U.S. Municipal Bond Market

March 16 Market Activity:
HilltopSecurities Lowers Credit Outlooks Due to Unprecedented Steps Taken to Contain COVID-19

A Coronavirus Update, as of end of trading Monday, March 16
News about government responses to help contain the coronavirus (COVID-19) continued Sunday night and through Monday. Most of the activity is originating at the state and local government level, not from the federal government; although President Trump pledged assistance for the airline industry this afternoon. Governors in New York, New Jersey, Connecticut, Maryland, Ohio, Illinois, and Washington, as well as mayors in Minneapolis, New York City, and Chicago are among those who have taken – what just last week were likely considered to be drastic – steps to contain the spread of COVID-19, including shutting down schools, closing down bars, restaurants (take-out allowed in some places), and generally restricting public assembly. Here is a sample of the status as of what the landscape looks like this afternoon:

- There were 4,314 coronavirus cases reported in the U.S., 77 deaths, and 73 recoveries.¹
- U.S. Federal Reserve announced an additional $500 billion in overnight repo funding;
- Trading on stocks was halted today, when it resumed the Dow ended the day down about 12.9%, or lower by 2,997 points;
- New York City Comptroller Scott Stringer estimates New York City’s lost tax revenue will be $3.2 billion over the next six months;²
- Canada is closing its borders, U.S. citizens exempt “for the moment”;
- New York Governor Andrew Cuomo asked the federal government for military help to create hospital beds for the upcoming increase in demand in COVID-19 patients;
- San Francisco Mayor London Breed announced this afternoon that residents will be required to stay home. Only essential government and essential stores can remain open.

Municipal Market Update – Monday, March 16, 2020
There were minimal changes to the AAA MMD (Municipal Market Data) yields at the end of trading Monday, March 16. The adjustments were concentrated on the short end of the curve. Yields rose between 6 and 10 basis points up until 2025 and remained unchanged in 2026 and beyond.

<table>
<thead>
<tr>
<th>Date</th>
<th>1 Year</th>
<th>5 Year</th>
<th>10 Year</th>
<th>20 Year</th>
<th>25 Year</th>
<th>30 Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 13, 2020</td>
<td>1.11</td>
<td>1.20</td>
<td>1.61</td>
<td>2.13</td>
<td>2.27</td>
<td>2.32</td>
</tr>
<tr>
<td>March 16, 2020</td>
<td>1.21</td>
<td>1.26</td>
<td>1.61</td>
<td>2.13</td>
<td>2.27</td>
<td>2.32</td>
</tr>
</tbody>
</table>

Change from:
| Mar 13 - Mar 16, 2020 | 0.10   | 0.06   | 0.00    | 0.00    | 0.00    | 0.00    |

Source: Thomson Reuters and HilltopSecurities.
Today’s municipal bond primary market negotiated activity was limited mostly to the issues that needed to be executed for timing purposes, despite the still relatively low municipal market levels. Investor uncertainty remains, and price discovery continues to be an issue. A limited amount of competitive issues were sold, and the number of participating firms bidding remain small. There was some secondary market activity. However, there is what appears to be a very high level of secondary bond offerings available, telling us the number of buyers is just not meeting the number of sellers at these levels.

Lowering Hilltop Credit Outlooks on Impact from Unprecedented Nature of Steps Taken to Manage COVID-19

We are lowering our outlooks on three municipal sectors because of steps being taken to manage COVID-19 and because of the threat of a potential U.S. recession. We are making these adjustments now but want to highlight the unprecedented nature of the events unfolding related to the steps leaders are taking to contain COVID-19. Therefore, it is possible that we continue to revisit the outlooks on a regular basis and change again based on new information. That information very well could be positive information, especially if the U.S. federal government approves additional rounds of stimulus. The changes we are making today are:

- Airport sector: Lowering two notches to “Cautious” from “Stable”;
  - Today, President Trump announced the federal government would backstop the airline industry after they asked for $50 billion of government assistance. We could lower our outlook further if the backstop does not materialize or is less than what we believe is necessary. We also have not seen details so it is difficult to know how exactly this assistance could flow through to airports.3
- Housing: Lowering to “Stable” from “Positive”;
- Toll Facilities: Lowering to “Cautious” from “Stable.”
HilltopSecurities Municipal Sector Credit Outlooks

<table>
<thead>
<tr>
<th>Sector</th>
<th>Hilltop Credit Outlook</th>
<th>Recent Action</th>
<th>Key Sector Trends</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Government</td>
<td>Cautious</td>
<td>None</td>
<td>Oil prices will weigh on some budgets &amp; pension assets could be damaged</td>
</tr>
<tr>
<td>Local Government</td>
<td>Cautious</td>
<td>None</td>
<td>Local economic activity will take a hit b/c lack of activity, events, students, etc.</td>
</tr>
<tr>
<td>School Districts</td>
<td>Cautious</td>
<td>None</td>
<td>Schools and charter schools could be pressured without state/federal aid</td>
</tr>
<tr>
<td>Airports</td>
<td>Cautious</td>
<td>Lowered again</td>
<td>We lowered our outlook again because of further airline cutbacks, airlines just asked for $50 billion in government assistance, Trump pledges backstop</td>
</tr>
<tr>
<td>Health Care</td>
<td>Negative</td>
<td>None</td>
<td>Uncertainty especially about how prepared the sector is for COVID-19</td>
</tr>
<tr>
<td>Higher Education</td>
<td>Negative</td>
<td>None</td>
<td>Dozens of schools have postponed or prepared for students to work remotely</td>
</tr>
<tr>
<td>Housing</td>
<td>Stable</td>
<td>Lowered</td>
<td>A recession could impact real estate markets generally, HFAs will be less impacted, others will be impacted case by case</td>
</tr>
<tr>
<td>Public Power (Elec.)</td>
<td>Stable</td>
<td>None</td>
<td>Essential purpose, usage could slow due to steps taken to manage COVID-19 and if there is a recession, only material if for an extended time</td>
</tr>
<tr>
<td>Tobacco</td>
<td>Negative</td>
<td>None</td>
<td>Seen credit spreads in this sector continue to widen out</td>
</tr>
<tr>
<td>Toll Facilities</td>
<td>Cautious</td>
<td>Lowered</td>
<td>Already seeing usage decreases, duration of slowdown related to managing COVID-19 and potential recession both keys for the sector</td>
</tr>
<tr>
<td>Water and Sewer</td>
<td>Stable</td>
<td>None</td>
<td>Essentially continues to be a key factor in this sector, likely to continue in importance</td>
</tr>
</tbody>
</table>

Source: HilltopSecurities.

**Definition of Outlooks**

- **Positive**: Hilltop Strategy and Credit believes there are factors which point towards improving issuer or sector credit quality which may result in a higher level of credit ratings upgrades versus downgrades.

- **Stable**: Hilltop Strategy and Credit believes there are factors which point towards stable issuer or sector credit quality which are likely to result in an even level of credit ratings upgrades versus downgrades.

- **Cautious**: Hilltop Strategy and Credit believes there are factors which introduce the potential for declines in issuer or sector credit quality that may result in potential credit ratings downgrades only slightly outnumbering upgrades.

- **Negative**: Hilltop Strategy and Credit believes there are factors which point towards weakening issuer or credit quality that will likely result in a higher number of credit ratings downgrades versus upgrades.
A key driving factor we have not reduced more outlooks is the expectation of a U.S. federal government stimulus. If a stimulus does not arrive in a meaningful way, and potentially in different iterations, then we could more quickly lower additional outlooks.

**Revenue versus General Obligation Pledge**

For some time we have heard and read that revenue bonds were favored by some over those municipal bonds with a general obligation pledge. In today’s environment we think it is important for investors to understand the potential impact the current economic slowdown may have on revenue-related credits on a case-by-case basis. We noted in this morning’s commentary that sectors and subsectors are more likely than not to experience some level of impact as a result of the steps governments are taking to contain the spread of COVID-19. Again, we want to reiterate the unprecedented nature of the events unfolding as a result of those steps leaders are taking to contain COVID-19. Certain revenue bonds could be impacted at a pace that was unanticipated during normal economic times.

Recent HilltopSecurities COVID-19 Municipal Commentary

- Municipal Market Update: Week of March 16 Playbook, March 16, 2020
- Lowered Airport Sector Outlook: Recent COVID-19 Impact, March 11, 2020
- Falling Confidence and No Federal Stimulus Increase to Start the Week, March 9, 2020
- Uncertainty – What the Municipal Market Knows and Doesn’t Know About COVID-19, March 4, 2020

Recent HilltopSecurities COVID-19 Economic Commentary

- Waiting on Fiscal Policy as Aggressive Fed Move Falls Flat, March 16, 2020
- Stocks Rebound as Central Banks Respond, March 13, 2020
- On the Edge of Recession, March 12, 2020
- Central Banks Rush to Mitigate Pandemic Fallout, March 11, 2020
- Untying the Knot, March 10, 2020
- Runaway Markets Ignore Massive Payroll Number, March 6, 2020
- Bracing for Zero, March 5, 2020

1 Please see Worldometers.info/coronavirus for data that is updated hourly, last accessed 3/16/20 12:30pm central time.

2 Comptroller Stringer: City Must Take Immediate Action to Prepare for Economic Impacts of COVID-19 and Protect Vital Services for Most Vulnerable New Yorkers; March 16, 2020 statement.

3 Hirsch, Lauren; Trump pledges to backstop airlines ‘100%’ in coronavirus response; CNBC; March 16, 2020.