# Options Price Reporting Authority, LLC

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Dear OPRA Market Data Recipients:

The OPRA Participants have updated their traffic projections based on messages per 100-millisecond (MPHM) intervals. The use of the 10-millisecond interval reflects system utilization during bursts of traffic.

OPRA plans to support the updated traffic rates beginning in April, 2016.  The bandwidth required to receive data via your SFTI connection is reflected in Gigabits.

Please note that the traffic projections are for one stream only.  For fault tolerance purposes, two redundant streams of data are available from SIAC.  For those Data Recipients who elect to take in both streams of data, the Bandwidth requirements would be double.

The maximum output traffic rates for OPRA data services will be as follows:

## Capacity Projections

| Effective Date | 100-Milliseconds | | | 10-Milliseconds | | | Total Messages Per Day (billions) |
|---|---|---|---|---|---|---|---|
| | Maximum Output Traffic Rates (millions) | Bandwidth Gigabits | Peak Packets (thousands) | Maximum Output Traffic Rates (millions) | Bandwidth Gigabits | Peak Packets (thousands) | |
| 4/2016 | 5.710 | 1.85 | 530 | 0.645 | 0.205 | 53 | 30 |
| 7/2016 | 6.412 | 2.08 | 570 | 0.725 | 0.228 | 58 | 41 |
| 1/2017 | 7.019 | 2.28 | 600 | 0.793 | 0.245 | 63 | 43 |
| 7/2017 | 7.596 | 2.47 | 680 | 0.859 | 0.266 | 68 | 45 |
| 1/2018 | 8.017 | 2.60 | 720 | 0.906 | 0.282 | 72 | 46 |

## Retransmissions
The required bandwidth should be increased by 10% to account for retransmissions.

## Current Output Rate:
Beginning April, 2016, the maximum output rate on an individual Multicast Line will be 450,000 MPHM.

## Latency
The median latency for OPRA is under 0.2 milliseconds. Message latency is measured beginning with the time-stamp taken as an inbound Participant message arrives at the network entrance to the OPRA environment, through processing by the system into a consolidated message for Data Recipients, to the time-stamp taken as the outbound message arrives at the network exit from the environment.  These

time-stamps are taken and correlated by a process external to the data processing applications. If the external process cannot correlate an inbound message to its corresponding outbound message or measures negative latency for a message, the message is excluded from broader latency calculations such as median message latency.