PIONEER MUNICIPAL HIGH INCOME TRUST Form N-Q March 31, 2015

OMB APPROVAL

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

FORM N-Q

QUARTERLY SCHEDULE OF PORTFOLIO HOLDINGS OF REGISTERED MANAGEMENT INVESTMENT COMPANY

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)

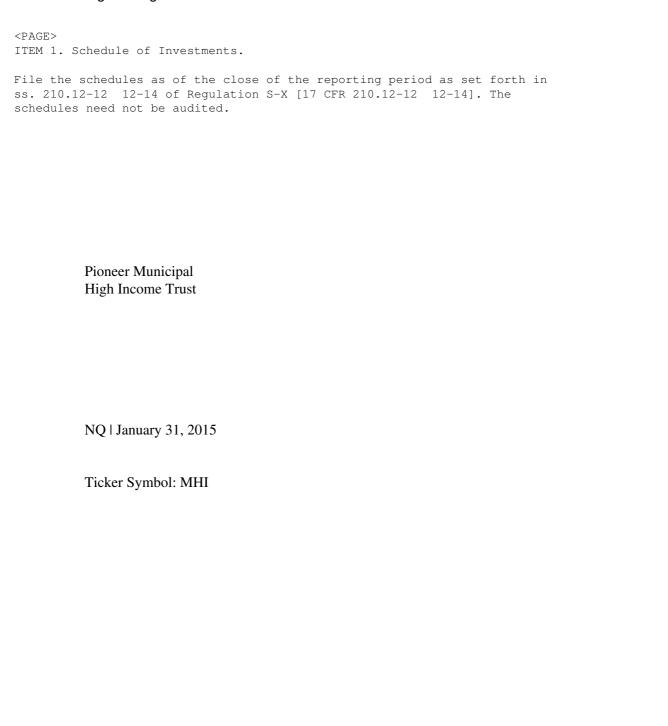
Registrant's telephone number, including area code: (617) 742-7825

Date of fiscal year end: April 30

Date of reporting period: January 31, 2015

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 270.30b1-5). 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.



Schedule of Investments | 1/31/15 (unaudited)

Principal Amount USD (\$)		Value
·	TAX EXEMPT OBLIGATIONS - 129.0% of Net Assets (f) Alabama - 1.5% Huntsville-Redstone Village Special Care Facilities Financing Authority Nursing Home	
	Revenue, 5.5%, 1/1/43	\$ 4,531,500
24,000	Arizona - 0.0%† Pima County Industrial Development Authority Education Revenue, 6.75%, 7/1/31	\$ 24,140
	California - 11.4% Abag Finance Authority for Nonprofit Corp., Revenue, 5.75%, 7/1/37 California Enterprise Development Authority	\$ 3,130,770
1 000 000	Recovery Zone Facility Revenue, 8.5%, 4/1/31 California Municipal Finance Authority, 5.75%,	1,697,443
	7/1/30	1,063,160
	California Pollution Control Financing Authority, 5.0%, 7/1/37 (144A)	5,192,450
1,740,000	California School Finance Authority, 7.375%, 10/1/43	2,050,781
1,400,000	California Statewide Communities Development Authority, 5.625%, 11/1/33	1,519,126
	California Statewide Communities Development Authority Environmental Facilities Revenue, 9.0%, 12/1/38	6
	Inland Empire Tobacco Securitization Authority Revenue, 6/1/36	3,878,000
	DLehman Municipal Trust Receipts Revenue, RIB, 11.147%, 9/20/28 (144A)	10,568,975
	College District, General Obligation, 4.0%, 8/1/39	2,169,460
2,000,000	Tobacco Securitization Authority of Northern California Revenue, 5.375%, 6/1/38	1,749,860
3,000,000	Tobacco Securitization Authority of Southern California Revenue, 5.0%, 6/1/37	2,574,030 \$ 35,594,061
4 =00 0	Colorado - 1.5%	
1,500,000	Colorado Educational & Cultural Facilities Authority, 8.0%, 9/1/43	\$ 1,550,535

2,000,000	Colorado Health Facilities Authority Revenue,	
1.000.000	5.25%, 5/15/42 Kremmling Memorial Hospital District	2,156,520
-,,	Certificate of Participation, 7.125%, 12/1/45	836,480
	Connecticut - 7.6%	\$ 4,543,535
1,000,000	Hamden Connecticut Facility Revenue, 7.75%,	ф 1 02 C 0 7 0
10.335.000(e	1/1/43)Lehman Municipal Trust Receipts Revenue,	\$ 1,036,970
	RIB, 11.889%, 8/21/35	12,187,549
5,000,000	Mohegan Tribe of Indians Gaming Authority, 6.25%, 1/1/31	5,000,650
5,000,000(g	State of Connecticut, General Obligation, 4.0%,	3,000,030
	9/1/30	5,554,600
	District of Colombia - 4.0%	\$ 23,779,769
5,000,000	District of Columbia Tobacco Settlement	
	Financing Corp., 6.5%, 5/15/33	\$ 6,427,550
6,000,000	District of Columbia Tobacco Settlement	
	Financing Corp., 6.75%, 5/15/40	6,001,200
	Florida - 6.4%	\$ 12,428,750
1.500.000	Alachua County Health Facilities Authority	
, ,	Revenue, 8.125%, 11/15/41	\$ 1,762,710
1,500,000	Alachua County Health Facilities Authority	
5 00 000	Revenue, 8.125%, 11/15/46	1,758,750
500,000	Capital Trust Agency Revenue Bonds, 7.75%, 1/1/41	489,680
5,000,000	Florida's Turnpike Enterprise, 4.0%, 7/1/34	5,407,550
	Hillsborough County Industrial Development	
	Authority Revenue, 8.0%, 8/15/32	1,315,820
2,260,000(b)	Liberty County Subordinate Revenue, 8.25%,	504 (12
2 500 000	7/1/28 Miami-Dade County Florida Aviation Revenue,	504,613
2,300,000	5.5%, 10/1/41	2,900,875
2,250,000(e	St. Johns County Industrial Development	, ,
	Authority Revenue, 1.344%, 1/1/49	835,493
832,581(b)	St. Johns County Industrial Development	0
5 000 000	Authority Revenue, 2.5%, 1/1/49 Tallahassee Health Facilities Revenue, 6.375%,	8
3,000,000	12/1/30	5,019,800
		\$ 19,995,299
	Georgia - 5.0%	
4,240,000(e	Atlanta Georgia Water and Wastewater	ф. 4.270.720
2 500 000	Revenue, RIB, 10.869%, 11/1/43 (144A) Clayton County Development Authority	\$ 4,279,729
2,500,000	Revenue, 8.75%, 6/1/29	3,143,325
3,445,000	Clayton County Development Authority	-,,0=0
	Revenue, 9.0%, 6/1/35	3,520,032
4,000,000	Private Colleges & Universities Authority	4.700.000
	Revenue, 5.0%, 10/1/43	4,703,360

\$ 15,646,446

Idaho - 1.6%

5,000,000 Power County Industrial Development Corp.,

Revenue, 6.45%, 8/1/32 \$ 5,010,750

Illinois - 14.2%

Schedule of Investments | 1/31/15 (unaudited)

1,827,000(d)Illinois Finance Authority Revenue, 11/15/52		\$ 162,068
Principal Amount		
USD (\$)		Value
	Illinois - (continued)	
2,087,000(e)	Olllinois Finance Authority Revenue, 4.0%, 11/15/52	\$ 1,335,075
	Illinois Finance Authority Revenue, 6.0%, 8/15/38	4,430,991
	Illinois Finance Authority Revenue, 6.0%, 8/15/39	2,370,480
	Illinois Finance Authority Revenue, 6.375%, 5/15/17	581,386
	Illinois Finance Authority Revenue, 6.5%, 4/1/39	2,789,550
	Illinois Finance Authority Revenue, 7.0%, 11/15/17	240,122
	Illinois Finance Authority Revenue, 7.0%, 5/15/18	235,559
	Illinois Finance Authority Revenue, 7.625%, 5/15/25	1,908,420
	Illinois Finance Authority Revenue, 7.75%, 5/15/30	666,114
	Illinois Finance Authority Revenue, 8.0%, 5/15/40	2,214,060
	Illinois Finance Authority Revenue, 8.0%, 5/15/46	3,527,136
	Illinois Finance Authority Revenue, 8.125%, 2/15/40	2,150,140
	Illinois Finance Authority Revenue, 8.25%, 2/15/46	2,694,300
	Metropolitan Pier & Exposition Authority Dedicated State Tax Revenue, 0.00%, 6/15/22	17,902,253
1,250,000	Southwestern Illinois Development Authority Revenue, 5.625%, 11/1/26	1,082,337
		\$ 44,289,991
250 000	Indiana - 1.7%	
	City of Carmel Indiana Nursing Home Revenue, 7.0%, 11/15/32	\$ 282,602
	City of Carmel Indiana Nursing Home Revenue, 7.125%, 11/15/42	844,005
	City of Carmel Indiana Nursing Home Revenue, 7.125%, 11/15/47	560,965
3,570,000	Vigo County Hospital Authority Revenue,	
	5.8%, 9/1/47 (144A)	3,752,606 \$ 5,440,178
	Kentucky - 1.9%	

5,000,000	Kentucky Economic Development Finance Authority Revenue, 6.375%, 6/1/40	\$ 5,874,650
	Louisiana - 3.1%	
2,260,000	Jefferson Parish Hospital Service District No. 2, 6.375%, 7/1/41	\$ 2,673,354
1,500,000	Louisiana Local Government Environmental Facilities & Community Development	
5 000 000	Authority Revenue, 6.75%, 11/1/32 Louisiana Public Facilities Authority Revenue,	1,724,280
3,000,000	5.5%, 5/15/47	5,290,900
	Maine - 2.2%	\$ 9,688,534
1,500,000	Maine Health & Higher Educational Facilities	
_,,	Authority Revenue, 7.5%, 7/1/32	\$ 1,839,330
4,480,000	Maine Turnpike Authority Revenue, 5.0%,	
	7/1/42	5,178,298
	Maryland - 0.5%	\$ 7,017,628
1,500,000	Maryland Health & Higher Educational	
, ,	Facilities Authority Revenue, 6.75%, 7/1/44	\$ 1,656,285
	Massachusetts - 4.9%	
7,100,000	Massachusetts Development Finance Agency	
	Revenue, 5.75%, 1/1/42	\$ 9,535,655
595,000	Massachusetts Educational Financing Authority	
4.500.000(b)(a)	Revenue, 6.0%, 1/1/28	635,531
4,300,000(0)(0))Massachusetts Health & Educational Facilities Authority Revenue, 6.5%, 1/15/38	11,610
5,000,000	Massachusetts Health & Educational Facilities	11,010
, ,	Authority Revenue, 6.75%, 10/1/33	5,019,850
		\$ 15,202,646
005 000	Michigan - 3.4%	
895,000	Doctor Charles Drew Academy Certificate of Participation, 5.7%, 11/1/36	\$ 179,036
2,000,000	Kent Hospital Finance Authority Revenue,	φ 172,030
, ,	6.25%, 7/1/40	2,023,520
2,640,000	Michigan State University Revenue, 5.0%,	
C 100 000	8/15/41	3,093,816
6,100,000	Michigan Tobacco Settlement Finance Authority Revenue, 6.0%, 6/1/48	5,277,537
	Authority Revenue, 0.0%, 0/1/40	\$ 10,573,909
	Minnesota - 0.8%	, -,,-
2,000,000	Port Authority of the City of Bloomington,	
	Minnesota Recovery Zone Facility Revenue,	ф 2 240 060
	9.0%, 12/1/35	\$ 2,349,960
	Montana - 0.0%†	
1,600,000(b)(c)	Two Rivers Authority, Inc., Project Revenue,	
	7.375%, 11/1/27	\$ 126,112

New Jersey - 1.9%	
3,000,000 New Jersey Economic Development Authorit	y
Revenue, 5.25%, 9/15/29	\$ 3,250,320
2,500,000 New Jersey Economic Development Authorit	y
Revenue, 5.75%, 9/15/27	2,786,700
	\$ 6,037,020
New Mexico - 1.3%	
1,500,000 Otero County New Mexico Project Revenue,	
6.0%, 4/1/23	\$ 1,385,310
2,960,000 Otero County New Mexico Project Revenue,	
6.0%, 4/1/28	2,576,917
	\$ 3,962,227
Principal	
Amount	
USD (\$)	Value
New York - 9.6%	
2,000,000 Chautauqua County Capital Resource Corp.,	
Revenue, 8.0%, 11/15/30	\$ 2,107,340
2,000,000 Hempstead Local Development Corp., Revenue,	
5.75%, 7/1/39	2,271,260
2,000,000	