

**AMERICAN REALTY CAPITAL TRUST V, INC.
SUPPLEMENT NO. 5, DATED JUNE 11, 2013,
TO THE PROSPECTUS, DATED APRIL 4, 2013**

This prospectus supplement, or this Supplement No. 5, is part of the prospectus of American Realty Capital Trust V, Inc., or the Company, dated April 4, 2013, or the Prospectus, as supplemented by Supplement No. 1, dated April 10, 2013, or Supplement No. 1, Supplement No. 2, dated April 25, 2013, or Supplement No. 2, Supplement No. 3, dated May 10, 2013, or Supplement No. 3, and Supplement No. 4, dated June 7, 2013, or Supplement No. 4. This Supplement No. 5 supplements, modifies or supersedes certain information contained in the Prospectus, Supplement No. 1, Supplement No. 2, Supplement No. 3 and Supplement No. 4 and should be read in conjunction with the Prospectus, Supplement No. 1, Supplement No. 2, Supplement No. 3 and Supplement No. 4. This Supplement No. 5 will be delivered with the Prospectus, Supplement No. 1, Supplement No. 2, Supplement No. 3 and Supplement No. 4. Unless the context suggests otherwise, the terms “we,” “us” and “our” used herein refer to the Company, together with its consolidated subsidiaries.

The purpose of this Supplement No. 5 is solely to correct printer errors made in connection with certain dollar amounts relating to acquisition fees and acquisition expenses contained in Supplement No. 4 pertaining to the “Use of Proceeds” and “Management Compensation” tables and the footnotes thereto.

Prospectus Summary

The table under the question “How will you use the proceeds raised in this offering?” on page 8 of the Prospectus is hereby replaced in its entirety with the following disclosure.

| | Minimum Offering (Not Including Distribution Reinvestment Plan) | | Maximum Offering (Not Including Distribution Reinvestment Plan) | |
|---|---|---------|---|---------------------|
| | Amount | Percent | Amount | Percent |
| “Gross offering proceeds | \$ 2,000,000 | 100.0% | \$ 1,700,000,000 | 100.0% |
| Less offering expenses: | | | | |
| Selling commissions and dealer manager fee | \$ 200,000 | 10.0 | \$ 170,000,000 | 10.0 ⁽¹⁾ |
| Organization and offering expenses ⁽²⁾ | \$ 30,000 | 1.5 | \$ 25,500,000 | 1.5 |
| Amount available for investment | \$ 1,770,000 | 88.5% | \$ 1,504,500,000 | 88.5% |
| Acquisition: | | | | |
| Acquisition fees | \$ 18,000 | 0.9 | \$ 15,300,000 | 0.9 |
| Acquisition expenses | \$ 18,000 | 0.9 | \$ 15,300,000 | 0.9 |
| Amount invested in properties ⁽³⁾ | \$ 1,734,000 | 86.7% | \$ 1,473,900,000 | 86.7%” |

Estimated Use of Proceeds

The table under the section “Estimated Use of Proceeds” on page 64 of the Prospectus is hereby replaced in its entirety with the following disclosure.

| | Minimum Offering (Not Including Distribution Reinvestment Plan) | | Maximum Offering (Not Including Distribution Reinvestment Plan) | |
|---|---|---------|---|---------------------|
| | Amount | Percent | Amount | Percent |
| “Gross offering proceeds | \$ 2,000,000 | 100.0% | \$ 1,700,000,000 | 100.0% |
| Less offering expenses: | | | | |
| Selling commissions and dealer manager fee ⁽¹⁾ | \$ 200,000 | 10.0 | \$ 170,000,000 | 10.0 ⁽⁹⁾ |
| Organization and offering expenses ⁽²⁾ | \$ 30,000 | 1.5 | \$ 25,500,000 | 1.5 |
| Amount available for investment ⁽³⁾ | \$ 1,770,000 | 88.5% | \$ 1,504,500,000 | 88.5% |
| Acquisition:⁽⁴⁾ | | | | |
| Acquisition fees ⁽⁵⁾ | \$ 18,000 | 0.9 | \$ 15,300,000 | 0.9 |
| Acquisition expenses ⁽⁶⁾ | \$ 18,000 | 0.9 | \$ 15,300,000 | 0.9 |
| Amount invested in properties ^{(7)(8)*} | \$ 1,734,000 | 86.7% | \$ 1,473,900,000 | 86.7%” |

The last two sentences of footnote 5 to the table under the section “Estimated Use of Proceeds” on page 65 of the Prospectus are hereby replaced in their entirety with the following disclosure.

“Assuming that we incur leverage up to 45% of the aggregate fair market value of our assets, as set forth in our investment guidelines, the minimum and maximum acquisition fees would be \$32,727 and \$27,818,182, respectively. Assuming we incur leverage up to 300% of our total “net assets” (as defined in our charter and in accordance with the NASAA REIT Guidelines) as of the date of any borrowing, which is generally expected to be approximately 75% of the cost of our investments, the minimum and maximum acquisition fees would be \$72,000 and \$61,200,000, respectively.”

Footnote 6 to the table under the section “Estimated Use of Proceeds” on pages 65 – 66 of the Prospectus is hereby replaced in its entirety with the following disclosure.

“(6)Acquisition expenses include both third party acquisition expenses and insourced acquisition expenses. Aggregate acquisition expenses include legal fees and expenses, travel and communications expenses, costs of appraisals, accounting fees and expenses, title insurance premiums and other closing costs and miscellaneous expenses relating to the selection, evaluation and acquisition of real estate properties, whether or not acquired. We may directly pay third parties for third party acquisition expenses, and our advisor or its affiliates may incur expenses for third party services, in each case from time to time. We will reimburse our advisor for any such third party acquisition expenses that it incurs. Additionally, for certain services provided directly by our advisor or its affiliates, we will pay insourced acquisition expenses incurred related to selecting, evaluating and acquiring assets on our behalf, including legal advisory expenses, due diligence expenses, personnel expenses, acquisition-related administrative and advisory expenses, survey, property, contract review expenses, travel and communications expenses and other closing costs, as applicable, regardless of whether we acquire the investment. We will fix our insourced acquisition expenses on an annual basis to 0.5% of the purchase price of our acquisitions (including our pro rata share of debt attributable to such our acquisitions) and 0.5% of the amount advanced for a loan or other investment (including our pro rata share of debt attributable to such investment), subject to a reduction in such expenses for the following year in light of our annual market check. Furthermore, we will limit our third party acquisition expenses (including both those third party acquisition expenses that we pay directly and those third party acquisition expenses for which we reimburse our advisor) on an annual basis to 0.5% of the purchase price of our acquisitions (including our pro rata share of debt attributable to such our acquisitions) and 0.5% of the amount advanced for a loan or other investment (including our pro rata share of debt attributable to such investment). Total acquisition fees and expenses (including any financing coordination fee) for our portfolio will not exceed 4.5% of the contract purchase price of our portfolio (including our pro rata share of debt attributable to our portfolio) or 4.5% of the amount advanced for all loans or other investments (including our pro rata share of debt attributable to such investments). Assuming that we incur leverage up to 45% of the aggregate fair market value of our assets, as set forth in our investment guidelines, the minimum and maximum aggregate acquisition expenses would be \$32,727 and \$27,818,182, respectively. Assuming we incur leverage up to 300% of our total “net assets” (as defined in our charter and in accordance with the NASAA REIT Guidelines) as of the date of any borrowing, which is generally expected to be approximately 75% of the cost of our investments, the minimum and maximum aggregate acquisition expenses would be \$72,000 and \$61,200,000, respectively.”

Management Compensation

The third column under the section “Acquisition Fees” on pages 13 and 89 of the Prospectus is hereby replaced in its entirety with the following disclosure.

“\$18,000/\$15,300,000 (or \$32,727/\$27,818,182 assuming we incur our expected leverage of 45% set forth in our investment guidelines or \$72,000/\$61,200,000 assuming the maximum leverage of approximately 75% permitted by our charter)”

The third column under the section “Acquisition Expenses” on pages 14 and 90 of the Prospectus is hereby replaced in its entirety with the following disclosure.

“\$9,000/\$7,650,000 (or \$16,364/ \$13,909,091 assuming we incur our expected leverage of 45% set forth in our investment guidelines or \$36,000/ \$30,600,000 assuming the maximum leverage of 75% permitted by our charter). Such estimates reflect only the compensation payable to our advisor and its affiliates for insourced acquisition expenses.”
