

Edgar Filing: PIONEER MUNICIPAL HIGH INCOME TRUST - Form N-Q

PIONEER MUNICIPAL HIGH INCOME TRUST  
Form N-Q  
September 28, 2012

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UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
Washington, D.C. 20549

FORM N-Q

CERTIFIED SHAREHOLDER REPORT OF REGISTERED  
MANAGEMENT INVESTMENT COMPANIES

Investment Company Act file number 811-21321

Pioneer Municipal High Income Trust  
(Exact name of registrant as specified in charter)

60 State Street, Boston, MA 02109  
(Address of principal executive offices) (ZIP code)

Terrence J Cullen, Pioneer Investment Management, Inc.,  
60 State Street, Boston, MA 02109  
(Name and address of agent for service)

Registrant's telephone number, including area code: (617) 742-7825

Date of fiscal year end: April 30

Date of reporting period: July 31, 2012

Form N-Q is to be used by management investment companies, other than small business investment companies registered on Form N-5 (239.24 and 274.5 of this chapter), to file reports with the Commission, not later than 60 days after close of the first and third fiscal quarters, pursuant to Rule 30b1-5 under the Investment Company Act of 1940 (17 CFR 270.30b-5). The Commission may use the information provided on Form N-Q in its regulatory, disclosure review, inspection, and policymaking roles.

A registrant is required to disclose the information specified by Form N-Q, and the Commission will make this information public. A registrant is not required to respond to the collection of information contained in Form N-Q unless the Form displays a currently valid Office of Management and Budget ("OMB") control number. Please direct comments concerning the accuracy of the information collection burden estimate and any suggestions for reducing the burden to Secretary, Securities and Exchange Commission, 450 Fifth Street, NW, Washington, DC 20549-0609. The OMB has reviewed this collection of information under the clearance requirements of 44 U.S.C. ss. 3507.

<PAGE>

ITEM 1. Schedule of Investments.

Pioneer Municipal  
 High Income Trust  
 NQ| July 31, 2012

Ticker Symbols: MHI

Schedule of Investments | 7/31/2012 (unaudited)

| Principal<br>Amount<br>USD (\$) | S&P/Moody's<br>Rating  | Value        |
|---------------------------------|--|--------------|
|                                 | TAX EXEMPT<br>OBLIGATIONS - 123.0%<br>of Net Assets  |              |
|                                 | Alabama - 2.4%   |              |
| 2,500,000                       | B-/B2 Alabama Industrial<br>Development Authority<br>Solid Waste Disposal<br>Revenue, 6.45%, 12/1/23 | \$ 2,464,250 |
| 1,000,000                       | NR/NR Huntsville-Redstone<br>Village Special Care<br>Facilities Financing<br>Authority, 5.5%, 1/1/28 | 1,011,260    |
| 4,500,000                       | NR/NR  | 4,486,590    |

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|              |         |  |              |
|--------------|---------|--|--------------|
|              |         | Huntsville-Redstone<br>Village Special Care<br>Facilities Financing<br>Authority, 5.5%, 1/1/43                     | \$ 7,962,100 |
| 984,000      | NR/Baa3 | Arizona - 0.7%<br>Pima County Industrial<br>Development Authority,<br>6.75%, 7/1/31                                | \$ 986,686   |
| 950,000      | NR/Baa3 | Pima County Industrial<br>Development Authority,<br>7.25%, 7/1/31  | 954,399      |
| 500,000      | NR/Baa2 | Yavapai County Industrial<br>Development Authority,<br>6.0%, 8/1/33  | 522,420      |
|              |         |  | \$ 2,463,505 |
| 3,000,000    | NR/A1   | California - 11.8%<br>Abag Finance Authority<br>for Nonprofit Corp.<br>Revenue, 5.75%, 7/1/37                      | \$ 3,275,730 |
| 5,100,000    | B-/NR   | California County<br>Tobacco Securitization<br>Agency Revenue, 5.125%,<br>6/1/38                                   | 4,207,551    |
| 1,000,000    | NR/NR   | California Enterprise<br>Development Authority<br>Recovery Zone Facility<br>Revenue, 8.5%, 4/1/31                  | 1,157,380    |
| 3,000,000    | BB/NR   | California Statewide<br>Communities<br>Development Authority,<br>7.25%, 10/1/38 (144A)                             | 3,189,000    |
| 568,006(a)   | NR/NR   | California Statewide<br>Communities<br>Development Authority<br>Environmental Facilities<br>Revenue, 9.0%, 12/1/38 | 5,305        |
| 5,150,000(b) | AA+/Aaa | Golden State Tobacco<br>Securitization Corp., 7.8%,<br>6/1/42  | 5,473,832    |
| 7,000,000(b) | AA+/Aaa | Golden State Tobacco<br>Securitization Corp.,<br>7.875%, 6/1/42  | 7,444,290    |
| 7,885,000(c) | AA-/WR  | Lehman Municipal Trust<br>Receipts Revenue, RIB,<br>10.94%, 9/20/28 (144A)   | 9,925,559    |
| 2,000,000    | B-/Caa1 | Tobacco Securitization<br>Authority of Northern<br>California Revenue,<br>5.375%, 6/1/38                           | 1,616,020    |
| 3,000,000    | BB+/B3  |  | 2,398,920    |

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|                                 |                       |   |                            |
|---------------------------------|-----------------------|---|----------------------------|
|                                 |                       | Tobacco Securitization<br>Authority of Southern<br>California, 5.0%, 6/1/37   | \$ 38,693,587              |
| 2,000,000                       | BBB+/NR               | Colorado - 1.0%<br>Colorado Health Facilities<br>Authority Revenue,<br>5.25%, 5/15/42                                     | \$ 2,059,500               |
| 1,000,000                       | NR/NR                 | Kremmling Memorial<br>Hospital District<br>Certificate of Participation,<br>7.125%, 12/1/45                               | 1,116,020<br>\$ 3,175,520  |
| 1,000,000                       | NR/NR                 | Connecticut - 6.2%<br>Hamden Connecticut<br>Facility Revenue, 7.75%,<br>1/1/43  | \$ 1,099,690               |
| 10,335,000(d)                   | AAA/WR                | Lehman Municipal Trust<br>Receipts Revenue,<br>11.665%, 8/21/35   | 14,157,916                 |
| 5,000,000                       | B/NR                  | Mohegan Tribe of Indians<br>Gaming Authority, 6.25%,<br>1/1/31  | 5,002,500<br>\$ 20,260,106 |
| 5,000,000                       | BBB/Baa1              | District of Columbia -<br>3.5%<br>District of Columbia<br>Tobacco Settlement<br>Financing Corp., 6.5%,<br>5/15/33         | \$ 5,456,050               |
| Principal<br>Amount<br>USD (\$) | S&P/Moody's<br>Rating |   | Value                      |
| 6,000,000                       | BBB/Baa1              | District of Columbia -<br>(continued)<br>District of Columbia<br>Tobacco Settlement<br>Financing Corp., 6.75%,<br>5/15/40 | 6,119,940<br>\$ 11,575,990 |
| 1,500,000                       | NR/NR                 | Florida - 7.4%<br>Alachua County Health<br>Facilities Authority<br>Revenue, 8.125%,<br>11/15/41                           | \$ 1,731,210               |
| 1,500,000                       | NR/NR                 | Alachua County Health<br>Facilities Authority<br>Revenue, 8.125%,<br>11/15/46   | 1,725,420                  |

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|              |  |               |
|--------------|--|---------------|
| 1,500,000    | NR/NRBeacon Lakes Community<br>Development District<br>Special Assessment, 6.9%,<br>5/1/35       | 1,538,385     |
| 500,000      | NR/Ba3Capital Trust Agency<br>Revenue, 7.75%, 1/1/41   | 555,380       |
| 1,000,000    | NR/NRFlorida Development<br>Finance Corp.,<br>Educational Facilities<br>Revenue, 6.0%, 9/15/40   | 1,055,770     |
| 2,000,000    | NR/NRFlorida Development<br>Finance Corp.,<br>Educational Facilities<br>Revenue, 7.625%, 6/15/41 | 2,309,780     |
| 1,000,000    | NR/NRFlorida Development<br>Finance Corp.,<br>Educational Facilities<br>Revenue, 7.75%, 6/15/42  | 1,127,020     |
| 1,000,000(b) | NR/WRHillsborough County<br>Industrial Development<br>Authority Revenue, 8.0%,<br>8/15/32        | 1,435,190     |
| 2,260,000    | NR/NRLiberty County<br>Subordinate Revenue,<br>8.25%, 7/1/28                                     | 2,290,691     |
| 2,500,000    | A-/A2Miami-Dade County<br>Florida Aviation Revenue,<br>5.5%, 10/1/41                             | 2,850,075     |
| 1,000,000    | NR/NRSt. Johns County Industrial<br>Development Authority<br>Revenue, 5.25%, 1/1/26              | 949,150       |
| 2,000,000    | NR/NRSt. Johns County Industrial<br>Development Authority<br>Revenue, 5.375%, 1/1/40             | 1,776,940     |
| 5,000,000    | NR/Baa1Tallahassee Health<br>Facilities Revenue,<br>6.375%, 12/1/30                              | 5,008,100     |
|              | Georgia - 2.7%   | \$ 24,353,111 |
| 4,240,000(c) | AA-/WRAtlanta Georgia Water and<br>Wastewater Revenue, RIB,<br>10.94%, 1/30/13 (144A)            | \$ 4,761,520  |
| 500,000      | CCC+/NRClayton County<br>Development Authority<br>Revenue, 9.0%, 6/1/35                          | 550,090       |
| 2,400,000    | NR/NRFulton County Residential<br>Care Facilities Revenue,<br>5.0%, 7/1/27                       | 2,365,176     |
| 1,100,000    | NR/NRFulton County Residential<br>Care Facilities Revenue,                                       | 1,039,434     |

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|                                 |                       |  |               |
|---------------------------------|-----------------------|--|---------------|
|                                 |                       | 5.125%, 7/1/42   |               |
|                                 |                       |  | \$ 8,716,220  |
|                                 |                       | Idaho - 1.5%   |               |
| 5,000,000                       | BBB+/Baa1             | Power County Industrial<br>Development Corp.,<br>6.45%, 8/1/32                               | \$ 5,008,300  |
|                                 |                       | Illinois - 14.1%   |               |
| 1,000,000(a)                    | NR/NR                 | Illinois Finance Authority<br>Revenue, 6.0%, 11/15/27  | \$ 240,050    |
| 3,865,000                       | BBB+/NR               | Illinois Finance Authority<br>Revenue, 6.0%, 8/15/38   | 4,374,484     |
| 2,000,000                       | AA+/Aa2               | Illinois Finance Authority<br>Revenue, 6.0%, 8/15/39   | 2,351,780     |
| 4,000,000(a)                    | NR/NR                 | Illinois Finance Authority<br>Revenue, 6.0%, 11/15/39  | 960,200       |
| 2,450,000                       | NR/NR                 | Illinois Finance Authority<br>Revenue, 6.375%, 5/15/17                                       | 2,452,548     |
|                                 |                       |  |               |
| Principal<br>Amount<br>USD (\$) | S&P/Moody's<br>Rating |  | Value         |
|                                 |                       | Illinois - (continued)   |               |
| 2,500,000                       | NR/Baa2               | Illinois Finance Authority<br>Revenue, 6.5%, 4/1/39  | 2,817,550     |
| 500,000                         | NR/NR                 | Illinois Finance Authority<br>Revenue, 7.0%, 5/15/18   | 502,585       |
| 1,700,000                       | NR/NR                 | Illinois Finance Authority<br>Revenue, 7.625%, 5/15/25                                       | 2,003,773     |
| 600,000                         | NR/NR                 | Illinois Finance Authority<br>Revenue, 7.75%, 5/15/30  | 702,558       |
| 2,000,000                       | NR/NR                 | Illinois Finance Authority<br>Revenue, 8.0%, 5/15/40   | 2,347,680     |
| 3,200,000                       | NR/NR                 | Illinois Finance Authority<br>Revenue, 8.0%, 5/15/46   | 3,756,288     |
| 4,000,000                       | NR/NR                 | Illinois Finance Authority<br>Revenue, 8.25%, 5/15/45  | 4,363,280     |
| 2,500,000                       | NR/NR                 | Illinois Finance Authority<br>Revenue, 8.25%, 2/15/46  | 2,710,950     |
| 16,880,000                      | AAA/A3                | Metropolitan Pier &<br>Exposition Authority<br>Dedicated State Tax<br>Revenue, 0.0%, 6/15/22 | 15,527,237    |
| 1,515,000                       | NR/NR                 | Southwestern Illinois<br>Development Authority<br>Revenue, 5.625%, 11/1/26                   | 1,294,719     |
|                                 |                       |  | \$ 46,405,682 |

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|              |           |  |                            |
|--------------|-----------|--|----------------------------|
|              |           | Indiana - 1.1%   |                            |
| 3,570,000    | NR/NR     | Vigo County Hospital<br>Authority Revenue, 5.8%,<br>9/1/47 (144A)  | \$ 3,680,813               |
|              |           | Louisiana - 2.1%   |                            |
| 1,500,000    | BBB-/Baa3 | Louisiana Local<br>Government<br>Environmental Facilities &<br>Community Development<br>Authority Revenue,<br>6.75%, 11/1/32 | \$ 1,685,925               |
| 5,000,000    | NR/Baa1   | Louisiana Public Facilities<br>Authority Revenue, 5.5%,<br>5/15/47   | 5,210,050<br>\$ 6,895,975  |
|              |           | Maine - 0.6%   |                            |
| 1,500,000    | NR/Baa3   | Maine Health & Higher<br>Educational Facilities<br>Authority Revenue, 7.5%,<br>7/1/32  | \$ 1,864,920               |
|              |           | Massachusetts - 6.4%   |                            |
| 7,100,000    | A/WR      | Massachusetts<br>Development Finance<br>Agency Revenue, 5.75%,<br>1/1/42   | \$ 9,266,707               |
| 2,250,000    | NR/NR     | Massachusetts<br>Development Finance<br>Agency Revenue, 7.1%,<br>7/1/32  | 2,115,562                  |
| 825,000      | AA/NR     | Massachusetts Educational<br>Financing Authority<br>Revenue, 6.0%, 1/1/28  | 959,261                    |
| 1,860,000    | AAA/Aaa   | Massachusetts Health &<br>Educational Facilities<br>Authority Revenue, 5.5%,<br>7/1/32                                       | 2,668,970                  |
| 1,000,000    | NR/Caa1   | Massachusetts Health &<br>Educational Facilities<br>Authority Revenue, 6.0%,<br>10/1/23                                      | 1,000,960                  |
| 4,500,000(a) | NR/NR     | Massachusetts Health &<br>Educational Facilities<br>Authority Revenue, 6.5%,<br>1/15/38                                      | 22,590                     |
| 5,000,000    | BB-/NR    | Massachusetts Health &<br>Educational Facilities<br>Authority Revenue,<br>6.75%, 10/1/33                                     | 5,100,350<br>\$ 21,134,400 |

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| Principal Amount USD (\$) | S&P/Moody's Rating |  | Value         |
|---------------------------|--------------------|--|---------------|
|                           |                    | Michigan - 3.2%  |               |
| 935,000                   | NR/NR              | Doctor Charles Drew Academy Certificate of Participation, 5.7%, 11/1/36                  | \$ 680,456    |
| 1,500,000                 | BB-/NR             | John Tolfree Health System Corp. Revenue, 6.0%, 9/15/23                                  | 1,470,135     |
| 2,000,000                 | BB+/NR             | Kent Hospital Finance Authority Revenue, 6.25%, 7/1/40                                   | 2,088,460     |
| 5,830,000                 | B-/NR              | Michigan Tobacco Settlement Finance Authority, 6.0%, 6/1/48                              | 4,770,980     |
|                           |                    | Michigan - (continued)   |               |
| 1,410,000                 | BBB/NR             | Star International Academy Certificates of Participation, 6.125%, 3/1/37                 | 1,424,128     |
|                           |                    |  | \$ 10,434,159 |
|                           |                    | Minnesota - 0.9%   |               |
| 1,000,000                 | NR/NR              | Bloomington Port Authority, 9.0%, 12/1/35  | \$ 1,189,280  |
| 1,675,000                 | BB-/NR             | Duluth Economic Development Authority Health Care Facilities Revenue, 7.25%, 6/15/32     | 1,693,810     |
|                           |                    |  | \$ 2,883,090  |
|                           |                    | Montana - 0.1%   |               |
| 1,600,000 (a)(e)          | NR/NR              | Two Rivers Authority Revenue, 7.375%, 11/1/27  | \$ 237,696    |
|                           |                    | Nevada - 0.0%  |               |
| 2,000,000 (a)(e)          | NR/NR              | Director of the State of Nevada Department of Business & Industry Revenue, 7.25%, 1/1/23 | \$ 20         |
|                           |                    | New Jersey - 8.8%  |               |
| 1,500,000                 | NR/NR              | New Jersey Economic Development Authority Revenue, 10.5%, 6/1/32 (144A)                  | \$ 1,657,635  |
| 10,000,000                | B/B3               | New Jersey Economic Development Authority Revenue, 6.25%, 9/15/29                        | 10,039,900    |
| 6,150,000 (d)             | B/B3               | New Jersey Economic Development Authority Revenue, 7.0%, 11/15/30                        | 6,173,308     |
| 3,000,000                 | B-/B1              | Tobacco Settlement Financing Corp., 4.625%, 6/1/26                                       | 2,720,760     |
| 8,000,000 (b)             | AA+/Aaa            | Tobacco Settlement Financing Corp., 6.75%, 6/1/39  | 8,435,360     |
|                           |                    |  | \$ 29,026,963 |
|                           |                    | New Mexico - 1.2%  |               |
| 1,500,000                 | NR/NR              | Otero County New Mexico Project Revenue, 6.0%, 4/1/23                                    | \$ 1,363,230  |
| 2,960,000                 | NR/NR              | Otero County New Mexico Project Revenue, 6.0%, 4/1/28                                    | 2,556,878     |
|                           |                    |  | \$ 3,920,108  |
|                           |                    | New York - 8.6%  |               |
| 2,000,000                 | NR/NR              |  | \$ 2,187,680  |



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|               |         |  |              |
|---------------|---------|--|--------------|
|               |         | Chautauqua County Capital Resource Corp. Revenue, 8.0%,<br>11/15/30          |              |
|               |         | Dutchess County Industrial Development Agency Revenue, 7.5%,<br>NR/NR 3/1/29 | 3,090,450    |
| 3,000,000     |         |  |              |
| 2,000,000     | BBB+/NR | Hempstead Local Development Corp. Revenue, 5.75%, 7/1/39                     | 2,222,340    |
|               |         | New York City Industrial Development Agency Revenue, 5.25%,<br>BB/B2 12/1/32 | 1,955,860    |
| 2,000,000     |         |  |              |
| 2,000,000     | BB/B2   | New York City Industrial Development Agency Revenue, 7.625%,<br>12/1/32      | 2,055,580    |
|               |         | New York City Industrial Development Agency Revenue, 8.0%,<br>NR/C 8/1/12    | 2,019,980    |
| 2,000,000     |         |  |              |
| 7,040,000 (d) | AAA/WR  | New York State Dormitory Authority Revenue, 13.219%, 5/29/14<br>(144A)       | 10,583,091   |
| 1,000,000     | NR/Ba1  | New York State Dormitory Authority Revenue, 6.125%, 12/1/29                  | 1,110,120    |
|               |         | Suffolk County Industrial Development Agency Revenue, 7.25%,<br>NR/NR 1/1/30 | 3,002,430    |
| 3,000,000     |         |  | \$28,227,531 |
|               |         | North Carolina - 2.8%  |              |
| 4,785,000     | NR/NR   | Charlotte Special Facilities Revenue, 5.6%, 7/1/27                           | \$4,356,073  |
| 4,795,000     | NR/NR   | Charlotte Special Facilities Revenue, 7.75%, 2/1/28                          | 4,802,576    |
|               |         |  | \$9,158,649  |
|               |         | Oklahoma - 0.4%  |              |
| 1,225,000 (a) | NR/WR   | Tulsa Airport Improvement Trust Revenue, 6.25%, 6/1/20                       | \$1,249,500  |

|                                 |                       |       |
|---------------------------------|-----------------------|-------|
| Principal<br>Amount<br>USD (\$) | S&P/Moody's<br>Rating | Value |
|---------------------------------|-----------------------|-------|

|              |         |  |              |
|--------------|---------|--|--------------|
|              |         | Pennsylvania - 2.5%  |              |
| 1,550,000    | NR/Baa2 | Allegheny County<br>Hospital Development<br>Authority Revenue,<br>5.125%, 5/1/25                             | \$ 1,550,372 |
| 1,000,000    | CCC/NR  | Columbia County Hospital<br>Authority Health Care<br>Revenue, 5.9%, 6/1/29                                   | 1,000,430    |
| 1,280,000(a) | NR/WR   | Langhorne Manor<br>Borough Higher Education<br>Authority Revenue,<br>7.35%, 7/1/22                           | 371,046      |
| 5,000,000    | B-/Caa2 | Pennsylvania Economic<br>Development Financing<br>Authority Solid Waste<br>Disposal Revenue, 6.0%,<br>6/1/31 | 4,830,100    |
| 500,000      | BBB+/NR | Pennsylvania Higher<br>Educational Facilities<br>Authority Revenue, 5.4%,<br>7/15/36                         | 516,795      |
|              |         |  | \$ 8,268,743 |

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|               |              |   |              |
|---------------|--------------|---|--------------|
|               |              | Rhode Island - 2.1%   |              |
| 6,000,000(e)  | NR/NR        | Central Falls Detention Facility Corp. Revenue, 7.25%, 7/15/35                        | \$ 5,162,280 |
| 1,500,000     | NR/NR        | Rhode Island Health & Educational Building Corp Revenue, 8.375%, 1/1/46               | 1,757,520    |
|               |              |   | \$ 6,919,800 |
|               |              | South Carolina - 1.2%   |              |
| –             | 3,850,000(b) | BBB+/Baa1 South Carolina Jobs Economic Development Authority Revenue, 6.375%, 8/1/34  | \$ 4,085,389 |
|               |              | Tennessee - 1.5%  |              |
| 4,600,000     | BBB+/NR      | Sullivan County Health, Educational & Housing Facilities Board Revenue, 5.25%, 9/1/36 | \$ 4,800,376 |
|               |              | Texas - 15.3%   |              |
| 1,345,000     | NR/Caa2      | Bexar County Housing Finance Corp., 8.0%, 12/1/36                                     | \$ 928,776   |
| 2,500,000     | BB+/Ba1      | Central Texas Regional Mobility Authority Revenue, 6.75%, 1/1/41                      | 2,862,100    |
| 4,000,000     | NR/NR        | Decatur Hospital Authority Revenue, 7.0%, 9/1/25                                      | 4,288,760    |
| 725,078(a)(e) | NR/NR        | Gulf Coast Industrial Development Authority, 7.0%, 12/1/36                            | 6,896        |
| 3,750,000     | B-/B3        | Houston Airport System Special Facilities Revenue, 5.7%, 7/15/29                      | 3,714,525    |
| 5,340,000     | NR/NR        | Lubbock Health Facilities Development Corp. Revenue, 6.625%, 7/1/36                   | 5,578,538    |
| 10,000,000    | BBB+/A3      | North Texas Tollway Authority Revenue, 5.75%, 1/1/33                                  | 11,054,400   |
| 2,810,000(d)  | AAA/Aaa      | Northside Independent School District G.O., 11.52%, 9/29/12 (144A)                    | 3,395,660    |
| 1,500,000     | NR/NR        | Red River Health Facilities Development Corp. Revenue, 8.0%, 11/15/41                 | 1,705,335    |
| 7,040,000(d)  | AA+/Aaa      | State of Texas G.O., 12.464%, 4/1/13  | 9,210,995    |
| 2,000,000     | NR/NR        |   | 2,256,580    |

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|                                 |                       |   |               |
|---------------------------------|-----------------------|---|---------------|
|                                 |                       | Tarrant County Cultural<br>Education Facilities<br>Finance Corp. Revenue,<br>8.0%, 11/15/34                       |               |
| 1,000,000                       | NR/NR                 | Tarrant County Cultural<br>Education Facilities<br>Finance Corp. Revenue,<br>8.125%, 11/15/39                     | 1,112,620     |
| 1,500,000                       | NR/NR                 | Tarrant County Cultural<br>Education Facilities<br>Finance Corp. Revenue,<br>8.25%, 11/15/44                      | 1,675,125     |
| 2,500,000                       | NR/NR                 | Travis County Health<br>Facilities Development<br>Corp. Revenue, 7.125%,<br>1/1/46                                | 2,615,200     |
|                                 |                       |   | \$ 50,405,510 |
| 1,500,000(b)                    | A-/Baa1               | Vermont - 0.5%<br>Vermont Educational &<br>Health Buildings<br>Financing Agency<br>Revenue, 6.0%, 10/1/28         | \$ 1,599,135  |
| Principal<br>Amount<br>USD (\$) | S&P/Moody's<br>Rating |   | Value         |
| 1,000,000                       | BBB/Baa1              | Virginia - 0.3%<br>Peninsula Ports Authority<br>Revenue, 6.0%, 4/1/33   | \$ 1,021,970  |
| 4,710,000                       | A+/A2                 | Washington - 10.0%<br>Spokane Public Facilities<br>District Hotel/Motel Tax<br>& Sales Revenue, 5.75%,<br>12/1/27 | \$ 4,978,140  |
| 14,315,000(f)                   | AA+/Aa1               | State of Washington G.O.,<br>0.0%, 6/1/22   | 11,259,034    |
| 7,025,000                       | BBB/Baa1              | Tobacco Settlement<br>Authority Revenue,<br>6.625%, 6/1/32  | 7,292,723     |
| 3,795,000                       | A/A2                  | Washington State Health<br>Care Facilities Authority<br>Revenue, 6.0%, 1/1/33                                     | 4,276,358     |
| 5,000,000                       | NR/NR                 | Washington State Housing<br>Finance Committee<br>Nonprofit Revenue,<br>5.625%, 1/1/27                             | 5,041,500     |
|                                 |                       |   | \$ 32,847,755 |
|                                 |                       | West Virginia - 0.3%  |               |

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|                  |  |                  |
|------------------|--|------------------|
| 745,000          | NR/NRWest Virginia Hospital<br>Finance Authority<br>Hospital Revenue,<br>9.125%, 10/1/41   | \$ 915,434       |
| 2,320,000(g)     | Wisconsin - 1.8%<br>NR/NRAztalan Township, 0.0%,   | \$ -             |
| 2,500,000        | NR/NRWisconsin Public Finance<br>Authority Revenue,<br>8.25%, 6/1/46                       | 2,962,000        |
| 1,500,000        | NR/NRWisconsin Public Finance<br>Authority Revenue,<br>8.375%, 6/1/20                      | 1,518,000        |
| 1,500,000        | NR/NRWisconsin Public Finance<br>Authority Revenue,<br>8.625%, 6/1/47                      | 1,573,125        |
|                  |  | \$ 6,053,125     |
|                  | TOTAL TAX EXEMPT<br>OBLIGATIONS<br>(Cost \$363,011,069)                                    | \$ 404,245,182   |
|                  | MUNICIPAL<br>COLLATERALIZED<br>DEBT OBLIGATION<br>- 1.9% of Net Assets                     |                  |
| 10,000,000(d)(e) | NR/NRNon-Profit Preferred<br>Funding Trust I, 6.75%,<br>9/15/37 (144A)                     | \$ 6,329,000     |
|                  | TOTAL MUNICIPAL<br>COLLATERALIZED<br>DEBT OBLIGATION<br>(Cost \$10,000,000)                | \$ 6,329,000     |
|                  | TOTAL INVESTMENTS<br>IN SECURITIES - 124.9%<br>(Cost - \$373,011,069)                      |                  |
|                  | (h)(i)   | \$ 410,574,182   |
|                  | OTHER ASSETS AND<br>LIABILITIES -5.8%  | \$ 19,114,004    |
|                  | PREFERRED SHARES<br>AT REDEMPTION<br>VALUE,<br>INCLUDING<br>DIVIDENDS PAYABLE -<br>(30.7)% | \$ (100,999,612) |
|                  | NET ASSETS   | \$ 328,688,574   |
|                  | APPLICABLE TO<br>COMMON<br>SHAREHOLDERS  |                  |

-100.0%

|        |  |
|--------|--|
| NR     | Security not rated by S&P or Moody's.  |
| RIB    | Residual Interest Bonds.   |
| GO     | General Obligation.  |
| WR     | Rating Withdrawn.  |
| (144A) | Security is exempt from registration under Rule 144A of the Securities Act of 1933. Such securities may be resold normally to qualified institutional buyers in a transaction exempt from registration. At July 31, 2012, the value of these securities amounted to \$43,522,278, or 13.2% of total net assets applicable to common shareowners. |

- (a) Security is in default and is non income producing.
- (b) Prerefunded bonds have been collateralized by U.S. Treasury or U.S. Government Agency securities which are held in escrow to pay interest and principal on the tax exempt issue and to retire the bonds in full at the earliest refunding date.
- (c) Residual Interest Bonds. The interest rate is subject to change periodically and inversely based upon prevailing market rates. The interest rate shown is the rate July 31, 2012.
- (d) The interest rate is subject to change periodically. The interest is shown is the rate at July 31, 2012.
- (e) Indicates a security that has been deemed as illiquid. The aggregate cost of illiquid securities is \$20,086,629. The aggregate fair value of \$11,735,892 represents 3.6% of total net assets applicable to common shareholders.
- (f) Security issued with a zero coupon. Income is recognized through accretion of discount.
- (g) Security is fair valued

- (h) The concentration of investments by type of obligation/ market sector is as follows (unaudited):

|                    |      |
|--------------------|------|
| Insured            |      |
| NATL-RE            | 5.0% |
| FSA                | 3.6  |
| NATL-RE FGIC       | 2.7  |
| AMBAC GO OF INSTN  | 2.3  |
| PSF-GTD            | 0.8  |
| GO OF INSTN        | 0.7  |
| Revenue Bonds:     |      |
| Health Revenue     | 17.3 |
| Other Revenue      | 15.5 |
| Facilities Revenue | 13.9 |

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|                           |        |
|---------------------------|--------|
| Tobacco Revenue           | 13.6   |
| Development Revenue       | 8.1    |
| Education Revenue         | 6.1    |
| Airport Revenue           | 5.9    |
| Transportation Revenue    | 2.7    |
| Pollution Control Revenue | 1.8    |
| Utilities Revenue*        | 0.0    |
|                           | 100.0% |

\* Amount rounds to less than 01.1%

At July 31, 2012, the net unrealized gain on investments based on cost for federal tax purposes of \$373,011,069 was as follows:

|     |  |               |
|-----|--|---------------|
| (i) | Aggregate gross unrealized gain for all investments in which there is an excess of value over tax cost | \$ 53,079,947 |
|     | Aggregate gross unrealized loss for all investments in which there is an excess of tax cost over value | (15,516,826)  |
|     | Net unrealized gain  | \$ 37,563,121 |

For financial reporting purposes net unrealized gain on investments was \$ 37,563,121 and cost of investments aggregated \$373,011,069.

Principal amounts are denominated in U.S. dollars unless otherwise noted.

Various inputs are used in determining the value of the Trust's investments. These inputs are summarized in the three broad levels below.

Level 1 - quoted prices in active markets for identical securities

Level 2 - other significant observable inputs (including quoted prices for similar securities, interest rates, prepayment speeds credit risks, etc.)

Level 3 - significant unobservable inputs (including the Trust's own assumptions in determining fair value of investments)

Generally, equity securities are categorized as Level 1, fixed income securities and senior loans are categorized as Level 2, and securities valued using fair value methods (other than prices supplied by independent pricing services) as level 3.

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|   | Level 1 | Level 2       | Level 3 | Total         |
|---|---------|---------------|---------|---------------|
| Investments in Securities - Assets        |         |               |         |               |
| TAX EXEMPT OBLIGATIONS:                   | \$-     | \$397,638,711 | \$-     | \$404,245,182 |
| MUNICIPAL COLLATERALIZED DEBT OBLIGATION: | -       | 6,329,000     | -       | 6,329,000     |
| Total Investments in Securities - Assets  | \$-     | \$403,967,711 | \$-     | \$410,574,182 |

ITEM 2. CONTROLS AND PROCEDURES.

(a) Disclose the conclusions of the registrant's principal executive officer or officers and principal financial officer or officers, or persons performing similar functions, about the effectiveness of the registrant's disclosure controls and procedures (as defined in Rule 30a-3(c) under the Act (17 CFR 270.30a-3(c))) as of a date within 90 days of the filing date of the report that includes the disclosure required by this paragraph, based on their evaluation of these controls and procedures required by Rule 30a-3(b) under the Act (17 CFR 270.30a-3(b)) and Rule 13a-15(b) or 15d-15(b) under the Exchange Act (17 CFR 240.13a-15(b) or 240.15d-15(b)).

The registrant's principal executive officer and principal financial officer have concluded that the registrant's disclosure controls and procedures are effective based on their evaluation of these controls and procedures as of a date within 90 days of the filing date of this report.

(b) Disclose any change in the registrant's internal controls over financial reporting (as defined in Rule 30a-3(d) under the Act (17 CFR 270.30a-3(d))) that occurred during the registrant's last fiscal quarter that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting.

There were no significant changes in the registrant's internal control over financial reporting that occurred during the second fiscal quarter of the period covered by this report that have materially affected, or are reasonably likely to materially affect, the registrant's internal control over financial reporting.

ITEM 3. EXHIBITS.

(a) A separate certification for each principal executive officer and principal financial officer of the registrant as required by Rule 30a-2 under the Act (17 CFR 270.30a-2).

Filed herewith.

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SIGNATURES

[See General Instruction F]

Pursuant to the requirements of the Securities Exchange Act of 1934 and the Investment Company Act of 1940, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

(Registrant) Pioneer Municipal High Income Trust

By (Signature and Title)\* /s/ John F. Cogan, Jr.  
John F. Cogan, Jr, President

Date September 28, 2012

Pursuant to the requirements of the Securities Exchange Act of 1934 and the Investment Company Act of 1940, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

By (Signature and Title)\* /s/ John F. Cogan, Jr.  
John F. Cogan, Jr., President

Date September 28, 2012

By (Signature and Title)\* /s/ Mark Bradley  
Mark Bradley, Treasurer

Date September 28, 2012

\* Print the name and title of each signing officer under his or her signature.