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PIONEER MUNICIPAL HIGH INCOME TRUST  
Form N-Q  
April 01, 2013

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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: January 31, 2013

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  
NQI January 31, 2013

Ticker Symbol: MHI

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Schedule of Investments | 1/31/13 (unaudited)

Principal Amount USD (\$)	S&P/Moody's Rating		Value
		TAX EXEMPT OBLIGATIONS	
		- 126.5% of Net Assets	
		Alabama - 2.1%	
2,500,000	B-/B2	Alabama Industrial Development Authority Solid Waste Disposal Revenue, 6.45%, 12/1/23	\$ 2,499,700
4,500,000	NR/NR	Huntsville-Redstone Village Special Care Facilities Financing Authority Nursing Home Revenue, 5.5%, 1/1/43	4,402,845 \$ 6,902,545
		Arizona - 0.7%	
974,000	NR/Baa3	Pima County Industrial Development Authority Education Revenue, 6.75%, 7/1/31	\$ 977,614
950,000	NR/Baa3	Pima County Industrial Development Authority Education Revenue, 7.25%, 7/1/31	955,329
500,000	NR/Baa2	Yavapai County Industrial Development Authority Mediical Revenue, 6.0%, 8/1/33	511,970 \$ 2,444,913
		California - 13.9%	
3,000,000(a)	NR/A1	Abag Finance Authority for Nonprofit Corp. Revenue, 5.75%, 7/1/37	\$ 3,437,910
5,100,000	B-/NR	California County Tobacco Securitization Agency Revenue, 5.125%, 6/1/38	4,456,380
1,450,000	NR/NR	California Enterprise Development Authority Recovery Zone Facility Revenue, 8.5%, 4/1/31	1,678,114
5,000,000	NR/Baa3	California Pollution Control Financing Authority, 5.0%, 7/1/37	5,202,500
568,006(b)	NR/NR	California Statewide Communities Development Authority Environmental Facilities Revenue, 9.0%, 12/1/38	5,021
4,000,000	BB/NR	California Statewide Communities Development Authority Revenue Higher Education Revenue, 7.25%, 10/1/38 (144A)	4,062,320

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5,150,000(a)	AA+/Aaa	Golden State Tobacco Securitization Corp., Revenue Bonds, 7.8%, 6/1/42	5,279,883
7,000,000(a)	AA+/Aaa	Golden State Tobacco Securitization Corp., Revenue Bonds, 7.875%, 6/1/42	7,178,220
7,885,000	AA-/WR	Lehman Municipal Trust Receipts Revenue, RIB, 10.999%, 9/20/28 (144A)	10,488,469
2,000,000	B-/Caa1	Tobacco Securitization Authority of Northern California, Revenue, 5.375%, 6/1/38	1,764,640
3,000,000	BB+/B3	Tobacco Securitization Authority of Southern California Revenue, 5.0%, 6/1/37	2,725,200
		Colorado - 0.9%	\$ 46,278,657
2,000,000	BBB+/NR	Colorado Health Facilities Authority Revenue, 5.25%, 5/15/42	\$ 2,064,080
1,000,000	NR/NR	Kremmling Memorial Hospital District Certificate of Participation, 7.125%, 12/1/45	1,116,150
		Connecticut - 6.0%	\$ 3,180,230
1,000,000	NR/NR	Hamden Connecticut Facility Revenue, 7.75%, 1/1/43	\$ 1,087,790
10,335,000(c)	AAA/WR	Lehman Municipal Trust Receipts Revenue, 11.729%, 8/21/35	14,012,813
5,000,000	B/NR	Mohegan Tribe of Indians Gaming Authority, 6.25%, 1/1/31	5,004,100
		District of Columbia - 3.6%	\$ 20,104,703
5,000,000	BBB/Baa1	District of Columbia Tobacco Settlement Financing Corp., 6.5%, 5/15/33	\$ 5,863,950
6,000,000	BBB/Baa1	District of Columbia Tobacco Settlement Financing Corp., 6.75%, 5/15/40	6,239,940
		Florida - 7.3%	\$ 12,103,890
1,500,000	NR/NR	Alachua County Health Facilities Authority Revenue, 8.125%, 11/15/41	\$ 1,763,310
1,500,000	NR/NR	Alachua County Health Facilities Authority Revenue, 8.125%, 11/15/46	1,763,310
Principal Amount USD (\$)	S&P/Moody's Rating		Value

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	Florida - (continued)	
1,400,000	NR/NRBeacon Lakes Community Development District Special Assessment, 6.9%, 5/1/35	\$ 1,421,672
500,000	NR/BI Capital Trust Agency Revenue Bonds, 7.75%, 1/1/41	563,185
1,000,000	NR/NRFlorida Development Finance Corp., Educational Facilities Revenue, 6.0%, 9/15/40	1,087,750
2,000,000	NR/NRFlorida Development Finance Corp., Educational Facilities Revenue, 7.625%, 6/15/41	2,347,480
1,000,000	NR/NRFlorida Development Finance Corp., Educational Facilities Revenue, 7.75%, 6/15/42	1,140,800
1,000,000(a)	NR/WRHillsborough County Industrial Development Authority Revenue, 8.0%, 8/15/32	1,410,560
2,260,000	NR/NRLiberty County Subordinate Revenue, 8.25%, 7/1/28	2,288,566
2,500,000	A/A2Miami-Dade County Florida Aviation Revenue, 5.5%, 10/1/41	2,849,075
1,000,000	NR/NRSt. Johns County Industrial Development Authority Revenue, 5.25%, 1/1/26	913,860
2,000,000	NR/NRSt. Johns County Industrial Development Authority Revenue, 5.375%, 1/1/40	1,680,580
5,000,000	NR/Baa1Tallahassee Health Facilities Revenue, 6.375%, 12/1/30	5,083,400
		\$ 24,313,548
	Georgia - 2.7%	
4,240,000	AA-/WRAtlanta Georgia Water and Wastewater Revenue, RIB, 10.813%, 11/1/43 (144A)	\$ 4,939,049
500,000	B-/NRClayton County Development Authority Revenue, 9.0%, 6/1/35	559,295
2,400,000	NR/NRFulton County Residential Care Facilities Revenue, 5.0%, 7/1/27	2,421,648
1,100,000	NR/NRFulton County Residential Care Facilities Revenue, 5.125%, 7/1/42	1,098,790
		\$ 9,018,782
	Idaho - 1.5%	
5,000,000	A-/Baa1Power County Industrial Development Corp., Revenue, 6.45%, 8/1/32	\$ 5,008,550
	Illinois - 14.5%	
1,827,000(d)	NR/NR	\$ 227,070

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	Illinois Finance Authority Revenue, 0.0%, 11/15/52	
2,087,000(c)	NR/NRIllinois Finance Authority Revenue, 4.0%, 11/15/52	1,539,163
3,865,000	BBB+/NRIllinois Finance Authority Revenue, 6.0%, 8/15/38	4,390,872
2,000,000	AA+/Aa2Illinois Finance Authority Revenue, 6.0%, 8/15/39	2,349,920
2,450,000	NR/NRIllinois Finance Authority Revenue, 6.375%, 5/15/17	2,453,185
2,500,000	NR/Baa3Illinois Finance Authority Revenue, 6.5%, 4/1/39	2,855,800
240,000	NR/NRIllinois Finance Authority Revenue, 7.0%, 11/15/17	238,526
500,000	NR/NRIllinois Finance Authority Revenue, 7.0%, 5/15/18	500,840
855,000	NR/NRIllinois Finance Authority Revenue, 7.0%, 11/15/27	849,729
1,700,000	NR/NRIllinois Finance Authority Revenue, 7.625%, 5/15/25	2,035,971
600,000	NR/NRIllinois Finance Authority Revenue, 7.75%, 5/15/30	714,018
2,000,000	NR/NRIllinois Finance Authority Revenue, 8.0%, 5/15/40	2,385,420
3,200,000	NR/NRIllinois Finance Authority Revenue, 8.0%, 5/15/46	3,816,672
4,000,000	NR/NRIllinois Finance Authority Revenue, 8.25%, 5/15/45	4,242,400
2,500,000	NR/NRIllinois Finance Authority Revenue, 8.25%, 2/15/46	2,731,375
16,880,000(e)	AAA/A3Metropolitan Pier & Exposition Authority Dedicated State Tax Revenue, 0.0%, 6/15/22	15,837,322
1,450,000	NR/NRSouthwestern Illinois Development Authority Revenue, 5.625%, 11/1/26	1,235,313
	Indiana - 1.6%	\$ 48,403,596
250,000	NR/NRCity of Carmel Indiana Nursing Home Revenue, 7.0%, 11/15/32	\$ 270,972
750,000	NR/NRCity of Carmel Indiana Nursing Home Revenue, 7.125%, 11/15/42	813,428
500,000	NR/NRCity of Carmel Indiana Nursing Home Revenue, 7.125%, 11/15/47	540,360
3,570,000	NR/NRVigo County Hospital Authority Revenue, 5.8%, 9/1/47 (144A)	3,703,554
		\$ 5,328,314
Principal Amount USD (\$)	S&P/Moody's Rating	Value

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		Louisiana - 2.1%	
1,500,000	BBB-/Baa3	Louisiana Local Government Environmental Facilities & Community Development Authority Revenue, 6.75%, 11/1/32	\$ 1,705,200
5,000,000	NR/Baa1	Louisiana Public Facilities Authority Revenue, 5.5%, 5/15/47	5,323,600 \$ 7,028,800
		Maine - 0.6%	
1,500,000	NR/Baa3	Maine Health & Higher Educational Facilities Authority Revenue, 7.5%, 7/1/32	\$ 1,926,510
		Massachusetts - 5.3%	
7,100,000	A/WR	Massachusetts Development Finance Agency Revenue, 5.75%, 1/1/42	\$ 9,485,884
2,250,000	NR/NR	Massachusetts Development Finance Agency Revenue, 7.1%, 7/1/32	2,251,125
790,000	AA/NR	Massachusetts Educational Financing Authority Revenue, 6.0%, 1/1/28	918,802
4,500,000(b)	NR/NR	Massachusetts Health & Educational Facilities Authority Revenue, 6.5%, 1/15/38	23,355
5,000,000	BB-/NR	Massachusetts Health & Educational Facilities Authority Revenue, 6.75%, 10/1/33	5,078,250 \$ 17,757,416
		Michigan - 3.4%	
935,000	NR/NR	Doctor Charles Drew Academy Certificate of Participation, 5.7%, 11/1/36	\$ 683,662
1,500,000	BB-/NR	John Tolfree Health System Corp. Revenue, 6.0%, 9/15/23	1,499,925
2,000,000	BB+/NR	Kent Hospital Finance Authority Revenue, 6.25%, 7/1/40	2,102,840
5,830,000	B-/NR	Michigan Tobacco Settlement Finance Authority Revenue, 6.0%, 6/1/48	5,541,765
1,410,000(a)	BBB/NR	Star International Academy Certificates of Participation, 6.125%, 3/1/37	1,444,672 \$ 11,272,864
		Minnesota - 0.3%	
1,000,000	NR/NR	Port Authority of the City of Bloomington, Minnesota Recovery Zone Facility Revenue, 9.0%, 12/1/35	\$ 1,193,120

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		Montana - 0.1%	
1,600,000(b)(f)	NR/NR	Two Rivers Authority Inc., Project Revenue, 7.375%, 11/1/27	\$ 237,568
		New Jersey - 8.0%	
1,500,000	NR/NR	New Jersey Economic Development Authority Revenue, 10.5%, 6/1/32 (144A)	\$ 1,651,245
5,000,000	B/B3	New Jersey Economic Development Authority Revenue, 5.25%, 9/15/29	5,095,350
2,500,000	B/B3	New Jersey Economic Development Authority Revenue, 5.75%, 9/15/27	2,574,275
6,150,000	B/B3	New Jersey Economic Development Authority Revenue, 7.0%, 11/15/30	6,173,001
3,000,000	B-/B1	Tobacco Settlement Financing Corp., Revenue, 4.625%, 6/1/26	2,911,170
8,000,000(a)	AA+/#Aaa	Tobacco Settlement Financing Corp., Revenue, 6.75%, 6/1/39	8,174,240
			\$ 26,579,281
		New Mexico - 1.2%	
1,500,000	NR/NR	Otero County New Mexico Project Revenue, 6.0%, 4/1/23	\$ 1,373,130
2,960,000	NR/NR	Otero County New Mexico Project Revenue, 6.0%, 4/1/28	2,577,154
			\$ 3,950,284
		New York - 7.8%	
2,000,000	NR/NR	Chautauqua County Capital Resource Corp., Revenue, 8.0%, 11/15/30	\$ 2,158,740
3,000,000	NR/NR	Dutchess County Industrial Development Agency Revenue, 7.5%, 3/1/29	3,078,390
2,000,000	BBB+/NR	Hempstead Local Development Corp. Revenue, 5.75%, 7/1/39	2,282,460
Principal Amount USD (\$)	S&P/Moody's Rating		Value
		New York - (continued)	
2,000,000	BB/B2	New York City Industrial Development Agency Revenue, 5.25%, 12/1/32	\$ 2,000,000
2,000,000	BB/B2	New York City Industrial Development Agency Revenue, 7.625%, 12/1/32	2,050,180
7,040,000(c)	AAA/WR	New York State Dormitory Authority Revenue, 13.299%, 5/29/14 (144A)	10,294,099
1,000,000	NR/Ba1		1,115,850



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		New York State Dormitory Authority Revenue, 6.125%, 12/1/29	
3,000,000		NR/NRSuffolk County Industrial Development Agency Revenue, 7.25%, 1/1/30	3,002,940 \$ 25,982,659
		North Carolina - 3.4%	
4,795,000		NR/NRCharlotte North Carolina Special Facilities Revenue, 7.75%, 2/1/28	\$ 4,802,145
6,685,000		NR/NRCharlotte Special Facilities Revenue, 5.6%, 7/1/27	6,587,265 \$ 11,389,410
		North Dakota - 0.8%	
2,525,000		BBB+/NRCounty of Burleigh Health Care Revenue, 5.0%, 7/1/38	\$ 2,744,145
		Ohio - 0.7%	
2,000,000		AA/A2JobsOhio Beverage System Liquor Profits Revenue, 5.0%, 1/1/38	\$ 2,281,880
		Oklahoma - 0.4%	
1,225,000		NR/WRTulsa Municipal Airport Trust Revenue, 6.25%, 6/1/20	\$ 1,227,965
		Pennsylvania - 2.2%	
1,550,000		NR/Baa2Allegheny County Hospital Development Authority Revenue, 5.125%, 5/1/25	\$ 1,550,558
1,280,000(b)		NR/WRLanghorne Manor Borough Higher Education Authority Revenue, 7.35%, 7/1/22	371,264
5,000,000		B-/Caa2Pennsylvania Economic Development Financing Authority Solid Waste Disposal Revenue, 6.0%, 6/1/31	5,000,350
500,000		BBB+/NRPennsylvania Higher Educational Facilities Authority Development Revenue, 5.4%, 7/15/36	508,945 \$ 7,431,117
		Rhode Island - 2.1%	
6,000,000(f)		NR/NRCentral Falls Rhode Island Detention Facility Corp., Revenue, 7.25%, 7/15/35	\$ 5,197,320
1,500,000		NR/NRRhode Island Health & Educational Building Corp., Revenue, 8.375%, 1/1/46	1,778,970 \$ 6,976,290
		South Carolina - 1.2%	
3,850,000(a)		BBB+/Baa1South Carolina Jobs Economic Development Authority Revenue, 6.375%, 8/1/34	\$ 3,967,694
		Tennessee - 1.4%	
4,600,000		BBB+/NRSullivan County Health, Educational & Housing Facilities Board Revenue, 5.25%, 9/1/36	\$ 4,857,646
		Texas - 16.9%	
1,345,000		NR/Caa2Bexar County Housing Finance Corp., Multi Family Housing Revenue, 8.0%, 12/1/36	\$ 931,116
2,500,000		BB+/Ba1Central Texas Regional Mobility Authority Revenue, 6.75%, 1/1/41	2,925,475

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4,000,000	NR/NRDecatur Hospital Authority Medical Revenue, 7.0%, 9/1/25	4,240,680
725,078(b)(f)	NR/NRGulf Coast Industrial Development Authority Revenue, 7.0%, 12/1/36	6,700
3,750,000	B/B3Houston Airport System Special Facilities Revenue, 5.7%, 7/15/29	3,759,150
3,000,000	NR/NRJefferson County Industrial Development Corp., Revenue, 8.25%, 7/1/32	3,078,510
5,340,000	NR/NRLubbock Health Facilities Development Corp., Nursing Home Revenue, 6.625%, 7/1/36	5,594,291
10,000,000	BBB+/A3North Texas Tollway Authority Transportation Revenue, 5.75%, 1/1/33	11,156,100

Principal Amount USD (\$)	S&P/Moody's Rating	Value
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	Texas - (continued)	
2,810,000(c)	AAA/AaaNorthside Independent School District, GO, 13.701%, 9/29/12 (144A)	\$ 3,239,480
1,500,000	NR/NRRed River Health Facilities Development Corp., Revenue, 8.0%, 11/15/41	1,737,975
3,000,000	NR/NRSanger Industrial Development Corp., Revenue, 8.0%, 7/1/38	3,214,770
7,040,000(c)	AA+/AaaState of Texas, GO, 12.536%, 4/1/13	8,950,093
2,000,000	NR/NRTarrant County Cultural Education Facilities Finance Corp., Revenue, 8.0%, 11/15/34	2,293,960
1,000,000	NR/NRTarrant County Cultural Education Facilities Finance Corp., Revenue, 8.125%, 11/15/39	1,119,300
1,500,000	NR/NRTarrant County Cultural Education Facilities Finance Corp., Revenue, 8.25%, 11/15/44	1,684,845
2,500,000	NR/NRTravis County Health Facilities Development Corp., Revenue, 7.125%, 1/1/46	2,677,125 \$ 56,609,570
	Vermont - 0.5%	
1,500,000(a)	A-/Baa1Vermont Educational & Health Buildings Financing Agency Higher Education Revenue, 6.0%, 10/1/28	\$ 1,556,790
	Virginia - 0.3%	
1,000,000	BBB/Ba1Peninsula Ports Authority Revenue, 6.0%, 4/1/33	\$ 1,013,610

Washington - 10.3%

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4,710,000	A+/A2Spokane Public Facilities District Hotel/Motel Tax & Sales, 5.75%, 12/1/27	\$ 4,876,357
14,315,000(d)	AA+/Aa1State of Washington, GO, 0.0%, 6/1/22	11,670,876
7,025,000	BBB/Baa1Tobacco Settlement Authority Revenue, 6.625%, 6/1/32	7,193,530
3,795,000	A/A2Washington State Health Care Facilities Authority Revenue, 6.0%, 1/1/33	4,275,523
5,000,000	NR/NRWashington State Housing Finance Committee Nonprofit Revenue, 5.625%, 1/1/27	5,073,300
1,150,000	NR/NRWashington State Housing Finance Committee Nonprofit Revenue, 6.75%, 10/1/47	1,167,791
	West Virginia - 0.9%	\$ 34,257,377
2,000,000	NR/NRCity of Philippi, 7.75%, 10/1/44	\$ 2,051,580
745,000	NR/NRWest Virginia Hospital Finance Authority Hospital Revenue, 9.125%, 10/1/41	955,693
	Wisconsin - 1.8%	\$ 3,007,273
2,320,000(g)	NR/NRAztalan Township, 7.5%, 5/1/18	\$ -
2,500,000	NR/NRWisconsin Public Finance Authority Continuing Care Retirement Community Revenue, 8.25%, 6/1/46	3,012,375
1,500,000	NR/NRWisconsin State Public Finance Authority Revenue, 8.375%, 6/1/20	1,517,445
1,500,000	NR/NRWisconsin State Public Finance Authority Revenue, 8.625%, 6/1/47	1,621,500
		\$ 6,151,320
	TOTAL TAX EXEMPT OBLIGATIONS (Cost \$374,898,476)	\$ 422,488,317
	MUNICIPAL COLLATERALIZED DEBT OBLIGATION - 1.9% of Net Assets	
10,000,000(c)(f)	NR/NRNon-Profit Preferred Funding Trust I, 6.75%, 9/15/37 (144A)	\$ 6,366,200
	TOTAL MUNICIPAL COLLATERALIZED DEBT OBLIGATION (Cost \$10,000,000)	\$ 6,366,200

TOTAL INVESTMENTS IN SECURITIES - 128.4%	
(Cost - \$384,898,476) (h) (i)	\$ 428,854,517
OTHER ASSETS AND LIABILITIES - 1.8%	\$ 6,060,080
PREFERRED SHARES AT REDEMPTION VALUE, INCLUDING DIVIDENDS PAYABLE - (30.2)%	\$ (101,000,768)
NET ASSETS APPLICABLE TO COMMON SHAREOWNERS - 100.0%	\$ 333,913,829

NR	Security not rated by S&P or Moody's.
WR	Rating withdrawn by either S&P or Moody's.
(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 January 31, 2013, the value of these securities amounted to \$44,744,416, or 13.4% of total net assets applicable to common shareowners.
RIB	Residual Interest Bond. The interest rate is subject to change periodically and inversely based upon prevailing market rates. The interest rate shown is the rate at January 31, 2013.
GO	General Obligation.

- (a) 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.
- (b) Security is in default and is non income producing.
- (c) The interest rate is subject to change periodically. The interest is shown is the rate at January 31, 2013.
- (d) Security issued with a zero coupon. Income is recognized through accretion of discount.
- (e) Debt obligation initially issued at one coupon which converts to a higher coupon at a specific date. The rate shown is the rate at January 31, 2013.
- (f) Indicates a security that has been deemed as illiquid. The aggregate cost of illiquid securities is \$18,159,633. The aggregate fair value of \$11,807,788 represents 3.5% of total net assets applicable to common shareowners.
- (g) Security is valued using fair value methods.

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

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Insured	
NATL-RE	4.8%
FSA	3.6
NATL-RE FGIC	2.7
AMBAC GO OF INSTN	2.2
PSF-GTD	0.8
Revenue Bonds:	
Health Revenue	16.6
Facilities Revenue	14.8
Other Revenue	14.7
Tobacco Revenue	13.4
Development Revenue	9.5
Education Revenue	6.4
Airport Revenue	5.0
Transportation Revenue	2.6
Pollution Control Revenue	1.7
Water Revenue	1.2
Utilities Revenue	0.0*
	100.0%

\* Amount is less than 0.1%

(i) At January 31, 2013 the net unrealized gain on investments based on cost for federal tax purposes \$384,898,476 was as follows:

Aggregate gross unrealized gain for all investments in which there is an excess of value over tax cost	\$ 54,371,492
Aggregate gross unrealized loss for all investments in which there is an excess of tax cost over value	(10,415,451)
Net unrealized gain	\$ 43,956,041

For financial reporting purposes net unrealized gain on investments was \$43,956,041 and cost of investments aggregated \$384,898,476.

Schedule of Investments | 1/31/13 (unaudited)

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.

The following is a summary of the inputs used as of January 31, 2013, in valuing the Trust's investments.

	Level 1	Level 2	Level 3	Total
TAX EXEMPT OBLIGATIONS	\$-	\$422,488,317	\$-	\$422,488,317
MUNICIPAL COLLATERALIZED DEBT OBLIGATION	-	6,366,200	-	6,366,200
TOTAL	\$-	\$428,854,517	\$-	\$428,854,517

The following is a reconciliation of assets valued using significant unobservable inputs (level 3):

	Balance as of 4/30/12	Realized gain (loss)	Change in Unrealized appreciation (depreciation)	Purchases	Sales	Accrued discounts/premiums	Transfers in to Level 3*	Transfers out of Level 3*	Balance as of 1/31/13	
Tax exempt obligations	\$-	\$-	\$ -	\$-	\$-	\$ -	\$-	\$-	\$-	**
Total	\$-	\$-	\$ -	\$-	\$-	\$ -	\$-	\$-	\$-	

\* Transfers are calculated on the end of period values.

\*\* Azatlan Township is fair valued at \$0.

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During the period ended January 31, 2013, there were no transfers between Levels 1, 2 and 3.

### 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

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Date April 1, 2013

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 April 1, 2013

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

Date April 1, 2013

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