | \$510 - \$5240     | NA   | NA                 | \$6,810  | (\$6,300) - (\$1,570)             |
| CZ12         | 15                   | \$0.03 - \$0.31  | \$510 - \$5240     | NA   | NA                 | \$6,824  | (\$6,314) - (\$1,584)             |
| CZ13         | 15                   | \$0.03 - \$0.31  | \$510 - \$5240     | NA   | NA                 | \$7,091  | (\$6,581) - (\$1,851)             |
| CZ14         | 15                   | \$0.03 - \$0.31  | \$510 - \$5240     | NA   | NA                 | \$7,983  | (\$7,473) - (\$2,743)             |
| CZ15         | 15                   | \$0.03 - \$0.31  | \$510 - \$5240     | NA   | NA                 | \$8,722  | (\$8,212) - (\$3,482)             |
| CZ16         | 15                   | \$0.61   | \$10,310           | NA   | NA                 | \$29,208   | (\$18,898)                        |
| CZ1 - HRR    | 15                   | \$0.61   | \$10,310           | NA   | NA                 | (\$1,700)  | \$10,150                          |
| CZ2 - HRR    | 15                   | \$0.61   | \$10,310           | NA   | NA                 | \$7,736  | \$2,574                           |
| CZ3 - HRR    | 15                   | \$0.61   | \$10,310           | NA   | NA                 | \$9,178  | \$1,132                           |
| CZ4 - HRR    | 15                   | \$0.61   | \$10,310           | NA   | NA                 | \$9,102  | \$1,208                           |
| CZ5 - HRR    | 15                   | \$0.61   | \$10,310           | NA   | NA                 | \$8,288  | \$2,022                           |
| CZ6 - HRR    | 15                   | \$0.61   | \$10,310           | NA   | NA                 | \$16,825   | (\$6,515)                         |
| CZ7 - HRR    | 15                   | \$0.61   | \$10,310           | NA   | NA                 | \$16,651   | (\$6,341)                         |
| CZ8 - HRR    | 15                   | \$0.61   | \$10,310           | NA   | NA                 | \$11,318   | (\$1,008)                         |
| CZ9 - HRR    | 15                   | \$0.03 - \$0.31  | \$510 - \$5240     | NA   | NA                 | \$12,126   | (\$11,616) - (\$6,886)            |
| CZ10 - HRR   | 15                   | \$0.03 - \$0.31  | \$510 - \$5240     | NA   | NA                 | \$2,985  | (\$2,475) - \$2,255               |
| CZ11 - HRR   | 15                   | \$0.03 - \$0.31  | \$510 - \$5240     | NA   | NA                 | \$2,711  | (\$2,201) - \$2,529               |
| CZ12 - HRR   | 15                   | \$0.61   | \$10,310           | NA   | NA                 | \$9,317  | \$993                             |
| CZ13 - HRR   | 15                   | \$0.03 - \$0.31  | \$510 - \$5240     | NA   | NA                 | \$2,984  | (\$2,474) - \$2,256               |
| CZ14 - HRR   | 15                   | \$0.03 - \$0.31  | \$510 - \$5240     | NA   | NA                 | \$2,634  | (\$2,124) - \$2,606               |
| CZ15 - HRR   | 15                   | \$0.03 - \$0.31  | \$510 - \$5240     | NA   | NA                 | \$4,135  | (\$3,625) - \$1,105               |
| CZ16 - HRR   | 15                   | \$0.61   | \$10,310           | NA   | NA                 | \$6,902  | \$3,408                           |

Notes:

1. Energy benefits estimated from simulation have been reduced by one-sixth, to account for the fact that some costs were gathered for 0.67 and some for 0.65, but energy simulation was based on 0.67. PV savings have been shown to be proportional to change in reflectance.
2. For CZ 9-11 and 13-15, the incremental cost range is \$0.03/ft<sup>2</sup> (BUR) to \$0.31/ft<sup>2</sup> (coatings), with SPR (\$0.16/ft<sup>2</sup>) and Mod Bit (\$0.25/ft<sup>2</sup>) falling in between. The modified bitumen roofs and coatings are not cost effective for CZ10-11 and 13-15.
3. John Goveia of Pacific Roofing Consultants informed me the Mod Bit is fairly common for High-Rise Residential.
4. For CZ6-8 the proposed reflectance of 0.65 is cost effective.

Recommendation:

1. Add a requirement of 0.65 for HRR for CZ6-8
2. Increase requirement to 0.65 to CZ9.
3. Leave CZ10, 11, 13, 14 and 15 unchanged from T24-2008 levels (0.55 aged reflectance).