

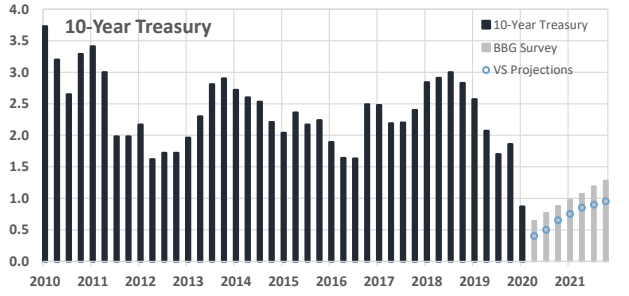
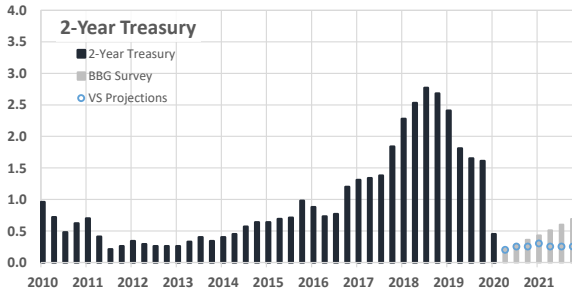
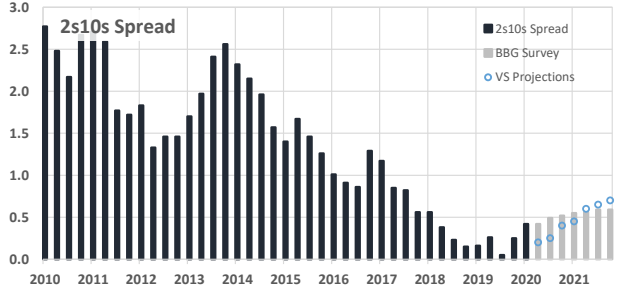
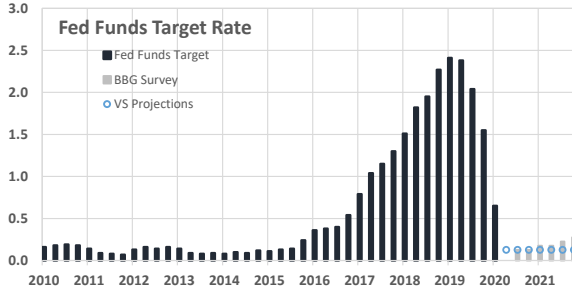
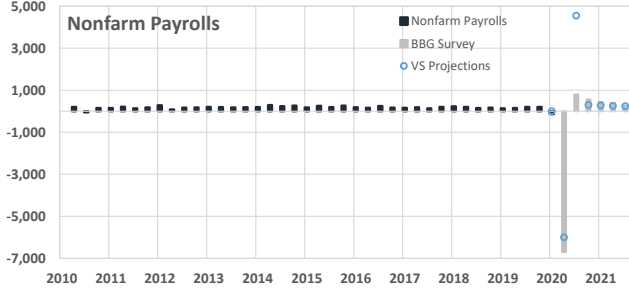
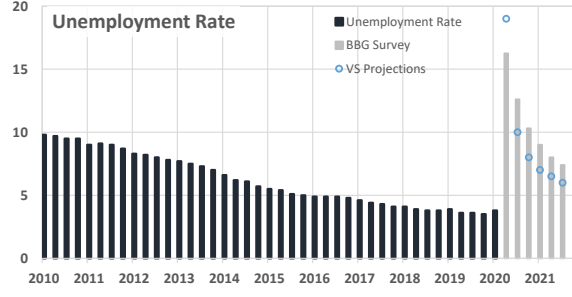
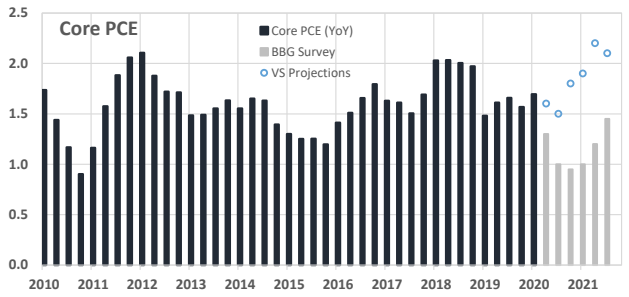
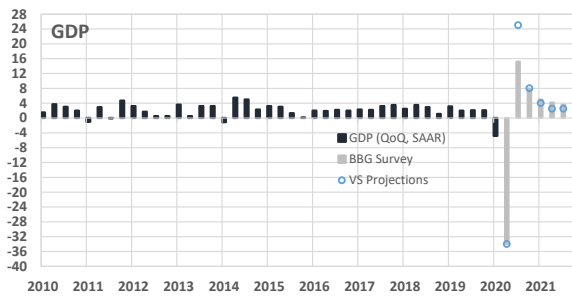
Vining Sparks Economic and Interest Rate Projections

May 2020

	Q220	Q320	Q420	Q121	Q221	Q321	2020	2021
<b>GDP (QoQ, SAAR)</b>	-34.0	25.0	8.0	4.0	2.5	2.5	-5.5	2.9
<b>Headline CPI (YoY)</b>	1.6	1.4	1.7	2.0	2.3	2.2	1.6	2.1
<b>Core PCE (YoY)</b>	1.6	1.5	1.8	1.9	2.2	2.1	1.6	1.9
<b>Unemployment Rate</b>	19.0	10.0	8.0	7.0	6.5	6.0	9.4	6.4
<b>Nonfarm Payrolls (Monthly)</b>	(6,000)	4,550	300	280	260	240	-300	250

	Q220	Q320	Q420	Q121	Q221	Q321	Q421	Q122
<b>Fed Funds Target</b>	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
<b>2-Year Treasury Yield</b>	0.20	0.25	0.25	0.30	0.25	0.25	0.25	0.25
<b>10-Year Treasury Yield</b>	0.40	0.50	0.65	0.75	0.85	0.90	0.95	1.00
<b>30-Year Treasury Yield</b>	0.88	0.97	1.16	1.25	1.45	1.53	1.61	1.70
<b>Prime Rate</b>	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25
<b>30-Year Mortgage Rate</b>	2.75	2.60	2.65	2.65	2.65	2.70	2.75	2.80



Sources: <sup>1</sup> Bloomberg Survey of Economists, <sup>2</sup> Economists' Real-Time Tracking Updates, Vining Sparks

## Bloomberg Survey of Economists

May Survey

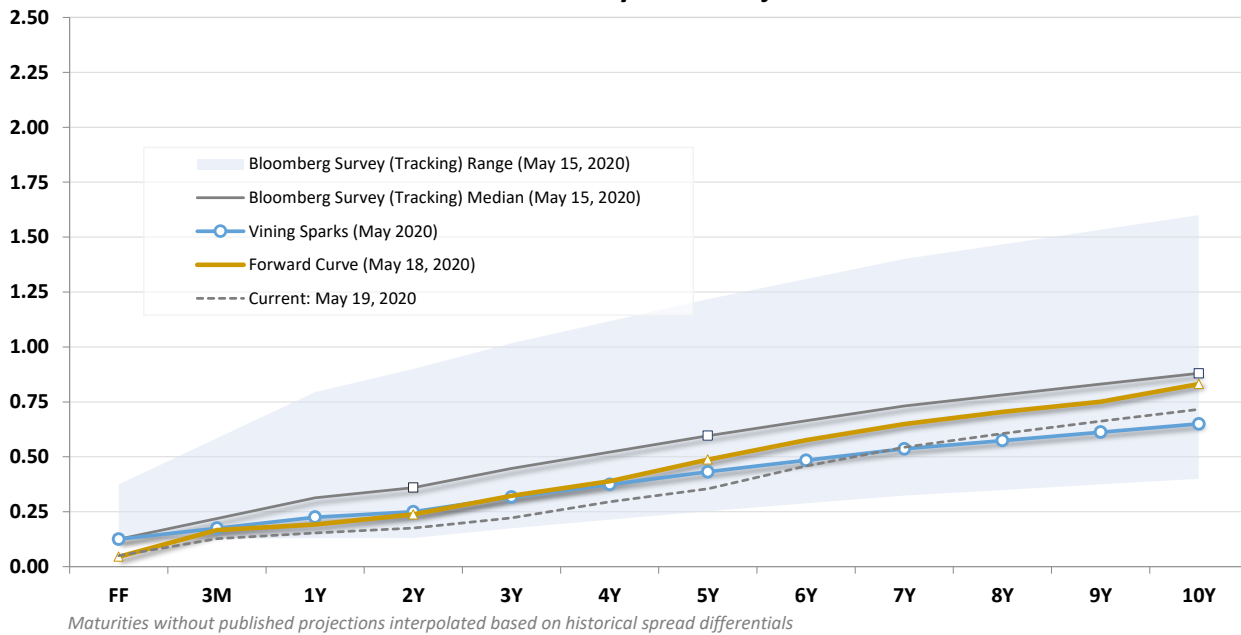
		Q220	Q320	Q420	Q121	Q221	Q321	2020	2021
<b>GDP</b>									
<b>Vining Sparks Projections</b>	<b>5/19/2020</b>	<b>-34.0</b>	<b>25.0</b>	<b>8.0</b>	<b>4.0</b>	<b>2.5</b>	<b>2.5</b>	<b>-5.5</b>	<b>2.9</b>
May Survey	5/15/2020	-32.7	14.8	7.5	5.0	4.1	3.6	-5.7	3.9
April Survey	4/10/2020	-25.0	7.6	5.8	4.4	3.7	3.0	-3.3	3.4
<b>Personal Consumption</b>									
May Survey	5/15/2020	-38.7	15.0	10.0	4.5	4.2	3.3	-6.8	4.0
April Survey	4/10/2020	-25.1	8.6	5.5	3.6	3.2	2.8	-3.7	3.3
<b>Private Investment</b>									
May Survey	5/15/2020	-42.8	-2.4	12.2	11.1	9.0	5.3	-10.5	5.5
April Survey	4/10/2020	-31.7	-3.5	8.3	10.2	6.0	5.3	-10.3	4.1
<b>Government Expenditures</b>									
May Survey	5/15/2020	2.6	3.5	2.1	1.5	1.5	1.5	2.2	1.8
April Survey	4/10/2020	2.3	2.6	2.0	1.6	1.4	1.3	2.5	1.7
<b>Headline CPI</b>									
<b>Vining Sparks Projections</b>	<b>5/19/2020</b>	<b>1.6</b>	<b>1.4</b>	<b>1.7</b>	<b>2.0</b>	<b>2.3</b>	<b>2.2</b>	<b>1.6</b>	<b>2.1</b>
May Survey	5/15/2020	0.4	0.4	0.3	0.8	1.9	2.0	0.8	1.7
April Survey	4/10/2020	0.7	0.8	0.9	1.2	2.2	2.1	1.1	1.9
<b>Core PCE</b>									
<b>Vining Sparks Projections</b>	<b>5/19/2020</b>	<b>1.6</b>	<b>1.5</b>	<b>1.8</b>	<b>1.9</b>	<b>2.2</b>	<b>2.1</b>	<b>1.6</b>	<b>1.9</b>
May Survey	5/15/2020	1.3	1.0	0.9	0.9	1.2	1.4	1.2	1.3
April Survey	4/10/2020	1.4	1.2	1.2	1.2	1.4	1.5	1.4	1.5
<b>Unemployment Rate</b>									
<b>Vining Sparks Projections</b>	<b>5/19/2020</b>	<b>19.0</b>	<b>10.0</b>	<b>8.0</b>	<b>7.0</b>	<b>6.5</b>	<b>6.0</b>	<b>9.4</b>	<b>6.4</b>
May Survey	5/15/2020	16.1	12.6	10.3	9.0	8.0	7.4	11.0	7.9
April Survey	4/10/2020	12.6	9.3	8.1	7.3	6.9	6.5	8.2	6.8
<b>Nonfarm Payroll (Monthly)</b>									
<b>Vining Sparks Projections</b>	<b>5/19/2020</b>	<b>(6,000)</b>	<b>4,550</b>	<b>300</b>	<b>280</b>	<b>260</b>	<b>240</b>	<b>-300</b>	<b>250</b>
May Survey	5/15/2020	(7,850)	1314	998	508	468	300	-1260	451
April Survey	4/10/2020	-3807	195	417	292	251	213	-511	225
<b>New Home Sales</b>									
May Survey	5/15/2020	449	583	578	578	617	665	564	642
April Survey	4/10/2020	489	587	600	640	659	695	605	683
<b>Existing Home Sales</b>									
May Survey	5/15/2020	4,100	4,500	4,900	4,900	5,200	5,300	4,700	5,200
April Survey	4/10/2020	4,300	4,800	5,000	5,200	5,300	5,400	4,900	5,400
<b>Fed Funds Target<sup>1</sup></b>									
<b>Vining Sparks Projections</b>	<b>5/19/2020</b>	<b>0.13</b>	<b>0.13</b>	<b>0.13</b>	<b>0.13</b>	<b>0.13</b>	<b>0.13</b>	<b>0.13</b>	<b>0.13</b>
May Survey	5/15/2020	0.13	0.13	0.13	0.18	0.18	0.23	0.28	0.43
April Survey	4/10/2020	0.13	0.13	0.18	0.18	0.23	0.33	0.38	0.53
<b>2-Year Treasury<sup>1</sup></b>									
<b>Vining Sparks Projections</b>	<b>5/19/2020</b>	<b>0.20</b>	<b>0.25</b>	<b>0.25</b>	<b>0.30</b>	<b>0.25</b>	<b>0.25</b>	<b>0.25</b>	<b>0.25</b>
May Survey	5/15/2020	0.22	0.28	0.36	0.43	0.51	0.60	0.69	0.79
April Survey	4/10/2020	0.28	0.37	0.47	0.56	0.64	0.74	0.86	0.94
<b>10-Year Treasury<sup>1</sup></b>									
<b>Vining Sparks Projections</b>	<b>5/19/2020</b>	<b>0.40</b>	<b>0.50</b>	<b>0.65</b>	<b>0.75</b>	<b>0.85</b>	<b>0.90</b>	<b>0.95</b>	<b>1.00</b>
May Survey	5/15/2020	0.64	0.77	0.88	0.98	1.07	1.19	1.28	1.40
April Survey	4/10/2020	0.67	0.81	0.91	1.09	1.19	1.32	1.42	1.57

\*Sources: Bloomberg Survey of Economists, <sup>1</sup> Economists' Real-Time Updates, Vining Sparks

# Year-End Rate Projections

May 2020

## YE2020 Treasury Yield Projections



Bloomberg Survey Tracking Index and Vining Projections

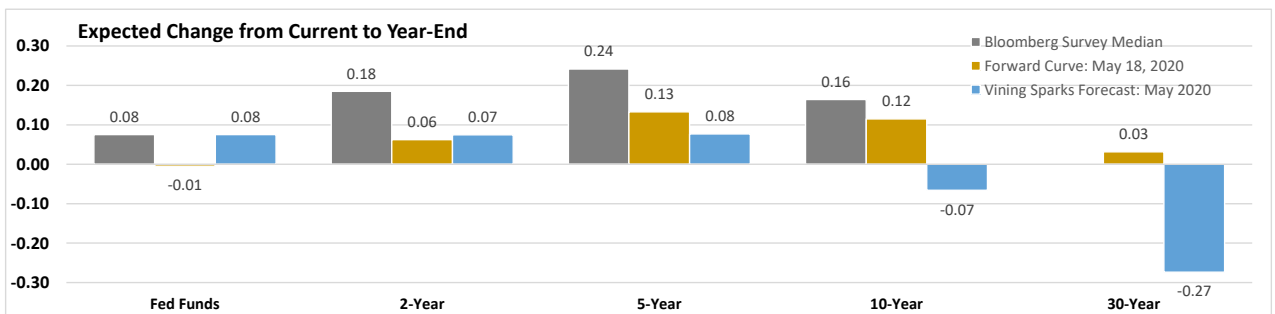
### Interest Rate Projections

May 18, 2020

	Fed Funds	3M T-Bill	1-Year	2-Year	3-Year	5-Year	7-Year	10-Year	30-Year
<b>Bloomberg Survey - Tracking: May 15, 2020</b>									
Low Forecast	0.13			0.13		0.25		0.40	
<b>Median Forecast</b>	<b>0.13</b>			<b>0.36</b>		<b>0.60</b>		<b>0.88</b>	
High Forecast	0.38			0.90		1.22		1.60	
<b>Forward Curve: May 18, 2020</b>	<b>0.05</b>	<b>0.17</b>	<b>0.19</b>	<b>0.24</b>	<b>0.32</b>	<b>0.49</b>	<b>0.65</b>	<b>0.83</b>	<b>1.47</b>
<b>Vining Sparks Forecast: May 2020</b>	<b>0.13</b>	<b>0.18</b>	<b>0.23</b>	<b>0.25</b>	<b>0.32</b>	<b>0.43</b>	<b>0.54</b>	<b>0.65</b>	<b>1.16</b>
<b>Current: May 19, 2020</b>	<b>0.05</b>	<b>0.13</b>	<b>0.15</b>	<b>0.18</b>	<b>0.22</b>	<b>0.35</b>	<b>0.54</b>	<b>0.72</b>	<b>1.44</b>

### Projected Δ by Year-End

	Fed Funds	3M T-Bill	1-Year	2-Year	3-Year	5-Year	7-Year	10-Year	30-Year
<b>Bloomberg Survey - Tracking: May 15, 2020</b>									
Low Forecast	0.08			-0.05		-0.10		-0.32	
<b>Median Forecast</b>	<b>0.08</b>			<b>0.18</b>		<b>0.24</b>		<b>0.16</b>	
High Forecast	0.33			0.72		0.86		0.88	
<b>Forward Curve: May 18, 2020</b>	<b>-0.01</b>	<b>0.04</b>	<b>0.04</b>	<b>0.06</b>	<b>0.10</b>	<b>0.13</b>	<b>0.11</b>	<b>0.12</b>	<b>0.03</b>
<b>Vining Sparks Forecast: May 2020</b>	<b>0.08</b>	<b>0.05</b>	<b>0.07</b>	<b>0.07</b>	<b>0.09</b>	<b>0.08</b>	<b>-0.01</b>	<b>-0.07</b>	<b>-0.27</b>

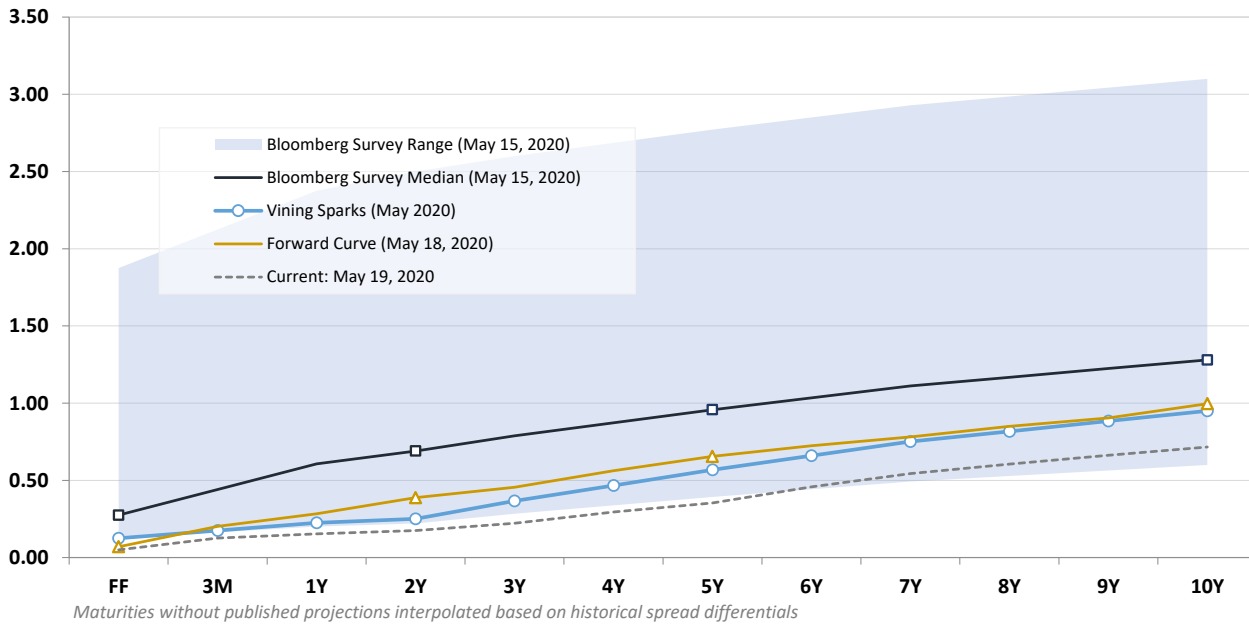


Sources: Bloomberg Survey of Economists Real-Time Tracking Index, Vining Sparks

# Year-End Rate Projections

May 2020

## YE2021 Treasury Yield Projections



Bloomberg Survey Tracking Index and Vining Projections

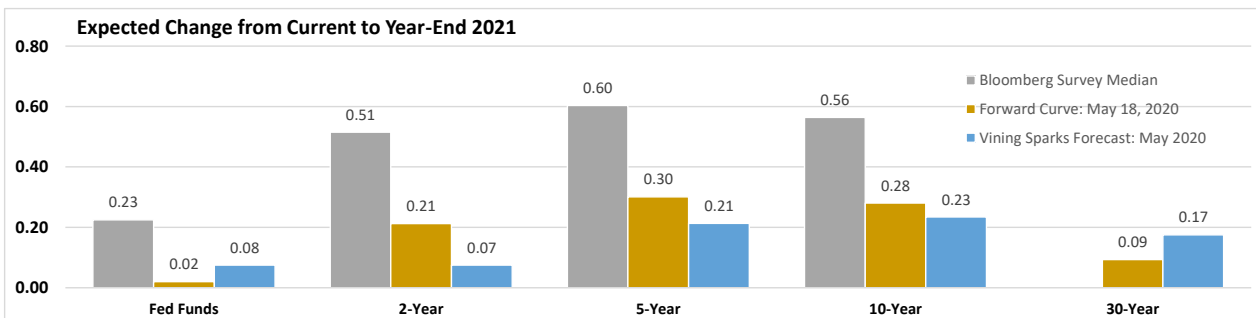
### Interest Rate Projections

May 18, 2020

	Fed Funds	3M T-Bill	1-Year	2-Year	3-Year	5-Year	7-Year	10-Year	30-Year
<b>Bloomberg Survey - Tracking: May 15, 2020</b>									
Low Forecast	0.13			0.22		0.39		0.60	
<b>Median Forecast</b>	<b>0.28</b>			<b>0.69</b>		<b>0.96</b>		<b>1.28</b>	
High Forecast	1.88			2.50		2.77		3.10	
<b>Forward Curve: May 18, 2020</b>	<b>0.07</b>	<b>0.20</b>	<b>0.28</b>	<b>0.39</b>	<b>0.45</b>	<b>0.65</b>	<b>0.78</b>	<b>1.00</b>	<b>1.53</b>
<b>Vining Sparks Forecast: May 2020</b>	<b>0.13</b>	<b>0.18</b>	<b>0.23</b>	<b>0.25</b>	<b>0.37</b>	<b>0.57</b>	<b>0.75</b>	<b>0.95</b>	<b>1.61</b>
<b>Current: May 19, 2020</b>	<b>0.05</b>	<b>0.13</b>	<b>0.15</b>	<b>0.18</b>	<b>0.22</b>	<b>0.35</b>	<b>0.54</b>	<b>0.72</b>	<b>1.44</b>

### Projected Δ by Year-End

	Fed Funds	3M T-Bill	1-Year	2-Year	3-Year	5-Year	7-Year	10-Year	30-Year
<b>Bloomberg Survey - Tracking: May 15, 2020</b>									
Low Forecast	0.08			0.04		0.04		-0.12	
<b>Median Forecast</b>	<b>0.23</b>			<b>0.51</b>		<b>0.60</b>		<b>0.56</b>	
High Forecast	1.83			2.32		2.42		2.38	
<b>Forward Curve: May 18, 2020</b>	<b>0.02</b>	<b>0.08</b>	<b>0.13</b>	<b>0.21</b>	<b>0.23</b>	<b>0.30</b>	<b>0.24</b>	<b>0.28</b>	<b>0.09</b>
<b>Vining Sparks Forecast: May 2020</b>	<b>0.08</b>	<b>0.05</b>	<b>0.07</b>	<b>0.07</b>	<b>0.14</b>	<b>0.21</b>	<b>0.21</b>	<b>0.23</b>	<b>0.17</b>



Sources: Bloomberg Survey of Economists Real-Time Tracking Index, Vining Sparks

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