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PIONEER MUNICIPAL HIGH INCOME TRUST
Form N-Q
September 29, 2004

OMB APPROVAL
OMB Number: 3235-0578
Expires: February 28, 2006
Estimated average burden
hours per response.....
20.0

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)

Dorothy E. Bourassa, 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, 2004

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

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under the clearance requirements of 44 U.S.C. ss. 3507.

ITEM 1. Schedule of Investments.

Pioneer Municipal High Income Trust

SCHEDULE OF INVESTMENTS 7/31/04 (unaudited)

Principal Amount	S&P/Moody's Ratings
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	TAX EXEMPT OBLIGATIONS - 127.6% OF NET ASSETS
	Alabama - 3.6%
\$ 10,000,000	Birmingham Alabama General Obligation, 5.0%, 12/1/32
1,500,000	Camden Alabama Industrial Development Board, 6.125%, 12/1/24
	Arizona - 6.0%
5,000,000	Apache County Industrial Development Authority, 5.85%, 3/1/28
5,000,000	Apache County Industrial Development Authority, 5.875%, 3/1/33
3,000,000	Maricopa County Industrial Development Authority, 7.875%, 4/1/27
5,880,000	Salt River Project Agriculture Improvement and Power District Electric System Revenue, 5.0%, 1/1/31
500,000	Yavapai County Industrial Development Authority, 6.0%, 8/1/33
	California - 10.9%
7,270,000	California State General Obligation, 5.25%, 2/1/28
5,150,000	Golden State Tobacco Securitization Corp., 7.8%, 6/1/42
7,000,000	Golden State Tobacco Securitization Corp., 7.875%, 6/1/42
4,000,000	Palm Desert Financing Authority Tax Allocation Revenue, 5.0%, 4/1/30
3,000,000	San Diego Unified School District, 5.0%, 7/1/25
2,500,000	University of California Revenue, 5.0%, 5/15/25
7,000,000	Valley Health System Hospital Revenue, 6.5%, 5/15/25
	Connecticut - 1.6%
2,205,000	Connecticut State Health & Educational Facilities Authority Revenue, 5.0%
4,400,000	Connecticut State Health & Educational Facilities Authority Revenue, 5.0%
	District of Columbia - 3.4%
5,000,000	District of Columbia Tobacco Settlement Financing Corp., 6.5%, 5/15/33
7,325,000	District of Columbia Tobacco Settlement Financing Corp., 6.75%, 5/15/40
	Florida - 4.5%
2,000,000	Beacon Lakes Community Development, 6.9%, 5/1/35
2,300,000	Hillsborough County Aviation Authority Revenue, 6.8%, 1/1/24
1,650,000	Polk County Industrial Development Revenue, 5.85%, 12/1/30
2,000,000	Seminole Tribe Convention-A, 8.95%, 10/1/33
1,900,000	Seminole Tribe Convention-A, 10.0%, 10/1/33
5,000,000	Tallahassee Health Facilities Revenue, 6.375%, 12/1/30
	Idaho - 1.6%
5,000,000	Power County Industrial Development Corp., 6.45%, 8/1/32
	Illinois - 3.9%
1,000,000	Centerpoint Intermodal Center, 8.0%, 6/15/23 (144A)
2,790,000	Chicago Illinois O'Hare International Airport, 6.45%, 5/1/18
1,500,000	Illinois Health Facilities Authority Revenue, 6.9%, 11/15/33

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16,880,	(aAAA/Aaa	Metropolitan Pier & Exposition Authority Dedicated State Tax Revenue, 0.0%, 6/15/22
		Indiana - 1.1%
4,300,000	CCC/Caa3	Indiana State Development Finance Authority Revenue, 5.75%, 10/1/11

Pioneer Municipal High Income Trust

SCHEDULE OF INVESTMENTS 7/31/04 (unaudited) (continued)

Principal Amount	S&P/Moody's Ratings	
		Kentucky - 2.2%
\$ 7,050,000	CCC-/Caa2	Kenton County Airport Revenue, 7.5%, 2/1/12
1,965,000	CCC-/Caa2	Kenton County Airport Revenue, 7.5%, 2/1/20
		Massachusetts - 8.4%
2,435,000	AAA/Aaa	Massachusetts Health & Educational Facilities Authority Revenue, 5.0%,
7,050,000	AAA/Aaa	Massachusetts Health & Educational Facilities Authority Revenue, 5.125%
1,000,000	AA/NR	Massachusetts Health & Educational Facilities Authority Revenue, 5.25%
2,640,000	BBB/Baa3	Massachusetts Health & Educational Facilities Authority Revenue, 5.75%
3,500,000	BBB/Baa3	Massachusetts Health & Educational Facilities Authority Revenue, 6.25%
5,000,000	BBB-/NR	Massachusetts Health & Educational Facilities Authority Revenue, 6.75%
75,000	BB/NR	Massachusetts State Development Finance Agency, 5.25%, 10/1/18
5,055,000	AA-/Aa3	Massachusetts State Housing Finance Agency, 5.25%, 12/1/33
		Michigan - 4.3%
1,500,000	BBB-/NR	John Tolfree Health System Corp., 6.0%, 9/15/23
4,010,000	BBB-/Baa3	Michigan State Hospital Finance Authority Revenue, 6.0%, 2/1/24
2,000,000	NR/NR	Michigan State Hospital Finance Authority Revenue, 6.4%, 1/1/15
7,690,000	NR/NR	Wayne Charter County Special Airport Facilities Revenue, 6.75%, 12/1/15
		Minnesota - 3.9%
13,260,000	NR/NR	Minneapolis/St. Paul Metropolitan Airports, 7.0%, 4/1/25
1,500,000	BB/Ba2	St. Paul Housing & Redevelopment Authority, 6.625%, 11/1/17
		Mississippi - 0.9%
3,000,000	BBB-/Ba1	Mississippi Business Finance Corp. Pollution Control Revenue, 5.9%, 5/1
		Missouri - 1.5%
5,500,000	NR/Ba3	St. Louis Industrial Development Authority Revenue, 7.25%, 12/15/35
		Nevada - 1.4%
1,000,000	BBB-/Baa2	Clark County Industrial Development Revenue, 5.45%, 3/1/38
1,850,000	B-/NR	Clark County Industrial Development Revenue, 5.5%, 10/1/30
2,000,000	NR/NR	Nevada State Department of Business & Industry, 7.25%, 1/1/23
		New Hampshire - 0.9%
3,000,000	AAA/Aaa	Manchester School Facilities Revenue, 5.125%, 6/1/28
		New Jersey - 8.0%
2,000,000	B/Caa2	New Jersey Economic Development Authority Revenue, 6.25%, 9/15/19
11,700,000	B/Caa2	New Jersey Economic Development Authority Revenue, 6.25%, 9/15/29
1,000,000	B/Caa2	New Jersey Economic Development Authority Revenue, 6.4%, 9/15/23
6,150,000	B/Caa2	New Jersey Economic Development Authority Revenue, 7.0%, 11/15/30
10,750,000	BBB/Baa3	Tobacco Settlement Financing Corp., 6.75%, 6/1/39
		New Mexico - 1.3%

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3,700,000	NR/NR	New Mexico Hospital Equipment Loan Council, 6.4%, 6/1/16
		New York - 5.8%
2,000,000	A/NR	New York City Industrial Development Agency, 5.375%, 6/1/23
5,625,000	CCC/Caa2	New York City Industrial Development Agency, 6.9%, 8/1/24
5,000,000	AAA/Aaa	New York City Trust Cultural Resources Revenue, 5.125%, 7/1/31
2,000,000	NR/NR	Suffolk County Industrial Development Agency, 7.25%, 1/1/30
6,000,000	AAA/Aaa	Triborough Bridge & Tunnel Authority Revenue, 5.25%, 11/15/30
		North Carolina - 1.4%
2,000,000	AA+/Aa2	Charlotte North Carolina Certificates of Participation, 5.0%, 6/1/33
4,600,000	NR/NR	Charlotte North Carolina Special Facilities Revenue, 7.75%, 2/1/28

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SCHEDULE OF INVESTMENTS 7/31/04 (unaudited) (continued)

Principal Amount	S&P/Moody's Ratings	
		Oklahoma - 4.9%
\$ 3,000,000	00B-/B1	Oklahoma Development Finance Authority Revenue, 5.625%, 8/15/19
8,000,000	B-/B1	Oklahoma Development Finance Authority Revenue, 5.625%, 8/15/29
4,100,000	B-/Caa2	Tulsa Municipal Airport Revenue, 5.65%, 12/1/35
1,225,000	B-/Caa2	Tulsa Municipal Airport Revenue, 6.25%, 6/1/20
		Oregon - 4.8%
1,000,000	NR/NR	Klamath Falls Electric Revenue, 5.75%, 1/1/13
7,000,000	NR/NR	Klamath Falls Electric Revenue, 6.0%, 1/1/25
7,500,000	NR/NR	Western Generation Agency Cogeneration Project Revenue, 7.125%, 1/1/21
		Pennsylvania - 10.9%
1,550,000	NR/Baa1	Allegheny County Hospital Development Authority Revenue, 5.125%, 5/1/25
12,300,000	B/B2	Allegheny County Hospital Development Authority Revenue, 9.25%, 11/15/30
2,500,000	BBB-/Baa2	Beaver County Industrial Development Authority, 7.625%, 5/1/25
1,000,000	BB-/NR	Columbia County Hospital Authority Health Care Revenue, 5.9%, 6/1/29
5,000,000	BBB/Baa3	Delaware County Industrial Development Authority Revenue, 6.1%, 7/1/13
1,280,000	NR/B2	Langhorne Manor Borough Higher Education & Health Authority Revenue, 7.0%
2,500,000	BBB+/NR	Pennsylvania Higher Educational Facilities Authority Revenue, 5.4%, 7/1/25
2,230,000	AAA/Aaa	Pennsylvania State Turnpike Commission, 5.0%, 7/15/10
5,000,000	BBB-/Baa2	Philadelphia Hospitals & Higher Education Facilities Authority Revenue, 6.0%
		South Carolina - 8.7%
4,250,000	BBB/Baa2	Georgetown County Environmental Improvement Revenue, 5.95%, 3/15/14
15,000,000	AA-/A1	Greenville County School District, 5.5%, 12/1/28
1,900,000	BBB/Baa2	South Carolina Jobs Economic Development Authority Revenue, 6.25%, 8/1/25
5,850,000	BBB/Baa2	South Carolina Jobs Economic Development Authority Revenue, 6.375%, 8/1/25
		Tennessee - 5.2%
7,000,000	BBB+/Baa2	Johnson City Health & Educational Facilities Board Hospital Revenue, 7.0%
4,480,000	NR/Baa2	Knox County Health Educational & Housing Facilities Board Hospital Revenue, 5.0%
4,055,000	BBB/Baa2	Memphis-Shelby County Airport Authority Special Facilities Revenue, 5.0%
		Texas - 7.7%
6,500,000	CCC/Caa2	Alliance Airport Authority Special Facilities Revenue, 7.0%, 12/1/11
7,500,000	CCC/Caa2	Alliance Airport Authority Special Facilities Revenue, 7.5%, 12/1/29
1,345,000	NR/Baa3	Bexar County Housing Finance Corp., 8.0%, 12/1/36
5,500,000	CCC-/Caa2	Dallas-Fort Worth International Airport Revenue, 7.125%, 11/1/26
2,800,000	CCC-/Caa2	Dallas-Fort Worth International Airport Revenue, 7.6%, 11/1/11
750,000	CCC-/Caa2	Dallas-Fort Worth International Airport Revenue, 7.625%, 11/1/21

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1,000,000	BB/NR	Georgetown Health Facilities Development Corp., 6.25%, 8/15/29
3,750,000	B-/Caa2	Houston Airport System Special Facilities Revenue, 5.7%, 7/15/29
5,000,000	BBB/NR	Lufkin Health Facilities Development Corp. 5.7%, 2/15/28
500,000	BBB/Baa2	Sabine River Authority Pollution Control Revenue, 6.15%, 8/1/22
		Vermont - 0.5%
1,500,000	A-/A3	Vermont Educational & Health Buildings Financing Agency Revenue, 6.0%,
		Virginia - 1.4%
1,000,000	BBB/Baa3	Peninsula Ports Authority, 6.0%, 4/1/33
4,000,000	BB/NR	Pocahontas Parkway Association of Virginia Toll Road Revenue, 5.5%, 8/1
		Washington - 5.3%
4,710,000	AAA/Aaa	Spokane Public Facilities District Hotel/Motel Tax & Sales, 5.75%, 12/1
7,025,000	BBB/Baa3	Tobacco Settlement Authority Washington, 6.625%, 6/1/32
14,315,000	AAA/Aaa	Washington State General Obligation, 0.0%, 6/1/22

Pioneer Municipal High Income Trust

SCHEDULE OF INVESTMENTS 7/31/04 (unaudited) (continued)

Principal Amount	S&P/Moody's Ratings	
		Wyoming - 1.6%
\$ 5,000,000	BB+/Ba3	Sweetwater County Solid Waste Disposal Revenue, 6.9%, 9/1/24

TOTAL TAX-EXEMPT OBLIGATIONS
(Cost \$405,609,905)

Shares	TAX-EXEMPT MONEY MARKET MUTUAL FUND - 1.1% OF NET ASSETS
3,452,361	BlackRock Provident Institutional Municipal Fund
	TOTAL TAX-EXEMPT MONEY MARKET MUTUAL FUND
	(Cost \$3,452,361)

TOTAL INVESTMENTS IN SECURITIES - 128.7%
(Cost \$409,062,266) (b) (c) (d)
Other Assets in Excess of Liabilities - 2.8%
Preferred Shares at Redemption Value - (31.5)%
NET ASSETS APPLICABLE TO COMMON SHAREOWNERS - 100.0%

NR: Security not rated by S&P or Moody's.

(144A) Security is exempt from registration under Rule 144A of the Securities Act of 1933. securities may be resold normally to qualified institutional buyers in a transaction from registration. At July 31, 2004 the value of these securities amounted to \$971,310 or 0.3% of net assets applicable to common shareholders.

(a) Indicates a security that has a zero coupon that remains in effect until a predetermined stated coupon rate becomes effective until final maturity.

(b) The concentration of investments by type of obligation/market sector is as follows:
Insured
General Obligation
Revenue Bonds:

Health Revenue
Airport Revenue
Tobacco Revenue
Education Revenue
Pollution Control Revenue

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Power Revenue
Development Revenue
Other
Facilities Revenue
Housing Revenue
Transportation Revenue
Utilities Revenue

- (c) At July 31, 2004, the net unrealized gain on investments based on cost for federal income tax purposes of \$408,488,776 was as follows:

Aggregate gross unrealized gain for all investments in which there is an excess of value over tax cost

Aggregate gross unrealized loss for all investments in which there is an excess of tax cost over value

Net unrealized gain

For financial reporting purposes net unrealized gain on investments was \$3,685,968 and cost of investments aggregated \$409,062,266

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 certifying officers have determined that the registrant's disclosure controls and procedures are effective based on an evaluation of these controls and procedures as of a date within 90 days prior to 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 controls over financial reporting that occurred during the registrant's last fiscal quarter that have materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting.

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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.

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, 2004

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, 2004

By (Signature and Title)* /s/ Vincent Nave
Vincent Nave, Treasurer

Date September 28, 2004

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