PIONEER MUNICIPAL HIGH INCOME TRUST Form N-O

September 27, 2017

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: July 31, 2017

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.

<PAGE>

ITEM 1. Schedule of Investments.

File the schedules as of the close of the reporting period as set forth in ss. 210.12-12 12-14 of Regulation S-X [17 CFR 210.12-12 12-14]. The

schedules need not be audited.

Pioneer Municipal High Income Trust

NQ | July 31, 2017

Ticker Symbol: MHI

Principal Amount USD (\$)		Value
4,500,000	TAX EXEMPT OBLIGATIONS - 132.9% of Net Assets (a) Alabama - 1.5% Huntsville-Redstone Village Special Care	
,	Facilities Financing Authority, Redstone	
	Village Project, 5.5%, 1/1/43	\$4,292,685
	Arizona - 0.7%	
2,250,000	City of Phoenix, AZ, Industrial	
	Development Authority, 3rd & Indian	
	School Assisted Living Project, 5.4%,	
	10/1/36	\$2,158,043
24,000	County of Pima, AZ, Industrial	
	Development Authority, Arizona Charter	
	Schools Project, Series C, 6.75%, 7/1/31	24,141
		\$2,182,184
	California - 9.9%	
10,000,000(b)	California County Tobacco Securitization	
	Agency, Capital Appreciation, Stanislaus	
	County Subordinated, Series A, 6/1/46	\$1,404,500
1,450,000	California Enterprise Development	
	Authority, Sunpower Corp., 8.5%, 4/1/31	1,589,432

530,000	California Municipal Finance Authority, Santa Rosa Academy Project, Series A,	
7 000 000	5.75%, 7/1/30	571,006
5,000,000	California Pollution Control Financing Authority, 5.0%, 7/1/37 (144A)	5,008,550
1,740,000	California School Finance Authority,	2,000,000
	Classical Academies Project,	2.020.752
1,400,000	Series A, 7.375%, 10/1/43 California Statewide Communities	2,028,753
1,400,000	Development Authority, Lancer Plaza	
	Project, 5.625%, 11/1/33	1,502,200
568,006(c)	California Statewide Communities	
	Development Authority, Microgy Holdings Project, 9.0%, 12/1/38	6
7,885,000(d)	Lehman Municipal Trust Receipts, RIB,	U
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	11.821%, 11/1/39 (144A) (AGM Insured)	8,595,123
2,000,000(e)	Los Angeles Community College District,	
1 (05 000	Series G, 4.0%, 8/1/39	2,116,360
1,605,000	Los Angeles County Metropolitan Transportation Authority, Series A, 5.0%,	
	7/1/30	1,981,677
1,000,000	River Islands Public Financing Authority,	
	Community Facilities, 5.5%, 9/1/45	1,065,800
3,000,000	Tobacco Securitization Authority of Southern California, Series A-1, 5.0%,	
	0/1/3/	3.005.400
	6/1/37	3,005,400 \$28,868,807
	Colorado - 0.6%	
1,500,000	Colorado - 0.6% Colorado Educational & Cultural	
1,500,000	Colorado - 0.6% Colorado Educational & Cultural Facilities Authority, Rocky Mountain	\$28,868,807
1,500,000	Colorado - 0.6% Colorado Educational & Cultural	
1,500,000	Colorado - 0.6% Colorado Educational & Cultural Facilities Authority, Rocky Mountain	\$28,868,807
1,500,000 2,915,000	Colorado - 0.6% Colorado Educational & Cultural Facilities Authority, Rocky Mountain Classical Academy Project, 8.0%, 9/1/43 Connecticut - 3.2% Mohegan Tribal Finance Authority, 7.0%,	\$28,868,807 \$1,669,455
2,915,000	Colorado - 0.6% Colorado Educational & Cultural Facilities Authority, Rocky Mountain Classical Academy Project, 8.0%, 9/1/43 Connecticut - 3.2% Mohegan Tribal Finance Authority, 7.0%, 2/1/45 (144A)	\$28,868,807
	Colorado - 0.6% Colorado Educational & Cultural Facilities Authority, Rocky Mountain Classical Academy Project, 8.0%, 9/1/43 Connecticut - 3.2% Mohegan Tribal Finance Authority, 7.0%, 2/1/45 (144A) State of Connecticut, Series E, 4.0%,	\$28,868,807 \$1,669,455 \$3,083,895
2,915,000	Colorado - 0.6% Colorado Educational & Cultural Facilities Authority, Rocky Mountain Classical Academy Project, 8.0%, 9/1/43 Connecticut - 3.2% Mohegan Tribal Finance Authority, 7.0%, 2/1/45 (144A)	\$28,868,807 \$1,669,455
2,915,000 5,000,000(e)	Colorado - 0.6% Colorado Educational & Cultural Facilities Authority, Rocky Mountain Classical Academy Project, 8.0%, 9/1/43 Connecticut - 3.2% Mohegan Tribal Finance Authority, 7.0%, 2/1/45 (144A) State of Connecticut, Series E, 4.0%, 9/1/30	\$28,868,807 \$1,669,455 \$3,083,895 5,214,000 1,034,980
2,915,000 5,000,000(e)	Colorado - 0.6% Colorado Educational & Cultural Facilities Authority, Rocky Mountain Classical Academy Project, 8.0%, 9/1/43 Connecticut - 3.2% Mohegan Tribal Finance Authority, 7.0%, 2/1/45 (144A) State of Connecticut, Series E, 4.0%, 9/1/30 Town of Hamden, CT, Whitney Center Project, Series A, 7.75%, 1/1/43	\$28,868,807 \$1,669,455 \$3,083,895 5,214,000
2,915,000 5,000,000(e) 1,000,000	Colorado - 0.6% Colorado Educational & Cultural Facilities Authority, Rocky Mountain Classical Academy Project, 8.0%, 9/1/43 Connecticut - 3.2% Mohegan Tribal Finance Authority, 7.0%, 2/1/45 (144A) State of Connecticut, Series E, 4.0%, 9/1/30 Town of Hamden, CT, Whitney Center Project, Series A, 7.75%, 1/1/43 District of Columbia - 5.1%	\$28,868,807 \$1,669,455 \$3,083,895 5,214,000 1,034,980
2,915,000 5,000,000(e)	Colorado - 0.6% Colorado Educational & Cultural Facilities Authority, Rocky Mountain Classical Academy Project, 8.0%, 9/1/43 Connecticut - 3.2% Mohegan Tribal Finance Authority, 7.0%, 2/1/45 (144A) State of Connecticut, Series E, 4.0%, 9/1/30 Town of Hamden, CT, Whitney Center Project, Series A, 7.75%, 1/1/43 District of Columbia - 5.1% District of Columbia Tobacco Settlement	\$28,868,807 \$1,669,455 \$3,083,895 5,214,000 1,034,980
2,915,000 5,000,000(e) 1,000,000	Colorado - 0.6% Colorado Educational & Cultural Facilities Authority, Rocky Mountain Classical Academy Project, 8.0%, 9/1/43 Connecticut - 3.2% Mohegan Tribal Finance Authority, 7.0%, 2/1/45 (144A) State of Connecticut, Series E, 4.0%, 9/1/30 Town of Hamden, CT, Whitney Center Project, Series A, 7.75%, 1/1/43 District of Columbia - 5.1%	\$28,868,807 \$1,669,455 \$3,083,895 5,214,000 1,034,980
2,915,000 5,000,000(e) 1,000,000	Colorado - 0.6% Colorado Educational & Cultural Facilities Authority, Rocky Mountain Classical Academy Project, 8.0%, 9/1/43 Connecticut - 3.2% Mohegan Tribal Finance Authority, 7.0%, 2/1/45 (144A) State of Connecticut, Series E, 4.0%, 9/1/30 Town of Hamden, CT, Whitney Center Project, Series A, 7.75%, 1/1/43 District of Columbia - 5.1% District of Columbia Tobacco Settlement Financing Corp., Asset-Backed, 6.5%, 5/15/33 District of Columbia Tobacco Settlement	\$28,868,807 \$1,669,455 \$3,083,895 5,214,000 1,034,980 \$9,332,875
2,915,000 5,000,000(e) 1,000,000 4,365,000	Colorado - 0.6% Colorado Educational & Cultural Facilities Authority, Rocky Mountain Classical Academy Project, 8.0%, 9/1/43 Connecticut - 3.2% Mohegan Tribal Finance Authority, 7.0%, 2/1/45 (144A) State of Connecticut, Series E, 4.0%, 9/1/30 Town of Hamden, CT, Whitney Center Project, Series A, 7.75%, 1/1/43 District of Columbia - 5.1% District of Columbia Tobacco Settlement Financing Corp., Asset-Backed, 6.5%, 5/15/33 District of Columbia Tobacco Settlement Financing Corp., Asset-Backed, 6.75%,	\$28,868,807 \$1,669,455 \$3,083,895 5,214,000 1,034,980 \$9,332,875 \$4,877,276
2,915,000 5,000,000(e) 1,000,000 4,365,000 6,000,000	Colorado - 0.6% Colorado Educational & Cultural Facilities Authority, Rocky Mountain Classical Academy Project, 8.0%, 9/1/43 Connecticut - 3.2% Mohegan Tribal Finance Authority, 7.0%, 2/1/45 (144A) State of Connecticut, Series E, 4.0%, 9/1/30 Town of Hamden, CT, Whitney Center Project, Series A, 7.75%, 1/1/43 District of Columbia - 5.1% District of Columbia Tobacco Settlement Financing Corp., Asset-Backed, 6.5%, 5/15/33 District of Columbia Tobacco Settlement Financing Corp., Asset-Backed, 6.75%, 5/15/40	\$28,868,807 \$1,669,455 \$3,083,895 5,214,000 1,034,980 \$9,332,875
2,915,000 5,000,000(e) 1,000,000 4,365,000	Colorado - 0.6% Colorado Educational & Cultural Facilities Authority, Rocky Mountain Classical Academy Project, 8.0%, 9/1/43 Connecticut - 3.2% Mohegan Tribal Finance Authority, 7.0%, 2/1/45 (144A) State of Connecticut, Series E, 4.0%, 9/1/30 Town of Hamden, CT, Whitney Center Project, Series A, 7.75%, 1/1/43 District of Columbia - 5.1% District of Columbia Tobacco Settlement Financing Corp., Asset-Backed, 6.5%, 5/15/33 District of Columbia Tobacco Settlement Financing Corp., Asset-Backed, 6.75%,	\$28,868,807 \$1,669,455 \$3,083,895 5,214,000 1,034,980 \$9,332,875 \$4,877,276
2,915,000 5,000,000(e) 1,000,000 4,365,000 6,000,000	Colorado - 0.6% Colorado Educational & Cultural Facilities Authority, Rocky Mountain Classical Academy Project, 8.0%, 9/1/43 Connecticut - 3.2% Mohegan Tribal Finance Authority, 7.0%, 2/1/45 (144A) State of Connecticut, Series E, 4.0%, 9/1/30 Town of Hamden, CT, Whitney Center Project, Series A, 7.75%, 1/1/43 District of Columbia - 5.1% District of Columbia Tobacco Settlement Financing Corp., Asset-Backed, 6.5%, 5/15/33 District of Columbia Tobacco Settlement Financing Corp., Asset-Backed, 6.75%, 5/15/40 District of Columbia Tobacco Settlement	\$28,868,807 \$1,669,455 \$3,083,895 5,214,000 1,034,980 \$9,332,875 \$4,877,276

		\$14,882,936	
	Florida - 4.9%		
1,500,000	Alachua County Health Facilities		
	Authority, Terraces Bonita Springs		
	Project, Series A, 8.125%, 11/15/41	\$1,730,325	
1,500,000	Alachua County Health Facilities		
	Authority, Terraces Bonita Springs		
	Project, Series A, 8.125%, 11/15/46	1,726,515	
2,260,000(c)	County of Liberty, FL, Twin Oaks		
	Project, 8.25%, 7/1/28	201,344	
2,500,000(f)	County of Miami-Dade, FL, Aviation		
	Revenue, Series B, 5.5%, 10/1/41	2,739,650	
5,000,000	Florida's Turnpike Enterprise, Department		
	of Transportation, Series A, 4.0%, 7/1/34	5,287,700	
1,000,000(f)	Hillsborough County Industrial		
	Development Authority, Various Health		
	Facilities, 8.0%, 8/15/32	1,149,560	
2,250,000(c)(d)	St. Johns County Industrial Development		
	Authority, Glenmoor Project, Series A,		
	1.344%, 1/1/49	1,437,750	
832,581(c)	St. Johns County Industrial Development		
	Authority, Glenmoor Project, Series B,		
	2.5%, 1/1/49	8	
		\$14,272,852	
	Georgia - 2.6%		
2,500,000	Clayton County Development Authority,		
	Delta Air Lines, Series A, 8.75%, 6/1/29	\$2,922,950	
4,000,000	Private Colleges & Universities Authority,		
	Emory University, Series A, 5.0%,		
	10/1/43	4,607,560	
		\$7,530,510	
	Idaho - 1.7%		
5,000,000	Power County Industrial Development		
	Corp., FMC Corp. Project, 6.45%, 8/1/32	\$5,008,650	
	1 0		
	Illinois - 14.8%		
2,087,000(d)	Illinois Finance Authority, Clare Oaks		
	Project, Series B, 4.0%, 11/15/52	\$1,467,224	
1,305,000(b)	Illinois Finance Authority, Clare Oaks		
	Project, Series C-1, 11/15/52	44,892	
Principal	·		
Amount			
USD (\$)			Value
	Illinois - (continued)		
261,000(b)	Illinois Finance Authority, Clare Oaks		
	Project, Series C-2, 11/15/52	\$	68,486
261,000(b)	Illinois Finance Authority, Clare Oaks		
	Project, Series C-3, 11/15/52	42,386	
2,000,000(c)	Illinois Finance Authority, Greenfields of		
,	Geneva Project, Series A, 8.125%,		
	2/15/40	1,160,000	

2,500,000(c)	Illinois Finance Authority, Greenfields of	
2 000 000	Geneva Project, Series A, 8.25%, 2/15/46	1,450,000
2,000,000	Illinois Finance Authority, Northwestern Memorial Hospital, Series A, 6.0%,	
	8/15/39	2,187,680
2,500,000	Illinois Finance Authority, Roosevelt	2,107,000
2,200,000	University Project, 6.5%, 4/1/39	2,649,125
3,865,000(f)	Illinois Finance Authority, Swedish	
	Covenant, Series A, 6.0%, 8/15/38	4,340,472
1,700,000	Illinois Finance Authority, The Admiral at	
	the Lake Project, Series A, 7.625%,	
	5/15/25	1,892,797
600,000	Illinois Finance Authority, The Admiral at	665.706
2 000 000	the Lake Project, Series A, 7.75%, 5/15/30	665,796
2,000,000	Illinois Finance Authority, The Admiral at the Lake Project, Series A, 8.0%, 5/15/40	2,221,240
3,200,000	Illinois Finance Authority, The Admiral at	2,221,240
3,200,000	the Lake Project, Series A, 8.0%, 5/15/46	3,547,904
1,000,000	Metropolitan Pier & Exposition Authority,	2,2 . , , , 2 0 .
, ,	McCormick Place, Series B, 5.0%,	
	6/15/52 (ST APPROP Insured)	1,004,660
1,485,000(b)(g)	Metropolitan Pier & Exposition Authority,	
	McCormick Place, Series B, 5.65%,	
	6/15/22 (NATL Insured)	1,792,128
15,395,000(b)	Metropolitan Pier & Exposition Authority,	
	McCormick Place, Series B, 5.65%,	17 665 600
1 020 000	6/15/22 (NATL Insured)	17,665,609
1,030,000	Southwestern Illinois Development Authority, Village of Sauget Project,	
	5.625%, 11/1/26	915,042
	5.025 70, 1171720	\$43,115,441
	Indiana - 2.1%	ψ 15,115,111
250,000	City of Carmel, IN, Barrington Carmel	
	Project, Series A, 7.0%, 11/15/32	\$272,790
750,000	City of Carmel, IN, Barrington Carmel	
	Project, Series A, 7.125%, 11/15/42	819,045
500,000	City of Carmel, IN, Barrington Carmel	
	Project, Series A, 7.125%, 11/15/47	544,820
1,000,000	Indiana Finance Authority, Multipurpose	
	Educational Facilities, Avondale	
	Meadows Academy Project, 5.375%, 7/1/47	978,900
3,570,000(f)	Vigo County Hospital Authority, Union	970,900
3,370,000(1)	Hospital, Inc., 5.8%, 9/1/47 (144A)	3,584,637
	2200p. 2001, 2007, 27 27 (2 1 1 2)	\$6,200,192
	Kentucky - 2.0%	. , ., . .
5,000,000(f)	Kentucky Economic Development	
	Finance Authority, Owensboro Medical	
	Health System, Series A, 6.375%, 6/1/40	\$5,731,150

2,260,000	Jefferson Parish Hospital Service District	
	No. 2, East Jefferson General Hospital,	
	6.375%, 7/1/41	\$2,476,983
1,500,000	Louisiana Local Government	
	Environmental Facilities & Community	
	Development Authority, Westlake	
	Chemical Corp. Project, 6.75%, 11/1/32	1,516,845
	N.: 229	\$3,993,828
1 500 000	Maine - 2.3%	
1,500,000	Maine Health & Higher Educational	
	Facilities Authority, Maine General Medical Center, 7.5%, 7/1/32	¢1 705 005
4,480,000	Maine Turnpike Authority, Series A,	\$1,705,995
4,460,000	5.0%, 7/1/42	5,034,848
	3.0%, //1/42	\$6,740,843
	Maryland - 0.5%	Ψ0,7+0,0+3
1,435,000	Maryland Health & Higher Educational	
1,133,000	Facilities Authority, City Neighbors,	
	Series A, 6.75%, 7/1/44	\$1,581,069
	50110011, 01/070, 1/1111	¥ 1,0 0 1,0 0 2
	Massachusetts - 10.3%	
7,000,000(b)	Massachusetts Bay Transportation	
	Authority, Series A, 7/1/28	\$5,100,970
1,550,000	Massachusetts Development Finance	
	Agency, Harvard University,	
	Series A, 5.0%, 7/15/36	2,024,734
5,000,000	Massachusetts Development Finance	
	Agency, Harvard University,	
	Series A, 5.0%, 7/15/40	6,601,000
975,158	Massachusetts Development Finance	
	Agency, Linden Ponds, Inc.,	015.106
1 000 000	Series A-1, 5.5%, 11/15/46	915,196
1,000,000	Massachusetts Development Finance	
	Agency, Partners Healthcare System,	1 0/1 880
7,100,000	4.0%, 7/1/41 Massachusetts Development Finance	1,041,880
7,100,000	Agency, WGBH Foundation,	
	Series A, 5.75%, 1/1/42 (AMBAC	
	Insured)	9,765,127
380,000	Massachusetts Educational Financing	3,700,127
,	Authority, Series I, 6.0%, 1/1/28	402,298
3,100,000	Massachusetts Health & Educational	•
	Facilities Authority, Massachusetts	
	Institute of Technology, Series K, 5.5%,	
	7/1/32	4,159,890
		\$30,011,095
	Michigan - 3.1%	
895,000(c)	Doctor Charles Drew Academy,	
.	Certificate of Participation, 5.7%, 11/1/36	\$ 44,723
Principal		Value
Amount		

USD (\$)			
. ,	Michigan - (continued)		
2,640,000	Michigan State University, Series A,		
	5.0%, 8/15/41	\$	3,041,333
6,100,000	Michigan Tobacco Settlement Finance		
	Authority, Series A, 6.0%, 6/1/48	5,855,817	
		\$8,941,873	
	Minnesota - 4.5%		
2,000,000	Bloomington Port Authority, Radisson	\$2.112.22	
1 000 000	Blu Mall of America, 9.0%, 12/1/35	\$2,113,320	
1,000,000	City of Ham Lake, MN, DaVinci	1 002 520	
2 200 000	Academy Project, Series A, 5.0%, 7/1/47	1,003,530	
2,300,000	City of Rochester, MN, Mayo Clinic,	2.070.266	
6 000 000(2)	Series B, 5.0%, 11/15/35	2,970,266	
6,000,000(e)	State of Minnesota, Series B, 4.0%, 8/1/27	6,971,880	
	Montana - 0.0%†	\$13,058,996	
1,600,000(c)	Two Rivers Authority, Inc., 7.375%,		
1,000,000(C)	11/1/27	\$ 46,848	
	11/1/2/	φ 40,040	
	New Jersey - 2.0%		
3,000,000	New Jersey Economic Development		
2,000,000	Authority, Continental Airlines, 5.25%,		
	9/15/29	\$3,265,320	
2,500,000	New Jersey Economic Development	, , , , , , , , , , , , , , , , , , , ,	
, ,	Authority, Continental Airlines, 5.75%,		
	9/15/27	2,755,425	
		\$6,020,745	
	New Mexico - 1.5%		
1,500,000	County of Otero, NM, Otero County Jail		
	Project, 6.0%, 4/1/23	\$1,462,350	
2,960,000	County of Otero, NM, Otero County Jail		
	Project, 6.0%, 4/1/28	2,826,504	
		\$4,288,854	
• 000 000/5	New York - 5.6%		
2,000,000(f)	Hempstead Local Development Corp.,	Φ2 102 7 00	
1 000 000/6	Molloy College Project, 5.75%, 7/1/39	\$2,182,700	
1,000,000(f)	New York State Dormitory Authority,	1.060.010	
7.500.000	Orange Medical Center, 6.125%, 12/1/29	1,069,010	
7,500,000	New York State Dormitory Authority,	9 562 900	
1,500,000	Series C, 5.0%, 3/15/39 New York State Dormitory Authority,	8,563,800	
1,300,000	Trustees of Columbia University, 5.0%,		
	10/1/45	2,029,320	
2,497,540	Westchester County Healthcare Corp.,	2,029,320	
2,477,540	Series A, 5.0%, 11/1/44	2,676,763	
	00110011, 5.070, 11/1/17	\$16,521,593	
	North Dakota - 1.0%	Ψ10,521,575	
2,525,000(f)	County of Burleigh, ND, St. Alexius		
-, , (1)	Medical Center, 5.0%, 7/1/38	\$2,967,935	
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	01: 4.0%	
1 225 000	Ohio - 4.8%	
1,325,000	Buckeye Tobacco Settlement Financing	
	Authority, Asset-Backed,	44.050.40 0
	Series A-2, 5.75%, 6/1/34	\$1,252,138
2,500,000	Buckeye Tobacco Settlement Financing	
	Authority, Asset-Backed,	
	Series A-2, 5.875%, 6/1/47	2,355,050
1,700,000	Buckeye Tobacco Settlement Financing	
	Authority, Asset-Backed,	
	Series A-2, 6.0%, 6/1/42	1,585,284
6,000,000	Buckeye Tobacco Settlement Financing	
	Authority, Asset-Backed,	
	Series A-2, 6.5%, 6/1/47	5,917,620
2,500,000(e)	State of Ohio, Common Schools, Series B,	
	5.0%, 6/15/29	2,916,000
		\$14,026,092
	Oregon - 2.4%	
1,000,000	Oregon Health & Science University,	
,	Series A, 5.0%, 7/1/42	\$1,173,240
5,190,000	Oregon Health & Science University,	, , , , , ,
-,-, -, -, -, -, -, -, -, -, -, -, -, -,	Series E, 5.0%, 7/1/32	5,837,816
	2,000,000	\$7,011,056
	Pennsylvania - 7.6%	Ψ7,011,000
1,550,000	Allegheny County Hospital Development	
1,550,000	Authority, South Hills Health, Series A,	
	5.125%, 5/1/25	\$1,553,146
3,000,000	Geisinger Authority, Geisinger Health	Ψ1,555,110
3,000,000	System, Series A-1, 5.0%, 2/15/45	3,443,520
1,280,000(c)	Langhorne Manor Borough Higher	3,443,320
1,280,000(C)	Education Authority, Lower Bucks	
	Hospital, 7.35%, 7/1/22	313,626
5,000,000	Pennsylvania Economic Development	313,020
3,000,000		
	Financing Authority, USG Corp. Project,	5 000 000
500,000	6.0%, 6/1/31	5,009,000
500,000	Philadelphia Authority for Industrial	
	Development, Greater Philadelphia Health	
	Action, Inc., Project, Series A, 6.625%,	£10.00£
2 000 000	6/1/50	519,885
2,000,000	Philadelphia Authority for Industrial	
	Development, Nueva Esperanze, Inc.,	2 201 120
1 000 000	8.2%, 12/1/43	2,291,120
1,000,000	Philadelphia Authority for Industrial	
	Development, Performing Arts Charter	1.000.000
• • • • • • • •	School Project, 6.5%, 6/15/33 (144A)	1,069,660
2,000,000	Philadelphia Authority for Industrial	
	Development, Performing Arts Charter	
- 000	School Project, 6.75%, 6/15/43 (144A)	2,147,160
5,900,000	Philadelphia Hospitals & Higher	
	Education Facilities Authority, Temple	
	University Health System, Series A, 5.0%,	
	7/1/34	5,905,487

		\$22,252,604
6,255,000(c)(e)	Puerto Rico - 1.3% Commonwealth of Puerto Rico, Series A, 8.0%, 7/1/35	\$3,753,000
5,900,000(c)	Rhode Island - 1.9% Central Falls Detention Facility Corp., 7.25%, 7/15/35	\$1,455,707
2,000,000	Rhode Island Health & Educational Building Corp., Brown University, Series	
Principal Amount USD (\$)	A, 4.0%, 9/1/37	2,187,440 Value
	Rhode Island - (continued)	
1,500,000(f)	Rhode Island Health & Educational	
	Building Corp., Tockwatten Home Issue, 8.375%, 1/1/46	\$1,846,140 \$5,489,287
1 000 000	Texas - 13.0%	
1,000,000	Arlington Higher Education Finance Corp., Universal Academy, Series A, 7.0%, 3/1/34	\$1,011,980
2,500,000(f)	Central Texas Regional Mobility	
2,490,000(e)	Authority, Sub Lien, 6.75%, 1/1/41 County of Harris, TX, Series A, 5.0%,	2,964,000
-	10/1/26	3,059,662
5,000,000(e)	Goose Creek Consolidated Independent	
	School District, Series C, 4.0%, 2/15/26 (PSF-GTD Insured)	5,703,850
725,078(c)	Gulf Coast Industrial Development	2,702,020
	Authority, Microgy Holdings Project,	
2.705.000	7.0%, 12/1/36	7
3,785,000	North Texas Tollway Authority, Series A, 5.0%, 1/1/35	4,314,635
10,000,000(f)	North Texas Tollway Authority, Series F,	7,317,033
, , , , , ,	5.75%, 1/1/33	10,202,900
1,500,000(f)	Red River Health Facilities Development	
	Corp., MRC Crestview, Series A, 8.0%, 11/15/41	1 012 100
3,960,000(c)(h)	Sanger Industrial Development Corp.,	1,913,190
-,,,,,	Texas Pellets Project, Series B, 8.0%,	
	7/1/38	1,881,000
1,000,000	Tarrant County Cultural Education	
	Facilities Finance Corp., Mirador Project, Series A, 4.875%, 11/15/48	839,810
1,000,000	Tarrant County Cultural Education	057,010
• •	Facilities Finance Corp., Mirador Project,	
• • • • • • • • • • • • • • • • • • • •	Series A, 5.0%, 11/15/55	837,770
2,000,000(f)	Tarrant County Cultural Education Facilities Finance Corp., MRC Crestview	2,435,960
	r actitudes i mande Corp., with Crestiview	

2,500,000	Project, 8.0%, 11/15/34 Travis County Health Facilities Development Corp., Longhorn Village Project, 7.125%, 1/1/46	2,700,225 \$37,864,989
1,000,000	Utah - 0.4% Salt Lake City Corp., Airport Revenue, Series B, 5.0%, 7/1/35	\$1,182,670
2,200,000(e) 1,415,000(e)	Virginia - 4.9% County of Arlington, VA, 4.0%, 8/15/35 County of Fairfax, VA, Series A, 4.0%, 10/1/33	\$2,425,566
5,000,000	(ST AID WITHHLDG Insured) University of Virginia, Series A, 5.0%,	1,566,730
	4/1/42	5,977,200
4,000,000	Upper Occoquan Sewage Authority, 4.0%, 7/1/41	4,288,680 \$14,258,176
3,745,000	Washington - 9.8% City of Seattle, WA, Water System Revenue, 4.0%, 8/1/32	\$4,101,224
2,500,000(e)	King County Issaquah School District No. 411, 4.0%, 12/1/31	ψ 1,1 0 1,2 2 1
14,315,000(b)(e	(SCH BD GTY Insured))State of Washington, Motor Vehicle Sales	2,745,575
	Tax, Series C, 6/1/22 (NATL Insured)	13,333,134
2,500,000	University of Washington, Series B, 5.0%, 6/1/29	2,993,325
3,795,000(f)	Washington State Health Care Facilities Authority, Fred Hutchinson Cancer	
1,150,000	Research Center, Series A, 6.0%, 1/1/33 Washington State Housing Finance Commission, Mirabella Project, Series A,	4,148,960
	6.75%, 10/1/47 (144A)	1,257,215 \$28,579,433
2,000,000(c)	West Virginia - 0.6% City of Philippi, WV, Alderson-Broaddus	
725,000(c)	College, Inc., Series A, 7.75%, 10/1/44 West Virginia Hospital Finance Authority,	\$1,200,000
	Highland Hospital Group, 9.125%, 10/1/41	670,118 \$1,870,118
5,000,000	Wisconsin - 4.9% Public Finance Authority, Glenridge	
750,000	Palmer Ranch, Series A, 8.25%, 6/1/46 Public Finance Authority, Roseman	\$5,913,750
	University Health Sciences Project, 5.875%, 4/1/45	787,410
1,500,000		1,730,745

Public Finance Authority, SearStone CCRC Project, Series A, 8.625%, 6/1/47

(144A)

5,000,000 Wisconsin Department of Transportation,

Series A, 5.0%, 7/1/28 5,991,150 \$14,423,055

TOTAL TAX EXEMPT OBLIGATIONS

(Cost \$372,732,153) \$387,971,896

MUNICIPAL COLLATERALIZED DEBT OBLIGATION - 0.0%† of Net

Assets

10,000,000(d) Non-Profit Preferred Funding Trust I,

Series E, 0.0%, 9/15/37 (144A) \$170,000

TOTAL MUNICIPAL

COLLATERALIZED DEBT

OBLIGATION

(Cost \$10,000,000) \$170,000

TOTAL INVESTMENTS IN

SECURITIES - 132.9%

(Cost - \$382,732,153) (i) \$388,141,896

OTHER ASSETS AND LIABILITIES -

1.7% \$4,840,136

PREFERRED SHARES AT REDEMPTION VALUE,

INCLUDING DIVIDENDS PAYABLE -

(34.6)% \$(100,993,669)

NET ASSETS APPLICABLE TO

COMMON SHAREOWNERS - 100.0% \$291,988,363

(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, 2017, the value of these securities amounted to \$26,646,985, or 9.1% of net assets applicable to common shareowners.

- RIB Residual Interest Bond is purchased in a secondary market. The interest rate is subject to change periodically and inversely based upon prevailing market rates. The interest rate shown is the rate at July 31, 2017.
- † Amount rounds to less than 0.1%.
- (a) Consists of Revenue Bonds unless otherwise indicated.
- (b) Security issued with a zero coupon. Income is recognized through accretion of discount.
- (c) Security is in default.

(d)	The interest rate is subject to change periodically. The interest rate shown is the rate at July 31, 2017.			
(e)	Represents a General Obligation Bond.			
(f)	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.			
(g)	Escrow to maturity.			
(h)	Security is valued using fair value methods (other than prices supplied services).	by independent	pricing	
(i)	At July 31, 2017, the net unrealized appreciation on investments based purposes of \$375,481,356 was as follows:	on cost for fede	eral tax	
	Aggregate gross unrealized appreciation for all investments in which there is an excess of value over tax cost Aggregate gross unrealized depreciation for all investments in which there is an excess of tax cost over value	\$ (22,431,462)	35,092,002	
	Net unrealized appreciation	\$	12,660,540	

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).

The following is a summary of the inputs used as of July 31, 2017, in valuing the Trust's investments.

	Level 1	Level 2	Level 3	Total
Tax Exempt Obligations				
Texas All Other Tax	\$ —	\$35,983,989	\$1,881,000	\$37,864,989
Exempt Obligations Municipal	_	350,106,907	_	350,106,907
Collateralized				
Debt Obligation Total	- \$-	170,000 \$386,260,896	- \$1,881,000	170,000 \$388,141,896

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

	Tax Ex	empt
	Obliga	tions
Balance as of 4/30/17	\$2,376,000	
Realized gain (loss)		_
Change in unrealized appreciation (depreciation)	(493,866)	
Purchases		_
Sales		_
Accrued discounts/premiums	(1,134)	
Transfer in and out of Level 3*		_
Balance as of 7/31/17	\$1,881,000	

^{*}Transfers are calculated on the beginning of period value. For the three months ended July 31, 2017, there were no transfers between Levels 1, 2 and 3.

Net change in unrealized depreciation of Level 3 investments still held and considered Level 3 at July 31, 2017: \$(493,866).

ITEM 2. CONTROLS AND PROCEDURES. (a) Disclose the conclusions of the registrant's principal executive and principal financial officers, or persons performing similar functions, regarding 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 the 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. File as exhibits as part of this Form a separate certification for each principal executive officer and principal financial officer of the registrant as required by Rule 30a-2(a) under the Act (17 CFR 270.30a-2(a)), exactly as set forth below: CERTIFICATIONS I, [identify the certifying individual], certify that: 1. I have reviewed this report on Form N-O of [identify registrant]; 2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report; 3. Based on my knowledge, the schedules of investments included in this report fairly present in all material respects the investments of the registrant as of the end of the fiscal quarter for which the report is filed; 4. The registrants other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Rule 30a-3(c) under the Investment Company Act of 1940) and internal control over financial reporting (as defined in Rule 30a-3(d) under the Investment Company Act of 1940) for the registrant and have: (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared; (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles; (c) Evaluated the effectiveness of the

registrants disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of a date within 90 days prior to the filing date of this report, based on such evaluation; and (d) Disclosed in this report any change in the registrants internal control over financial reporting that occurred during the registrants most recent fiscal quarter that has materially affected, or is reasonably likely to materially affect, the registrants internal control over financial reporting; and 5. The registrants other certifying officer(s) and I have disclosed to the registrants auditors and the audit committee of the registrants board of directors (or persons performing the equivalent functions): (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrants ability to record, process, summarize, and report financial information; and (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrants internal control over financial reporting. Date: [Signature] [Title] Filed herewith. <PAGE> 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/ Lisa M.Jones ------ Lisa M.Jones, President and Chief Executive Officer Date September 27, 2017 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/ Lisa M.Jones ----- Lisa M.Jones, President and Chief Executive Officer Date September 27, 2017 By (Signature and Title)* /s/ Mark E. Bradley ------ Mark E. Bradley, Treasurer and Chief Accounting and Financial Officer Date September 27, 2017 * Print the name and title of each signing officer under his or her signature.