





October 30, 2019

**Via Federal Express**

Ms. Jeanette Marshall  
Securities and Exchange Commission  
Division of Trading and Markets  
100 F Street, N.E.  
Mail Stop 6628  
Washington, DC 20549-0001

SEC  
Mail Processing  
Section

NOV 01 2019

Washington DC  
415

Re: ***Cboe EDGA Exchange, Inc.  
Form 1 Amendment***

Dear Jeanette:

On behalf of Cboe EDGA Exchange, Inc. (the "Exchange"), and in connection with the Cboe Form 1 that is on file with the Securities and Exchange Commission ("Commission"), enclosed please find one original and two copies of the Execution Page to Form 1 as well as the following exhibits<sup>1</sup>:

- Exhibit C (updated to reflect list of Directors and Committee Members);
- Exhibit J (updated to reflect any changes in names, titles, positions or term commencement dates and types of business of Officers and Directors);
- Exhibit M (updated to provide a list of firms currently approved as members or other users of the Exchange)

This amendment is filed in accordance with SEC Rule 6a-2 and is intended to replace Exhibits C, J, & M currently on file with the Commission. Please do not hesitate to contact me if you have any questions or require anything further.

Sincerely,

Kyle Murray  
VP, Associate General Counsel  
913-815-7121

Securities and Exchange Commission  
Trading and Markets

NOV 01 2019

**RECEIVED**

Enclosures

<sup>1</sup> See Attachment for a comprehensive list of updates to Exhibits C, J, & M

## Attachment

### *Summary of changes made to Exhibit C:*

- Adam Inzirillo was added as an Officer on Cboe BZX Exchange, Inc., Cboe BYX Exchange, Inc., Cboe EDGX Exchange, Inc., Cboe Exchange, Inc., Cboe C2 Exchange, Inc., and Cboe Bats, LLC
- Michael Mollet was added as an Officer on Cboe BZX Exchange, Inc., Cboe BYX Exchange, Inc., Cboe EDGX Exchange, Inc., Cboe Exchange, Inc., Cboe C2 Exchange, Inc., and Cboe Bats, LLC
- Kyle Murray was added as an Officer on Cboe BZX Exchange, Inc., Cboe BYX Exchange, Inc., Cboe EDGX Exchange, Inc., Cboe Exchange, Inc., Cboe C2 Exchange, Inc., and Cboe Bats, LLC
- Nick Dutton was added as an officer on Cboe Europe Limited
- Adam Eades officer title was updated to "Chief Legal Officer" on Cboe Europe Limited

### *Summary of changes made to Exhibit J:*

- Adam Inzirillo was added as an Officer
- Michael Mollet was added as an Officer
- Kyle Murray was added as an Officer

### *Summary of changes made to Exhibit M:*

#### **Sponsored Access Approval:**

- Ultraviolet Securites, LLC (sponsored by J.P. Morgan Securities LLC) was approved on Cboe EDGA Exchange, Inc.
- Verition Fund Management LLC (sponsored by BofA Securites, Inc.) was approved on Cboe EDGA Exchange, Inc.
- XR Securites LLC (sponsored by BofA Securites, Inc.) was approved on Cboe EDGA Exchange, Inc.

Exhibit C

**Exhibit Request:**

For each subsidiary or affiliate of the applicant, and for any entity with whom the applicant has a contractual or other agreement relating to the operation of an electronic trading system to be used to effect transactions on the exchange (“System”), provide the following information:

1. Name and address of organization.
2. Form of organization (e.g., association, corporation, partnership, etc.).
3. Name of state and statute citation under which organized. Date of incorporation in present form.
4. Brief description of nature and extent of affiliation.
5. Brief description of business or functions. Description should include responsibilities with respect to operation of the System and/or execution, reporting, clearance, or settlement of transactions in connection with operation of the System.
6. A copy of the constitution.
7. A copy of the articles of incorporation or association including all amendments.
8. A copy of existing by-laws or corresponding rules or instruments.
9. The name and title of the present officers, governors, members of all standing committees or persons performing similar functions.
10. An indication of whether such business or organization ceased to be associated with the applicant during the previous year, and a brief statement of the reasons for termination of the association.

**Response:** Please see below responses for the following entities:

**A. Bats Global Markets Holdings, Inc.**

1. *Name:* Bats Global Markets Holdings, Inc.  
*Address:* 8050 Marshall Dr., Ste. 120, Lenexa, KS 66214
2. *Form of organization:* Corporation.
3. *Name of state, statute under which organized and date of incorporation:*  
Incorporated in Delaware under Section 101 of the General Corporation Law of the State of Delaware on June 29, 2007.
4. *Brief description of nature and extent of affiliation:* Cboe Bats, LLC owns 100% of the membership interests of Bats Global Markets Holdings, Inc. Bats Global Markets Holdings, Inc. is the Exchange's 100% owner.
5. *Brief description of business or functions:* Bats Global Markets Holdings, Inc. is an intermediate holding company.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*

Current Directors

- Ed Tilly
- Brian Schell

Current Officers

- Ed Tilly (President and Chief Executive Officer)
- Jen Browning (Vice President)
- Jill Griebenow (Vice President)
- Bryan Harkins (Vice President)
- Chris Isaacson (Vice President)
- Jackie Hancock (Vice President)
- Brian Schell (Treasurer)
- J. Patrick Sexton (Secretary)

10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

**B. Direct Edge LLC**

1. *Name:* Direct Edge LLC  
*Address:* 8050 Marshall Dr., Ste. 120, Lenexa, KS 66214
2. *Form of organization:* Limited Liability Company.
3. *Name of state, statute under which organized and date of incorporation:* Formed in Delaware under Section 201 of the Limited Liability Company Act of the State of Delaware on December 31, 2014. Was converted from Direct Edge, Inc., a Delaware corporation, on December 31, 2014.
4. *Brief description of nature and extent of affiliation:* Cboe Bats, LLC owns 100% of the membership interests of Direct Edge LLC.
5. *Brief description of business or functions:* Direct Edge LLC is an intermediate holding company. Direct Edge LLC is the sole shareholder of Cboe EDGA Exchange, Inc. and Cboe EDGX Exchange, Inc.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws or corresponding rules or instruments:* No changes.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*

Current Directors

- None

Current Officers

- Ed Tilly (President and Chief Executive Officer)
  - Jill Griebenow (Vice President)
  - Bryan Harkins (Vice President)
  - Chris Isaacson (Vice President)
  - Jackie Hancock (Vice President and Controller)
  - Brian Schell (Treasurer)
  - J. Patrick Sexton (Secretary)
10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

**C. Cboe BZX Exchange, Inc.**

1. *Name:* Cboe BZX Exchange, Inc.  
*Address:* 400 South LaSalle Street, Chicago, Illinois 60605
2. *Form of organization:* Corporation.
3. *Name of state, statute under which organized and date of incorporation:*  
Incorporated in Delaware under Section 101 of the General Corporation Law of the State of Delaware on November 1, 2007.
4. *Brief description of nature and extent of affiliation:* Cboe BZX Exchange, Inc. is wholly-owned by Bats Global Markets Holdings, Inc., which is also the Exchange's 100% owner.
5. *Brief description of business or functions:* Cboe BZX Exchange, Inc. operates as a registered national securities exchange pursuant to Section 6 of the Act.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*

Current Directors

- Ed Tilly
- Bruce Andrews
- Kevin Murphy
- David Roscoe
- Jill Sommers
- Scott Wagner

Current Officers

- Ed Tilly (President and Chief Executive Officer)
- Alexandra Albright (SVP, Chief Compliance Officer)
- Lawrence Bresnahan (VP, Market & Member Reg.)
- Jen Browning (VP, Head of Human Resources)
- Kevin Carrai (VP, Market Data and Access Services)
- Catherine Clay (SVP, Information Solutions)
- Gary Compton (VP, Communications)
- Jeff Connell (VP, Deputy Chief Regulatory Officer)
- Brent Coonrod (VP, Software Engineering)
- Arianne Criqui (SVP, Head of Options and Business Development)
- Eric Crampton (SVP, CTO)

- John Deters (EVP, Chief Strategy Officer & Head Multi-Asset Solutions)
- Laura Dickman (VP, Associate General Counsel)
- James Enstrom (SVP, & Chief Audit Exec)
- Todd Furney (VP, Chief Risk Officer)
- Alicia Goldberg (VP, Statistical Analysis)
- Jennifer Golding (VP, Associate General Counsel, Chief Litigation Officer)
- Jill Griebnow (SVP & Chief Accounting Officer)
- Jackie Hancock (VP, Controller)
- John Hiatt (VP, Product Development)
- Bryan Harkins (EVP, Co-Head Markets Division)
- Mark Hemsley (EVP, President Europe)
- Rob Hocking (SVP, Head of Derivatives Strategy)
- Gregory Hoogasian (SVP, CRO)
- Adam Inzirillo (SVP, Head of U.S. Equities)
- Chris Isaacson (EVP, COO)
- Brett Johnson (VP, Software Engineering)
- Jennifer Lamie (VP, Chief Regulatory Advisor)
- Stephanie Marrin Lara (VP, Deputy Chief Reg Officer)
- Andrew Lowenthal (EVP, Co-Head Markets Division)
- Marc Magrini (VP, Administration)
- Michael Mollet (VP, MAS Product Development)
- Anthony Montesano (VP, TSD and Registration)
- Laura Morrison (SVP, ETP Listings)
- Kyle Murray (VP and Associate General Counsel)
- Mark Novak (VP, Software Engineer)
- Dan Overmyer (VP, Options Regulation)
- Arthur Reinstein (SVP & Deputy General Counsel)
- Bradley Samuels (VP, Systems Development)
- Brian Schell (EVP, CFO, & Treasurer)
- Curt Schumacher (VP, Infrastructure)
- J. Patrick Sexton (Executive Vice President, General Counsel & Corporate Secretary)
- Steven Sinclair (VP, Systems Development)
- Eileen Smith (VP, Data and Analytics)
- Michael Trees (VP, Trading Sys Develop.)
- Aaron Weissenfluh (VP, CISO)
- Troy Yeazel (SVP, Operations)
- Vivian Yiu (VP, Product Strategy)

Standing Committees

Executive Committee

- Ed Tilly
- Bruce Andrews
- Kevin Murphy
- David Roscoe
- Jill Sommers
- Scott Wagner

Regulatory Oversight Committee

- Scott Wagner
- Bruce Andrews
- David Roscoe
- Jill Sommers

10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

**D. Cboe BYX Exchange, Inc.**

1. *Name:* Cboe BYX Exchange, Inc.  
*Address:* 400 South LaSalle Street, Chicago, Illinois 60605
2. *Form of organization:* Corporation.
3. *Name of state, statute under which organized and date of incorporation:*  
Incorporated in Delaware under Section 101 of the General Corporation Law of the State of Delaware on July 31, 2009.
4. *Brief description of nature and extent of affiliation:* Cboe BYX Exchange, Inc. is wholly-owned by Bats Global Markets Holdings, Inc., which is also the Exchange's 100% owner.
5. *Brief description of business or functions:* Cboe BYX Exchange, Inc. operates as a registered national securities exchange pursuant to Section 6 of the Act.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*

Current Directors

- Ed Tilly
- Bruce Andrews
- Kevin Murphy
- David Roscoe
- Jill Sommers
- Scott Wagner

Current Officers

- Ed Tilly (President and Chief Executive Officer)
- Alexandra Albright (SVP, Chief Compliance Officer)
- Lawrence Bresnahan (VP, Market & Member Reg.)
- Jen Browning (VP, Head of Human Resources)
- Kevin Carrai (VP, Market Data and Access Services)
- Catherine Clay (SVP, Information Solutions)
- Gary Compton (VP, Communications)
- Jeff Connell (VP, Deputy Chief Regulatory Officer)
- Brent Coonrod (VP, Software Engineering)
- Arianne Criqui (SVP, Head of Options and Business Development)
- Eric Crampton (SVP, CTO)

- John Deters (EVP, Chief Strategy Officer & Head Multi-Asset Solutions)
- Laura Dickman (VP, Associate General Counsel)
- James Enstrom (SVP, & Chief Audit Exec)
- Todd Furney (VP, Chief Risk Officer)
- Alicia Goldberg (VP, Statistical Analysis)
- Jennifer Golding (VP, Associate General Counsel, Chief Litigation Officer)
- Jill Griebnow (SVP & Chief Accounting Officer)
- Jackie Hancock (VP, Controller)
- John Hiatt (VP, Product Development)
- Bryan Harkins (EVP, Co-Head Markets Division)
- Mark Hemsley (EVP, President Europe)
- Rob Hocking (SVP, Head of Derivatives Strategy)
- Gregory Hoogasian (SVP, CRO)
- Adam Inzirillo (SVP, Head of U.S. Equities)
- Chris Isaacson (EVP, COO)
- Brett Johnson (VP, Software Engineering)
- Jennifer Lamie (VP, Chief Regulatory Advisor)
- Stephanie Marrin Lara (VP, Deputy Chief Reg Officer)
- Andrew Lowenthal (EVP, Co-Head Markets Division)
- Marc Magrini (VP, Administration)
- Michael Mollet (VP, MAS Product Development)
- Anthony Montesano (VP, TSD and Registration)
- Laura Morrison (SVP, ETP Listings)
- Kyle Murray (VP and Associate General Counsel)
- Mark Novak (VP, Software Engineer)
- Dan Overmyer (VP, Options Regulation)
- Arthur Reinstein (SVP & Deputy General Counsel)
- Bradley Samuels (VP, Systems Development)
- Brian Schell (EVP, CFO, & Treasurer)
- Curt Schumacher (VP, Infrastructure)
- J. Patrick Sexton (Executive Vice President, General Counsel & Corporate Secretary)
- Steven Sinclair (VP, Systems Development)
- Eileen Smith (VP, Data and Analytics)
- Michael Trees (VP, Trading Sys Develop.)
- Aaron Weissenfluh (VP, CISO)
- Troy Yeazel (SVP, Operations)
- Vivian Yiu (VP, Product Strategy)

Standing Committees

Executive Committee

- Ed Tilly
- Bruce Andrews
- Kevin Murphy
- David Roscoe
- Jill Sommers
- Scott Wagner

Regulatory Oversight Committee

- Scott Wagner
- Bruce Andrews
- David Roscoe
- Jill Sommers

10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

**E. Cboe EDGX Exchange, Inc.**

1. *Name:* Cboe EDGX Exchange, Inc.  
*Address:* 400 South LaSalle Street, Chicago, Illinois 60605
2. *Form of organization:* Corporation.
3. *Name of state, statute under which organized and date of incorporation:* Formed in Delaware under the General Corporation Law of the State of Delaware on March 9, 2009.
4. *Brief description of nature and extent of affiliation:* Cboe EDGX Exchange, Inc. is an indirect wholly-owned subsidiary of Cboe Global Markets, Inc., the Exchange's ultimate parent.
5. *Brief description of business or functions:* Cboe EDGX Exchange, Inc. operates a registered national securities exchange pursuant to Section 6 of the Act.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*

Current Directors

- Ed Tilly
- Bruce Andrews
- Kevin Murphy
- David Roscoe
- Jill Sommers
- Scott Wagner

Current Officers

- Ed Tilly (President and Chief Executive Officer)
- Alexandra Albright (SVP, Chief Compliance Officer)
- Lawrence Bresnahan (VP, Market & Member Reg.)
- Jen Browning (VP, Head of Human Resources)
- Kevin Carrai (VP, Market Data and Access Services)
- Catherine Clay (SVP, Information Solutions)
- Gary Compton (VP, Communications)
- Jeff Connell (VP, Deputy Chief Regulatory Officer)
- Brent Coonrod (VP, Software Engineering)
- Arianne Criqui (SVP, Head of Options and Business Development)
- Eric Crampton (SVP, CTO)

- John Deters (EVP, Chief Strategy Officer & Head Multi-Asset Solutions)
- Laura Dickman (VP, Associate General Counsel)
- James Enstrom (SVP, & Chief Audit Exec)
- Todd Furney (VP, Chief Risk Officer)
- Alicia Goldberg (VP, Statistical Analysis)
- Jennifer Golding (VP, Associate General Counsel, Chief Litigation Officer)
- Jill Griebnow (SVP & Chief Accounting Officer)
- Jackie Hancock (VP, Controller)
- John Hiatt (VP, Product Development)
- Bryan Harkins (EVP, Co-Head Markets Division)
- Mark Hemsley (EVP, President Europe)
- Rob Hocking (SVP, Head of Derivatives Strategy)
- Gregory Hoogasian (SVP, CRO)
- Adam Inzirillo (SVP, Head of U.S. Equities)
- Chris Isaacson (EVP, COO)
- Brett Johnson (VP, Software Engineering)
- Jennifer Lamie (VP, Chief Regulatory Advisor)
- Stephanie Marrin Lara (VP, Deputy Chief Reg Officer)
- Andrew Lowenthal (EVP, Co-Head Markets Division)
- Marc Magrini (VP, Administration)
- Michael Mollet (VP, MAS Product Development)
- Anthony Montesano (VP, TSD and Registration)
- Laura Morrison (SVP, ETP Listings)
- Kyle Murray (VP and Associate General Counsel)
- Mark Novak (VP, Software Engineer)
- Dan Overmyer (VP, Options Regulation)
- Arthur Reinstein (SVP & Deputy General Counsel)
- Bradley Samuels (VP, Systems Development)
- Brian Schell (EVP, CFO, & Treasurer)
- Curt Schumacher (VP, Infrastructure)
- J. Patrick Sexton (Executive Vice President, General Counsel & Corporate Secretary)
- Steven Sinclair (VP, Systems Development)
- Eileen Smith (VP, Data and Analytics)
- Michael Trees (VP, Trading Sys Develop.)
- Aaron Weissenfluh (VP, CISO)
- Troy Yeazel (SVP, Operations)
- Vivian Yiu (VP, Product Strategy)

Standing Committees

Executive Committee

- Ed Tilly
- Bruce Andrews
- Kevin Murphy
- David Roscoe
- Jill Sommers
- Scott Wagner

Regulatory Oversight Committee

- Scott Wagner
- Bruce Andrews
- David Roscoe
- Jill Sommers

- 10.** *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

**F. Cboe Exchange, Inc.**

1. *Name:* Cboe Exchange, Inc.  
*Address:* 400 South LaSalle Street, Chicago, Illinois 60605
2. *Form of organization:* Corporation.
3. *Name of state, statute under which organized and date of incorporation:*  
Delaware, Delaware General Corporation Law (8 Del. C. § 101, et seq), February 8, 1972.
4. *Brief description of nature and extent of affiliation:* Wholly-owned subsidiary of Cboe Global Markets, Inc.
5. *Brief description of business or functions:* Cboe Exchange, Inc. is a registered national securities exchange.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*

Current Directors

- Ed Tilly
- Bruce Andrews
- Kevin Murphy
- David Roscoe
- Jill Sommers
- Scott Wagner

Current Officers

- Ed Tilly (President and Chief Executive Officer)
- Alexandra Albright (SVP, Chief Compliance Officer)
- Lawrence Bresnahan (VP, Market & Member Reg.)
- Jen Browning (VP, Head of Human Resources)
- Kevin Carrai (VP, Market Data and Access Services)
- Catherine Clay (SVP, Information Solutions)
- Gary Compton (VP, Communications)
- Jeff Connell (VP, Deputy Chief Regulatory Officer)
- Brent Coonrod (VP, Software Engineering)
- Arianne Criqui (SVP, Head of Options and Business Development)
- Eric Crampton (SVP, CTO)
- John Deters (EVP, Chief Strategy Officer & Head Multi-Asset Solutions)

- Laura Dickman (VP, Associate General Counsel)
- James Enstrom (SVP, & Chief Audit Exec)
- Todd Furney (VP, Chief Risk Officer)
- Alicia Goldberg (VP, Statistical Analysis)
- Jennifer Golding (VP, Associate General Counsel, Chief Litigation Officer)
- Jill Griebnow (SVP & Chief Accounting Officer)
- Jackie Hancock (VP, Controller)
- John Hiatt (VP, Product Development)
- Bryan Harkins (EVP, Co-Head Markets Division)
- Mark Hemsley (EVP, President Europe)
- Rob Hocking (SVP, Head of Derivatives Strategy)
- Gregory Hoogasian (SVP, CRO)
- Adam Inzirillo (SVP, Head of U.S. Equities)
- Chris Isaacson (EVP, COO)
- Brett Johnson (VP, Software Engineering)
- Jennifer Lamie (VP, Chief Regulatory Advisor)
- Stephanie Marrin Lara (VP, Deputy Chief Reg Officer)
- Andrew Lowenthal (EVP, Co-Head Markets Division)
- Marc Magrini (VP, Administration)
- Michael Mollet (VP, MAS Product Development)
- Anthony Montesano (VP, TSD and Registration)
- Laura Morrison (SVP, ETP Listings)
- Kyle Murray (VP and Associate General Counsel)
- Mark Novak (VP, Software Engineer)
- Dan Overmyer (VP, Options Regulation)
- Arthur Reinstein (SVP & Deputy General Counsel)
- Bradley Samuels (VP, Systems Development)
- Brian Schell (EVP, CFO, & Treasurer)
- Curt Schumacher (VP, Infrastructure)
- J. Patrick Sexton (Executive Vice President, General Counsel & Corporate Secretary)
- Steven Sinclair (VP, Systems Development)
- Eileen Smith (VP, Data and Analytics)
- Michael Trees (VP, Trading Sys Develop.)
- Aaron Weissenfluh (VP, CISO)
- Troy Yeazel (SVP, Operations)
- Vivian Yiu (VP, Product Strategy)

Standing Committees

Executive Committee

- Ed Tilly
- Bruce Andrews
- Kevin Murphy
- David Roscoe
- Jill Sommers
- Scott Wagner

Regulatory Oversight Committee

- Scott Wagner
- Bruce Andrews
- David Roscoe
- Jill Sommers

Indemnity Committee

- Ed Tilly

10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

**G. Cboe C2 Exchange, Inc.**

1. *Name:* Cboe C2 Exchange, Inc.  
*Address:* 400 South LaSalle Street, Chicago, Illinois 60605
2. *Form of organization:* Corporation.
3. *Name of state, statute under which organized and date of incorporation:*  
Delaware, Delaware General Corporation Law (8 Del. C. § 101, et seq), July 21, 2009.
4. *Brief description of nature and extent of affiliation:* Wholly-owned subsidiary of Cboe Global Markets, Inc.
5. *Brief description of business or functions:* Cboe C2 Exchange, Inc. is a registered national securities exchange.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*

Current Directors

- Ed Tilly
- Bruce Andrews
- Kevin Murphy
- David Roscoe
- Jill Sommers
- Scott Wagner

Current Officers

- Ed Tilly (President and Chief Executive Officer)
- Alexandra Albright (SVP, Chief Compliance Officer)
- Lawrence Bresnahan (VP, Market & Member Reg.)
- Jen Browning (VP, Head of Human Resources)
- Kevin Carrai (VP, Market Data and Access Services)
- Catherine Clay (SVP, Information Solutions)
- Gary Compton (VP, Communications)
- Jeff Connell (VP, Deputy Chief Regulatory Officer)
- Brent Coonrod (VP, Software Engineering)
- Arianne Criqui (SVP, Head of Options and Business Development)
- Eric Crampton (SVP, CTO)

- John Deters (EVP, Chief Strategy Officer & Head Multi-Asset Solutions)
- Laura Dickman (VP, Associate General Counsel)
- James Enstrom (SVP, & Chief Audit Exec)
- Todd Furney (VP, Chief Risk Officer)
- Alicia Goldberg (VP, Statistical Analysis)
- Jennifer Golding (VP, Associate General Counsel, Chief Litigation Officer)
- Jill Griebnow (SVP & Chief Accounting Officer)
- Jackie Hancock (VP, Controller)
- John Hiatt (VP, Product Development)
- Bryan Harkins (EVP, Co-Head Markets Division)
- Mark Hemsley (EVP, President Europe)
- Rob Hocking (SVP, Head of Derivatives Strategy)
- Gregory Hoogasian (SVP, CRO)
- Adam Inzirillo (SVP, Head of U.S. Equities)
- Chris Isaacson (EVP, COO)
- Brett Johnson (VP, Software Engineering)
- Jennifer Lamie (VP, Chief Regulatory Advisor)
- Stephanie Marrin Lara (VP, Deputy Chief Reg Officer)
- Andrew Lowenthal (EVP, Co-Head Markets Division)
- Marc Magrini (VP, Administration)
- Michael Mollet (VP, MAS Product Development)
- Anthony Montesano (VP, TSD and Registration)
- Laura Morrison (SVP, ETP Listings)
- Kyle Murray (VP and Associate General Counsel)
- Mark Novak (VP, Software Engineer)
- Dan Overmyer (VP, Options Regulation)
- Arthur Reinstein (SVP & Deputy General Counsel)
- Bradley Samuels (VP, Systems Development)
- Brian Schell (EVP, CFO, & Treasurer)
- Curt Schumacher (VP, Infrastructure)
- J. Patrick Sexton (Executive Vice President, General Counsel & Corporate Secretary)
- Steven Sinclair (VP, Systems Development)
- Eileen Smith (VP, Data and Analytics)
- Michael Trees (VP, Trading Sys Develop.)
- Aaron Weissenfluh (VP, CISO)
- Troy Yeazel (SVP, Operations)
- Vivian Yiu (VP, Product Strategy)

Standing Committees

Executive Committee

- Ed Tilly
- Bruce Andrews
- Kevin Murphy
- David Roscoe
- Jill Sommers
- Scott Wagner

Regulatory Oversight Committee

- Scott Wagner
- Bruce Andrews
- David Roscoe
- Jill Sommers

10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

**H. Cboe Trading, Inc.**

1. *Name:* Cboe Trading, Inc.  
*Address:* 8050 Marshall Dr., Ste. 120, Lenexa, KS 66214
2. *Form of organization:* Corporation.
3. *Name of state, statute under which organized and date of incorporation:*  
Incorporated in Delaware under Section 101 of the General Corporation Law of the State of Delaware on June 16, 2005.
4. *Brief description of nature and extent of affiliation:* Cboe Trading, Inc. is wholly-owned by Bats Global Markets Holdings, Inc., which is also the Exchange's 100% owner.
5. *Brief description of business or functions:* Cboe Trading, Inc. is a broker-dealer registered as such with the Securities and Exchange Commission and a member of the Financial Industry Regulatory Authority and other self-regulatory organizations. Cboe Trading, Inc. provides routing of orders from the Exchange Cboe BYX Exchange, Inc., Cboe EDGA Exchange, Inc. and Cboe EDGX Exchange, Inc. to other securities exchanges, facilities of securities exchanges, automated trading systems, electronic communication networks or other broker-dealers.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*  
  
Current Directors
  - Chris Isaacson
  - Brian Schell  
Current Officers
  - Jackie Hancock (FINOP, Treasurer)
  - Bryan Upp (Chief Compliance Officer)
  - Troy Yeazel (President)
  - J. Patrick Sexton (Secretary)
10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

**I. Omicron Acquisition Corp.**

1. *Name:* Omicron Acquisition Corp.  
*Address:* 8050 Marshall Dr., Ste. 120, Lenexa, KS 66214
2. *Form of organization:* Corporation.
3. *Name of state, statute under which organized and date of incorporation:*  
Incorporated in Delaware under Section 101 of the General Corporation Law of the State of Delaware on February 7, 2011.
4. *Brief description of nature and extent of affiliation:* Omicron Acquisition Corp. is wholly-owned by Bats Global Markets Holdings, Inc., which is an affiliate of the Exchange.
5. *Brief description of business or functions:* Omicron Acquisition Corp. is an intermediate holding company of Cboe Worldwide Holdings Limited.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*

Current Directors

- Ed Tilly
- Mark Hemsley

Current Officers

- Ed Tilly (President and Chief Executive Officer)
- Jill Griebenow (Vice President)
- Mark Hemsley (Vice President)
- Jackie Hancock (Vice President and Controller)
- Chris Isaacson (Vice President)
- Brian Schell (Treasurer)
- J. Patrick Sexton (Secretary)

10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

**J. Cboe FX Holdings, LLC**

1. *Name:* Cboe FX Holdings, LLC  
*Address:* 8050 Marshall Dr., Ste. 120, Lenexa, KS 66214
2. *Form of organization:* Limited Liability Company.
3. *Name of state, statute under which organized and date of incorporation:* Formed in Delaware under Section 201 of the Limited Liability Company Act of the State of Delaware on May 15, 2000.
4. *Brief description of nature and extent of affiliation:* Cboe FX Holdings, LLC is wholly-owned by Bats Global Markets Holdings, Inc., which is an affiliate of the Exchange.
5. *Brief description of business or functions:* Cboe FX Holdings, LLC is an intermediate holding company of Cboe FX Markets, LLC, Cboe FX Services, LLC, and Cboe SEF, LLC.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*

Current Directors

- None

Current Officers

- Ed Tilly (President and Chief Executive Officer)
- Jill Griebenow (Vice President)
- Bryan Harkins (Vice President)
- Jackie Hancock (Vice President and Controller)
- Chris Isaacson (Vice President)
- Brian Schell (Treasurer)
- J. Patrick Sexton (Secretary)

10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

**K. Cboe FX Markets, LLC**

1. *Name:* Cboe FX Markets, LLC  
*Address:* 8050 Marshall Dr., Ste. 120, Lenexa, KS 66214
2. *Form of organization:* Limited Liability Company.
3. *Name of state, statute under which organized and date of incorporation:* Formed in New Jersey under Section 42 of the Limited Liability Company Act of the State of New Jersey on August 7, 2001.
4. *Brief description of nature and extent of affiliation:* Cboe FX Markets, LLC is wholly-owned by Cboe FX Holdings, LLC, which is wholly-owned by Bats Global Markets Holdings, Inc., which is an affiliate of the Exchange.
5. *Brief description of business or functions:* Cboe FX Markets, LLC operates an institutional spot foreign exchange market.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*

Current Directors

- None

Current Officers

- Ed Tilly (President and Chief Executive Officer)
- Alexandra Albright (Chief Compliance Officer)
- Sean Cleary (VP, Sales FX)
- Eric Crampton (SVP, CTO)
- John Deters (EVP, Chief Strategy Officer and Head of Multi-Asset Solutions)
- James Enstrom (SVP, Chief Audit Executive)
- Todd Furney (Chief Risk Officer)
- Jennifer Golding (VP, Associate General Counsel, Chief Litigation Officer)
- Jill Griebenow (SVP & Chief Accounting Officer)
- Jackie Hancock (VP, Controller)
- Bryan Harkins (EVP, Co-Head Markets Division)
- Mark Hemsley (EVP, President Europe)
- Greg Hoogasian (SVP, Chief Regulatory Officer)
- Chris Isaacson (EVP)
- Stephanie Marrin Lara (Deputy Chief Regulatory Officer)
- Andrew Lowenthal (EVP, Co-Head Markets Division)

**Cboe EDGA Exchange, Inc. Form 1 Registration Statement: Exhibit C**

- Paul Reidy (VP, Cboe FX COO)
- Brian Schell (EVP, CFO and Treasurer)
- J. Patrick Sexton (EVP, General Counsel, and Secretary)
- Lisa Shemie (VP, Associate General Counsel and Cboe FX Chief Legal Officer)
- Aaron Weissenfluh (VP, CISO)

10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

**L. Cboe FX Services, LLC**

1. *Name:* Cboe FX Services, LLC  
*Address:* 8050 Marshall Dr., Ste. 120, Lenexa, KS 66214
2. *Form of organization:* Limited Liability Company.
3. *Name of state, statute under which organized and date of incorporation:* Formed in New Jersey under Section 42 of the Limited Liability Company Act of the State of New Jersey on November 22, 2004.
4. *Brief description of nature and extent of affiliation:* Cboe FX Services, LLC is wholly-owned by Cboe FX Holdings, LLC, which is wholly-owned by Bats Global Markets Holdings, Inc., which is an affiliate of the Exchange.
5. *Brief description of business or functions:* Cboe FX Services, LLC operates an institutional spot foreign exchange market.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*

Current Directors

- None

Current Officers

- Ed Tilly (President and Chief Executive Officer)
  - Jill Griebenow (Vice President)
  - Bryan Harkins (Vice President)
  - Jackie Hancock (Vice President and Controller)
  - Chris Isaacson (Vice President)
  - Andrew Lowenthal (Vice President)
  - Brian Schell (Treasurer)
  - J. Patrick Sexton (Secretary)
10. Indication of whether such business or organization ceased to be associated with the applicant during previous year: Not applicable.

**M. Cboe FX Europe Limited**

1. *Name:* Cboe FX Europe Limited  
*Address:* 11 Monument Street, London, EC3R 8AF, United Kingdom
2. *Form of organization:* Private Company Limited by Shares.
3. *Name of state, statute under which organized and date of incorporation:*  
Incorporated in England and Wales under the Companies Act 1985 on February 5, 2015.
4. *Brief description of nature and extent of affiliation:* Cboe FX Europe Limited is wholly-owned by Cboe Worldwide Holdings Limited, which is an affiliate of the Exchange.
5. *Brief description of business or functions:* Cboe FX Europe Limited operates an institutional spot foreign exchange market.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* Not applicable.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*  
  
Current Directors
  - Ed Tilly
  - Mark Hemsley  
Current Officers
10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

**N. Cboe FX Asia Pte. Limited**

1. *Name:* Cboe FX Asia Pte. Limited  
*Address:* 16 Collyer Quay, #2104, Sixteen Collyer Quay, Singapore (049318)
2. *Form of organization:* Private Company Limited by Shares.
3. *Name of state, statute under which organized and date of incorporation:*  
Incorporated in Singapore under the Companies Act (Cap. 50) on February 23, 2015.
4. *Brief description of nature and extent of affiliation:* Cboe FX Asia Pte. Limited is wholly-owned by Cboe Worldwide Holdings Limited which is an affiliate of the Exchange.
5. *Brief description of business or functions:* Cboe FX Asia Pte. Limited operates an institutional spot foreign exchange market.
6. *Copy of constitution:* No changes.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* Not applicable.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*

Current Directors

- Ed Tilly
- Ng Lip Chih (Singapore Nominee)

Current Officers

- Ed Tilly (President)
- Ang Yee Koon Daphne, Secretary (Allen & Gledhill)
- Tan Zhe Lei, Secretary (Allen & Gledhill)

10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

**O. Cboe Europe Limited**

1. *Name:* Cboe Europe Limited  
*Address:* 11 Monument Street, London, EC3R 8AF, United Kingdom
2. *Form of organization:* Private Company Limited by Shares.
3. *Name of state, statute under which organized and date of incorporation:*  
Incorporated in England and Wales under the Companies Act 1985 on March 28, 2008.
4. *Brief description of nature and extent of affiliation:* Cboe Europe Limited is wholly-owned by Cboe Worldwide Holdings Limited, which is an affiliate of the Exchange.
5. *Brief description of business or functions:* Cboe Europe Limited is recognized as a Recognized Investment Exchange in the United Kingdom under the Financial Services and Markets Act 2000 (“FSMA”). It operates a platform for trading of European equity securities.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* Not applicable.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*

Current Directors

- Richard Balarkas
- Julian Corner
- Angelo Evangelou
- Rebecca Fuller
- Mark Hemsley
- Ted Hood
- Kristian West
- John Woodman

Current Officers

- Mark Hemsley (Chief Executive Officer)
- Antonio Amelia (Secretary)
- Jerry Avenell (Co-Head Sales)
- Alex Dalley (Co-Head Sales)
- Nick Dutton (Chief Regulatory Officer)
- Adam Eades (Chief Legal Officer)
- David Howson (COO)

- Stephanie Renner (CFO)

Standing Committees

Audit, Risk and Compliance Committee

- Richard Balarkas
- Rebecca Fuller
- Ted Hood

Remuneration Committee

- Rebecca Fuller
- Kristian West
- John Woodman

10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

**P. Cboe Chi-X Europe Limited**

1. *Name:* Cboe Chi-X Europe Limited  
*Address:* 11 Monument Street, London, EC3R 8AF, United Kingdom
2. *Form of organization:* Private Company Limited by Shares.
3. *Name of state, statute under which organized and date of incorporation:*  
Incorporated in England and Wales.
4. *Brief description of nature and extent of affiliation:* Cboe Chi-X Europe Limited is wholly-owned by Cboe Europe Limited which, in turn, is indirectly wholly owned by Bats Global Markets, Inc.
5. *Brief description of business or functions:* Cboe Chi-X Europe Limited is authorized in the United Kingdom under the Financial Services and Markets Act 2000 (“FSMA”), as an investment firm. Between April 30, 2012 and May 20, 2013 it was a dormant company. Since May 20, 2013, Cboe Chi-X Europe Limited operates the smart order router that is needed for the routing strategies deployed by Cboe Europe Limited. As of November 2018 this company remains dormant.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* Not applicable.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*

Current Directors

- Mark Hemsley
- Adam Eades
- John Woodman

Current Officers

- Mark Hemsley (Chief Executive Officer)
- Antonio Amelia (Secretary)
- Adam Eades (Chief Legal and Regulatory Officer)
- Stephanie Renner (Chief Financial Officer)

10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

**Q. Cboe ETF.com, Inc.**

1. *Name:* Cboe ETF.com, Inc.  
*Address:* 8050 Marshall Dr., Ste. 120, Lenexa, KS 66214
2. *Form of organization:* Corporation.
3. *Name of state, statute under which organized and date of incorporation:*  
Incorporated in Delaware under Section 101 of the General Corporation Law of the State of Delaware on March 28, 2016.
4. *Brief description of nature and extent of affiliation:* Cboe ETF.com, Inc. is wholly-owned by Bats Global Markets Holdings, Inc., which is also the Exchange's 100% owner.
5. *Brief description of business or functions:* Cboe ETF.com, Inc. is a media company providing ETF data, news and analysis.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*

Current Directors

- Ed Tilly
- Brian Schell

Current Officers

- Ed Tilly (President and Chief Executive Officer)
  - Brent Coonrod (Vice President)
  - Eric Crampton (Vice President)
  - Jennifer Golding (Vice President)
  - Jill Griebenow (Vice President)
  - Jackie Hancock (Vice President and Controller)
  - Bryan Harkins (Vice President)
  - Chris Isaacson (Vice President)
  - Laura Morrison (Vice President)
  - Dave Nadig (Senior Director, Content and ETF)
  - Brian Schell (Treasurer)
  - J. Patrick Sexton (Secretary)
10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

**R. IndexPubs S.A.**

1. *Name:* IndexPubs S.A.  
*Address:* Almagro Plaza, Ste. 508, Pedro Ponce Carrasco, E8-06 y Diego de Almagro, 170516 – Quito, Ecuador
2. *Form of organization:* Corporation (Soceidad Anonima or S.A.).
3. *Name of state, statute under which organized and date of incorporation:*  
Incorporated in Ecuador on January 15, 2008.
4. *Brief description of nature and extent of affiliation:* IndexPubs S.A. is owned 0.1% by Fernando Rivera and 99.9% by Cboe Worldwide Holdings Limited, which is an affiliate of the Exchange.
5. *Brief description of business or functions:* IndexPubs S.A. is a media company providing ETF data, news and analysis.
6. *Copy of constitution:* No changes.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*  
  
Current Directors  
  
Current Officers
  - Patricia Hidalgo (General Manager)
  - Dave Nadig (President)
10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

S. Cboe SEF, LLC

1. *Name:* Cboe SEF, LLC  
*Address:* 17 State Street, 31<sup>st</sup> Floor, New York, NY 10004
2. *Form of organization:* Limited Liability Company.
3. *Name of state, statute under which organized and date of incorporation:* Formed in Delaware under Section 201 of the Limited Liability Company Act of the State of Delaware on April 19, 2012.
4. *Brief description of nature and extent of affiliation:* Cboe SEF, LLC is wholly-owned by Cboe FX Holdings LLC, which is wholly-owned by Bats Global Markets Holdings, Inc., which is an affiliate of the Exchange.
5. *Brief description of business or functions:* Cboe SEF, LLC is a swap execution facility registered with the Commodity Futures Trading Association, which will soon list non-deliverable foreign exchange forwards for trading.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*

Current Officers

- Ed Tilly (President and Chief Executive Officer)
- Alexandra Albright (Senior Vice President and Chief Compliance Officer)
- Sean Cleary (Vice President)
- Eric Crampton (SVP, CTO)
- John Deters (EVP, Chief Strategy Officer & Head of Multi-Asset Solutions)
- James Enstrom (Senior Vice President & Chief Audit Executive)
- Todd Furney (VP, and Chief Risk Officer)
- Jennifer Golding (VP, Associate General Counsel, Chief Litigation Officer)
- Jill Griebenow (SVP & Chief Accounting Officer)
- Bryan Harkins (Executive Vice President, Co-Head of U.S. Markets)
- Mark Hemsley (Executive Vice President, President Europe)
- Gregory Hoogasian (Senior Vice President & Chief Regulatory Officer)
- Chris Isaacson (Executive Vice President & COO)
- Andrew Lowenthal (Executive Vice President, Co-Head of U.S. Markets)
- Stephanie Marrin (Vice President and Deputy Chief Regulatory Officer)
- Paul Reidy (Vice President)
- J. Patrick Sexton (Executive Vice President, General Counsel & Corporate Secretary)

- Brian Schell (Executive Vice President, Chief Financial Officer & Treasurer)
- Lisa Shemie (Vice President, Associate General Counsel & Cboe SEF Chief Legal Officer)
- Jackie Hancock (Vice President and Controller)
- Aaron Weissenfluh (Vice President & Chief Information Security Officer)

Managers

- Ed Tilly
- Gilbert Bassett
- Michael Gorham
- James Parisi
- Jill Sommers

10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

**T. Cboe Worldwide Holdings Limited**

1. *Name:* Cboe Worldwide Holdings Limited  
*Address:* 11 Monument Street, London, EC3R 8AF, United Kingdom
2. *Form of organization:* Private Company Limited by Shares.
3. *Name of state, statute under which organized and date of incorporation:*  
Incorporated in England and Wales under the Companies Act 2006 on November 9, 2016.
4. *Brief description of nature and extent of affiliation:* Cboe Worldwide Holdings Limited is wholly-owned by Omicron Acquisition Corp., which is an affiliate of the Exchange.
5. *Brief description of business or functions:* Cboe Worldwide Holdings Limited is an intermediate holding company of Cboe Europe Limited, Cboe Hong Kong Limited, Cboe UK Limited, Cboe FX Asia Pte. Limited, and IndexPubs S.A.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* Not applicable.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*  
  
Current Directors
  - Ed Tilly
  - Mark Hemsley  
Current Officers
10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

**U. Cboe Global Markets, Inc.**

1. *Name:* Cboe Global Markets, Inc.  
*Address:* 400 South LaSalle Street, Chicago, Illinois 60605
2. *Form of organization:* Corporation.
3. *Name of state, statute under which organized and date of incorporation:*  
Delaware, Delaware General Corporation Law (8 Del. C. §101, et seq), August 15, 2006.
4. *Brief description of nature and extent of affiliation:* Cboe Bats, LLC is a wholly-owned subsidiary of Cboe Global Markets, Inc.
5. *Brief description of business or functions:* Holding company.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*

Current Directors

- Ed Tilly
- Frank English
- William Farrow
- Janet Froetscher
- Jill Goodman
- Roderick Palmore
- James Parisi
- Joe Ratterman
- Michael Richter
- Jill Sommers
- Carole Stone
- Eugene Sunshine
- Fredric Tomczyk

Current Officers

- Ed Tilly (President and Chief Executive Officer)
- John Deters (EVP, Chief Strategy Officer and Head of Multi-Asset Solutions)
- Jill Griebenow (SVP & Chief Accounting Officer)
- Bryan Harkins (EVP, Co-Head Markets Division)
- Mark Hemsley (EVP, President Europe)
- Chris Isaacson (EVP and COO)

- Andrew Lowenthal (EVP, Co-Head Markets Division)
- Brian Schell (EVP, and CFO)
- J. Patrick Sexton (EVP, General Counsel and Corporate Secretary)

Compensation Committee

- Frank English
- Janet Froetscher
- Edward Fitzpatrick
- James Parisi

Audit Committee

- William Farrow
- Carole Stone
- Michael Richter
- James Parisi

Nominating and Governance Committee

- Frank English
- Jill Goodman
- Roderick Palmore
- Carole Stone
- Janet Froetscher

Finance and Strategy Committee

- Frank English
- Jill Goodman
- Joe Ratterman
- Roderick Palmore
- Jill Sommers

Risk Committee

- William Farrow
- Edward Fitzpatrick
- Janet Froetscher
- Michael Richter
- Carole Stone

Indemnity Committee

- Ed Tilly

10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

V. Cboe Futures Exchange, LLC

1. *Name:* Cboe Futures Exchange, LLC  
*Address:* 400 South LaSalle Street, Chicago, Illinois 60605
2. *Form of organization:* Limited Liability Company.
3. *Name of state, statute under which organized and date of incorporation:*  
Delaware, Delaware Limited Liability Company Act (6 Del. C. §18-101, et seq),  
July 16, 2002.
4. *Brief description of nature and extent of affiliation:* Wholly-owned subsidiary of  
Cboe Global Markets, Inc.
5. *Brief description of business or functions:* Cboe Futures Exchanges, LLC is a  
designated contract market (DCM) approved by the Commodity Futures Trading  
Commission in August 2003. Cboe Futures Exchange, LLC is a fully electronic  
futures exchange.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees  
and persons performing similar functions:*

Current Directors

- Ed Tilly
- Gilbert Bassett, Jr.
- Michael Gorham
- James Parisi
- Jill Sommers

Current Officers

- Ed Tilly (President and Chief Executive Officer)
- Alexandra Albright (SVP and Chief Compliance Officer)
- Lawrence Bresnahan (VP, Market & Member Reg.)
- Joseph Caauwe (CFE Managing Director)
- Kevin Carrai (Vice President, Connectivity, Data & Member Services)
- Catherine Clay (SVP, Business Development)
- Eric Crampton (SVP, CTO)
- John Deters (Executive Vice President, Chief Strategy Officer & Head of  
Multi-Asset Solutions)
- James Enstrom (Senior Vice President & Chief Audit Executive)
- Todd Furney (Vice President and Chief Risk Officer)

- Jennifer Golding (VP, Associate General Counsel & Chief Litigation Officer)
- Jill Griebenow (Senior Vice President & Chief Accounting Officer)
- Jackie Hancock (Vice President and Controller)
- Bryan Harkins (Executive Vice President, Co-Head of U.S. Markets Division)
- Mark Hemsley (Executive Vice President, President Europe)
- Gregory Hoogasian (Senior Vice President & Chief Regulatory Officer)
- Chris Isaacson (Executive Vice President, CFE Senior Managing Director, & COO)
- Jennifer Lamie (VP & Chief Regulatory Advisor)
- Stephanie Marrin Lara (VP & Deputy Chief Reg Officer)
- Andrew Lowenthal (Executive Vice President, Co-Head of U.S. Markets Division, and CFE Senior Managing Director)
- Matthew McFarland (VP, Head of Futures and CFE Managing Director)
- Arthur Reinstein (Senior Vice President, Deputy General Counsel & CFE Chief Legal Officer)
- J. Patrick Sexton (Executive Vice President, General Counsel & Corporate Secretary)
- Brian Schell (Executive Vice President, Chief Financial Officer & Treasurer)
- Aaron Weissenfluh (Vice President & Chief Information Security Officer)
- Troy Yeazel (Senior Vice President, U.S. Electronic Trading Operations and CFE Managing Director)

Standing Committees

Executive

- Ed Tilly
- Michael Gorham

Regulatory Oversight Committee

- Michael Gorham
- Gilbert Bassett
- Jill Sommers

10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year: Not applicable.*

**W. Cboe Building Corporation**

1. *Name:* Cboe Building Corporation  
*Address:* 400 South LaSalle Street, Chicago, Illinois 60605
2. *Form of organization:* Corporation.
3. *Name of state, statute under which organized and date of incorporation:*  
Delaware, Delaware General Corporation Law (8 Del. C. § 101, et seq), August 8, 1980.
4. *Brief description of nature and extent of affiliation:* Wholly-owned subsidiary of Cboe Global Markets, Inc.
5. *Brief description of business or functions:* Owns facility used by Cboe Global Markets, Inc.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*

Current Directors

- Ed Tilly
- Brian Schell

Current Officers

- Ed Tilly (President and Chief Executive Officer)
  - Jill Griebenow (Vice President)
  - Jackie Hancock (Vice President and Controller)
  - Chris Isaacson (Vice President)
  - Marc Magrini (Vice President)
  - Brian Schell (Treasurer)
  - J. Patrick Sexton (Secretary)
10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

**X. Cboe, LLC**

1. *Name:* Cboe, LLC  
*Address:* 400 South LaSalle Street, Chicago, Illinois 60605
2. *Form of organization:* Limited Liability Company.
3. *Name of state, statute under which organized and date of incorporation:*  
Delaware, Delaware Limited Liability Company Act (6 Del. C. §18-101, et seq),  
August 22, 2001.
4. *Brief description of nature and extent of affiliation:* Wholly-owned subsidiary of  
Cboe Global Markets, Inc.
5. *Brief description of business or functions:* Cboe, LLC is a limited liability  
company member of OneChicago, LLC.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees  
and persons performing similar functions:*

Current Directors

- Ed Tilly
- Brian Schell

Current Officers

- Ed Tilly (President and Chief Executive Officer)
- Catherine Clay (Vice President)
- Jill Griebenow (Vice President)
- Jackie Hancock (Vice President and Controller)
- Chris Isaacson (Vice President)
- Brian Schell (Treasurer)
- J. Patrick Sexton (Secretary)

10. *Indication of whether such business or organization ceased to be associated with  
the applicant during previous year:* Not applicable.

Y. Cboe III, LLC

1. *Name:* Cboe III, LLC  
*Address:* 400 South LaSalle Street, Chicago, Illinois 60605
2. *Form of organization:* Limited Liability Company.
3. *Name of state, statute under which organized and date of incorporation:*  
Delaware, Delaware Limited Liability Company Act (6 Del. C. §18-101, et seq),  
May 2, 2014.
4. *Brief description of nature and extent of affiliation:* Wholly-owned subsidiary of  
Cboe Global Markets, Inc.
5. *Brief description of business or functions:* Holding company for investment in  
Tradelegs, LLC.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees  
and persons performing similar functions:*

Current Directors

- Ed Tilly
- John Deters
- Brian Schell

Current Officers

- Ed Tilly (President and Chief Executive Officer)
- John Deters (Vice President)
- Jill Griebnow (Vice President)
- Jackie Hancock (Vice President and Controller)
- Chris Isaacson (Vice President)
- Brian Schell (Treasurer)
- J. Patrick Sexton (Secretary)

10. *Indication of whether such business or organization ceased to be associated with  
the applicant during previous year:* Not applicable.

**Z. Cboe Bats, LLC**

1. *Name:* Cboe Bats, LLC  
*Address:* 400 South LaSalle Street, Chicago, Illinois 60605
2. *Form of organization:* Limited Liability Company.
3. *Name of state, statute under which organized and date of incorporation:*  
Delaware, Delaware Limited Liability Company Act (6 Del. C. §18-101, et seq),  
September 25, 2016.
4. *Brief description of nature and extent of affiliation:* Wholly-owned subsidiary of  
Cboe Global Markets, Inc.
5. *Brief description of business or functions:* Holding company.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees  
and persons performing similar functions:*

Current Directors

- Ed Tilly
- Brian Schell
- Chris Isaacson

Current Officers

- Ed Tilly (President and Chief Executive Officer)
- Alexandra Albright (SVP, Chief Compliance Officer)
- Lawrence Bresnahan (VP, Market & Member Regulation)
- Jen Browning (VP, Head of Human Resources)
- Kevin Carrai (VP, Market Data and Access Services)
- Catherine Clay (SVP, Information Solutions)
- Sean Cleary (VP, Sales FX)
- Gary Compton (VP, Corporate Communications)
- Jeff Connell (VP, Deputy Chief Regulatory Officer)
- Brent Coonrod (Vice President, Software Engineering)
- Eric Crampton (SVP, CTO)
- Arianne Criqui (SVP, Head of Options and Business Development)
- John Deters (EVP, Chief Strategy Officer and Head of Multi-Asset Solutions)
- Laura Dickman (VP, Associate General Counsel)
- James Enstrom (SVP, Chief Audit Executive) Bats
- Angelo Evangelou (SVP, Market Policy and Government Affairs)

- Carmen Frazier Brannan (VP, Government Relations)
- Todd Furney (VP, Chief Risk Officer)
- Alicia Goldberg (VP, Statistical Analysis)
- Jennifer Golding (VP, Associate General Counsel, Chief Litigation Officer)
- Jill Griebenow (SVP & Chief Accounting Officer)
- Jackie Hancock (VP, Controller)
- Bryan Harkins (EVP, Co-Head Markets Division)
- Mark Hemsley (EVP, President Europe)
- John Hiatt (VP, Product Development)
- Rob Hocking (SVP, Head of Derivatives Strategy)
- Gregory Hoogasian (SVP, Chief Regulatory Officer)
- Chris Isaacson (EVP, Chief Operating Officer)
- Brett Johnson (VP, Software Engineering)
- Carol Kennedy (VP, Chief Communications Officer)
- Deborah Koopman (VP, Investor Relations)
- Jennifer Lamie (VP, Chief Regulatory Advisor)
- Andrew Lowenthal (EVP, Co-Head Markets Division)
- Marc Magrini (VP, Administration)
- Stephanie Marrin Lara (VP, Deputy Chief Regulatory Officer)
- Anthony Montesano (VP, TSD and Membership Services)
- Laura Morrison (SVP, ETP Listings)
- Mark Novak (VP, Software Engineering)
- Dan Overmyer (VP, Options Regulations)
- Paul Reidy (VP, Cboe FX COO)
- Arthur Reinstein (SVP, Deputy General Counsel)
- Bradley Samuels (VP, Systems Development)
- Brian Schell (EVP, Chief Financial Officer and Treasurer)
- Curt Schumacher (VP, Infrastructure)
- J. Patrick Sexton (EVP, General Counsel and Corporate Secretary)
- Lisa Shemie (VP, Associate General Counsel, Cboe FX and Cboe SEF Chief Legal Officer)
- Steven Sinclair (VP, Systems Development)
- Eileen Smith (VP, Data and Analytics)
- Michael Trees (VP, Trading Systems Development)
- Aaron Weissenfluh (VP, CISO)
- Troy Yeazel (SVP, Operations)
- Vivian Yiu (VP, Product Strategy)

10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

AA. Cboe Livevol, LLC

1. *Name:* Cboe Livevol, LLC  
*Address:* 400 South LaSalle Street, Chicago, Illinois 60605
2. *Form of organization:* Limited Liability Company.
3. *Name of state, statute under which organized and date of incorporation:*  
Delaware, Delaware Limited Liability Company Act (6 Del. C. §18-101, et seq),  
May 29, 2015.
4. *Brief description of nature and extent of affiliation:* Wholly-owned subsidiary of  
Cboe Global Markets, Inc.
5. *Brief description of business or functions:* Cboe Livevol, LLC provides equity  
and index options technology for professional and retail traders, which includes  
options strategy backtesting, trade analysis and volatility modeling technologies  
and historical data.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees  
and persons performing similar functions:*

Current Directors

- Andrew Lowenthal
- John Deters
- Catherine Clay

Current Officers

- Ed Tilly (President and Chief Executive Officer)
- Alexandra Albright (Chief Compliance Officer)
- Brent Coonrod (Vice President)
- Catherine Clay (Vice President)
- Eric Crampton (Vice President)
- John Deters (Vice President)
- James Enstrom (Vice President, Chief Audit Executive)
- Todd Furney (Chief Risk Officer)
- Jennifer Golding (Vice President)
- Jill Griebnow (Vice President)
- Jackie Hancock (Vice President and Controller)
- Chris Isaacson (Vice President)
- Andrew Lowenthal (Vice President)

**Cboe EDGA Exchange, Inc. Form 1 Registration Statement: Exhibit C**

- Brian Schell (Treasurer)
- J. Patrick Sexton (Secretary)
- Aaron Weissenfluh (Vice President, CISO)

10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

**BB. Cboe UK Limited**

1. *Name:* Cboe UK Limited  
*Address:* 11 Monument Street, London, EC3R 8AF, United Kingdom
2. *Form of organization:* Private Limited Company.
3. *Name of state, statute under which organized and date of incorporation:* England and Wales, Companies Act 2006, March 10, 2016.
4. *Brief description of nature and extent of affiliation:* Wholly-owned subsidiary of Cboe Global Markets, Inc.
5. *Brief description of business or functions:* Marketing and business development services.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*  
  
Current Directors
  - Ed Tilly
  - Mark Hemsley  
Current Officers
  - None
10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

CC. Cboe Vest, LLC

1. *Name:* Cboe Vest, LLC  
*Address:* 400 South LaSalle Street, Chicago, Illinois 60605
2. *Form of organization:* Limited Liability Company.
3. *Name of state, statute under which organized and date of incorporation:*  
Delaware, Delaware Limited Liability Company Act (6 Del. C. §18-101, et seq),  
December 10, 2015.
4. *Brief description of nature and extent of affiliation:* Wholly-owned subsidiary of  
Cboe Global Markets, Inc.
5. *Brief description of business or functions:* Holding company of majority equity  
investment in Eris Inc.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees  
and persons performing similar functions:*

Current Directors

- Ed Tilly
- John Deters
- Brian Schell

Current Officers

- Ed Tilly (President and Chief Executive Officer)
- Catherine Clay (Vice President)
- John Deters (Vice President)
- Jill Griebenow (Vice President)
- Jackie Hancock (Vice President and Controller)
- Chris Isaacson (Vice President)
- Brian Schell (Treasurer)
- J. Patrick Sexton (Secretary)

10. *Indication of whether such business or organization ceased to be associated with  
the applicant during previous year:* Not applicable.

**DD. Loan Markets, LLC**

1. *Name:* Loan Markets, LLC  
*Address:* 400 S. LaSalle Street, Chicago, Illinois 60605
2. *Form of organization:* Limited Liability Company.
3. *Name of state, statute under which organized and date of incorporation:*  
Delaware, Delaware Limited Liability Company Act (6 Del. C. §18-101, et seq),  
May 11, 2015.
4. *Brief description of nature and extent of affiliation:* Wholly-owned subsidiary of  
Cboe Global Markets, Inc.
5. *Brief description of business or functions:* Holding company for investment in  
American Financial Exchange, LLC.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees  
and persons performing similar functions:*

Current Directors

- Ed Tilly
- John Deters
- Brian Schell

Current Officers

- Ed Tilly (President and Chief Executive Officer)
- John Deters (Vice President)
- Jill Griebenow (Vice President)
- Jackie Hancock (Vice President and Controller)
- Chris Isaacson (Vice President)
- Andrew Lowenthal (Vice President)
- Brian Schell (Treasurer)
- J. Patrick Sexton (Secretary)

10. *Indication of whether such business or organization ceased to be associated with  
the applicant during previous year:* Not applicable.

**EE. Cboe Data Services, LLC**

1. *Name:* Cboe Data Services, LLC  
*Address:* 400 South LaSalle Street Chicago, Illinois 60605
2. *Form of organization:* Limited Liability Company.
3. *Name of state, statute under which organized and date of incorporation:*  
Delaware, Delaware Limited Liability Company Act (6 Del. C. §18-101, et seq),  
February 21, 2006.
4. *Brief description of nature and extent of affiliation:* Wholly-owned subsidiary of  
Cboe Global Markets, Inc.
5. *Brief description of business or functions:* Cboe Data Services, LLC sells market  
data.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees  
and persons performing similar functions:*

Current Directors

- Ed Tilly
- Bryan Harkins
- Brian Schell

Current Officers

- Ed Tilly (President and Chief Executive Officer)
- Alexandra Albright (Chief Compliance Officer)
- Kevin Carrai (Vice President)
- Catherine Clay (Vice President)
- Eric Crampton (Vice President)
- James Enstrom (Chief Audit Executive)
- Todd Furney (Chief Risk Officer)
- Jennifer Golding (Vice President)
- Jill Griebenow (Vice President)
- Jackie Hancock (Vice President and Controller)
- Bryan Harkins (Vice President)
- Chris Isaacson (Vice President)
- Andrew Lowenthal (Vice President)
- Jim Roche (Vice President)
- Brian Schell (Treasurer)

**Cboe EDGA Exchange, Inc. Form 1 Registration Statement: Exhibit C**

- J. Patrick Sexton (Secretary)
- Aaron Weissenfluh ( Chief Information Security Officer)

10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

**FF. Signal Trading Systems, LLC**

1. *Name:* Signal Trading Systems, LLC  
*Address:* 400 South LaSalle Street, Chicago, Illinois 60605
2. *Form of organization:* Limited Liability Company.
3. *Name of state, statute under which organized and date of incorporation:*  
Delaware, Delaware Limited Liability Company Act (6 Del. C. §18-101, et seq),  
May 13, 2010.
4. *Brief description of nature and extent of affiliation:* Fifty percent (50%)  
subsidiary of Cboe Exchange, Inc.
5. *Brief description of business or functions:* Signal Trading Systems, LLC  
developed and markets a multi-asset front-end order entry system known as  
“Pulse”.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees  
and persons performing similar functions:* There are no directors or officers of  
Signal Trading Systems, LLC.
10. *Indication of whether such business or organization ceased to be associated with  
the applicant during previous year:* Not applicable.

**GG. Cboe Vest Group, Inc.**

1. *Name:* Cboe Vest Group, Inc.  
*Address:* 8300 Greensboro Drive, 8<sup>th</sup> Floor, McLean, VA 22102
2. *Form of organization:* Corporation.
3. *Name of state, statute under which organized and date of incorporation:*  
Delaware, Delaware General Corporation Law (8 Del. C. §101, et seq), January 2, 2015.
4. *Brief description of nature and extent of affiliation:* Majority-owned subsidiary of Cboe Vest, LLC.
5. *Brief description of business or functions:* Through its subsidiaries, provides options-based investment advisory services.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* No changes.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*

Current Directors

- John Deters
- Karan Sood
- Catherine Clay

Current Officers

- Karan Sood (Chief Executive Officer)
- Jeffrey Chang (Chief Financial Officer)

10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable

**HH. Cboe Hong Kong Limited**

1. *Name:* Cboe Hong Kong Limited  
*Address:* 66<sup>th</sup> Floor, The Center, 99 Queen's Road, Central, Hong Kong
2. *Form of organization:* Private Company Limited by Shares.
3. *Name of state, statute under which organized and date of incorporation:* Hong Kong under the Companies Ordinance (Chapter 622 of the Laws of Hong Kong), May 29, 2017.
4. *Brief description of nature and extent of affiliation:* Cboe Hong Kong Limited is wholly-owned by Cboe Worldwide Holdings Limited, which is an affiliate of the Exchange.
5. *Brief description of business or functions:* Marketing and business development services (business expected to commence in September 2017).
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* Not applicable.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*  
  
Current Directors
  - Andy Lowenthal  
Current Officers
  - None
10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

II. Cboe Silexx, LLC

1. *Name:* Cboe Silexx, LLC  
*Address:* 400 South LaSalle Street, Chicago, IL 60605
2. *Form of organization:* Limited Liability Company
3. *Name of state, statute under which organized and date of incorporation:*  
Delaware, Delaware Limited Liability Company Act (6 Del. C. §18-101, et seq),  
October 16, 2017.
4. *Brief description of nature and extent of affiliation:* Wholly-owned subsidiary of  
Cboe Global Markets, Inc.
5. *Brief description of business or functions:* Cboe Silexx, LLC operates the Silexx  
order execution management system business.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* Not applicable.
9. *Name and title of present officers, governors, members of standing committees  
and persons performing similar functions:*

Current Directors

- Ed Tilly
- John Deters
- Brian Schell

Current Officers

- Ed Tilly (President and Chief Executive Officer)
- Alexandra Albright (Chief Compliance Officer)
- Catherine Clay (Vice President)
- Brent Coonrod (Vice President)
- Eric Crampton (Vice President)
- John Deters (Vice President)
- James Enstrom (Chief Audit Executive)
- Todd Furney (Chief Risk Officer)
- Jennifer Golding (Vice President)
- Jill Griebenow (Vice President)
- Jackie Hancock (Vice President and Controller)
- Chris Isaacson (Vice President)
- Brian Schell (Treasurer)
- J. Patrick Sexton (Secretary)
- Aaron Weissenfluh (Chief Information Security Officer)

10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

**JJ. Digital Asset Benchmark Administration, LLC**

1. *Name:* Digital Asset Benchmark Administration, LLC  
*Address:* 400 South LaSalle Street, Chicago, IL 60605
2. *Form of organization:* Limited Liability Company
3. *Name of state, statute under which organized and date of incorporation:*  
Delaware, Delaware Limited Liability Company Act (6 Del. C. §18-101, et seq),  
October 17, 2017.
4. *Brief description of nature and extent of affiliation:* Wholly-owned subsidiary of  
Cboe Global Markets, Inc.
5. *Brief description of business or functions:* Digital Asset Benchmark  
Administration, LLC licenses Gemini-related data.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* Not applicable.
9. *Name and title of present officers, governors, members of standing committees  
and persons performing similar functions:*

Current Directors

- Ed Tilly
- John Deters
- Brian Schell

Current Officers

- Ed Tilly (President and Chief Executive Officer)
- Alexandra Albright (Chief Compliance Officer)
- Catherine Clay (Vice President)
- Eric Crampton (Vice President)
- John Deters (Vice President)
- James Enstrom (Vice President and Chief Audit Executive)
- Todd Furney (Chief Risk Officer)
- Jennifer Golding (Vice President))
- Jill Griebenow (Vice President)
- Jackie Hancock (Vice President and Controller)
- Chris Isaacson (Vice President)
- Brian Schell (Treasurer)
- J. Patrick Sexton (Secretary)
- Aaron Weissenfluh (CISO)

10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

**KK. CBOE Europe B.V.**

1. *Name:* CBOE Europe B.V.  
*Address:* 1212 Gustav Mahlerlaan, 108La Amsterdam (Netherlands)
2. *Form of organization:* Private Company Limited by Shares
3. *Name of state, statute under which organized and date of incorporation:*  
Incorporated in the United Kingdom on August 1, 2018.
4. *Brief description of nature and extent of affiliation:* Wholly-owned subsidiary of Cboe Europe Limited. Cboe Europe Limited is wholly-owned by Cboe Worldwide Holdings Limited, which is an affiliate of the Exchange.
5. *Brief description of business or functions:* The business is very broad, encompassing the operation of a regulated market and an approved publication arrangement, and all other businesses that may be ancillary or useful for the above operations
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* Not applicable.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*

Current Directors

- Mark Hemsley
- Adam Eades
- Ruben Hilhorst
- Shyam Savania

Current Officers

- Adam Eades (President)
- Ruben Hilhorst (Head of Compliance)
- Shyam Savania (Operations Manager)

10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

**LL. Cboe Off-Exchange Services, LLC**

1. *Name: Cboe Off-Exchange Services, LLC*  
*Address: 1209 Orange Street, Wilmington, County of New Castle, DE 19801*
2. *Form of organization: Limited Liability Company*
3. *Name of state, statute under which organized and date of incorporation:*  
Delaware, Delaware Limited Liability Company Act (6 Del. C. §18-101, et seq),  
January 31, 2019.
4. *Brief description of nature and extent of affiliation: Wholly-owned subsidiary of Cboe Global Markets, Inc.*
5. *Brief description of business or functions: The Company is organized for the purpose of engaging in any lawful activity for which limited liability companies may be organized under the Act.*
6. *Copy of constitution: Not applicable.*
7. *Copy of articles of incorporation or association and amendments: No changes.*
8. *Copy of existing by-laws: Not applicable.*
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*

Current Directors

- None

Current Officers

- Ed Tilly (President and Chief Executive Officer)
  - John Deters (Vice President)
  - Jill Griebenow (Vice President)
  - Jackie Hancock (Vice President and Controller)
  - Bryan Harkins (Vive President)
  - Mark Hemsley (Vice President)
  - Chis Isaacson (Vice President)
  - Andrew Lowenthal (Vice President)
  - Brian Schell (Treasurer)
  - J. Patrick Sexton (Secretary)
10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year: Not applicable.*

**MM. Cboe Global Indices, LLC**

1. *Name:* Cboe Global Indices, LLC  
*Address:* 400 South LaSalle Street, Chicago, IL 60605
2. *Form of organization:* Limited Liability Company
3. *Name of state, statute under which organized and date of incorporation:* Illinois, Illinois Limited Liability Company Act, September 11, 2019.
4. *Brief description of nature and extent of affiliation:* Wholly-owned subsidiary of Cboe Global Markets, Inc.
5. *Brief description of business or functions:* The Company is organized for the purpose of engaging in any lawful activity for which limited liability companies may be organized under the Act.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* No changes.
8. *Copy of existing by-laws:* Not applicable.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*

Current Directors

- Ed Tilly
- Brian Schell
- Catherine Clay

Current Officers

- Ed Tilly (President and Chief Executive Officer)
- Alexandra Albright (Vice President and Chief Compliance Officer)
- Catherine Clay (Vice President)
- Eric Crampton (Vice President)
- Jennifer Golding (Vice President and Chief Litigation Officer)
- Jill Griebenow (Vice President)
- Jackie Hancock (Vice President and Controller)
- Rob Hocking (Vice President)
- Chris Isaacson (Vice President)
- Brian Schell (Treasurer)
- J. Patrick Sexton (Secretary)
- Aaron Weissenfluh (Vice President and CISO)

10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

**NN. Cboe Europe Indices Limited**

1. *Name:* Cboe Europe Indices Limited  
*Address:* 5<sup>th</sup> Floor, The Monument Building  
11 Monument Street, London EC3R 8AF, United Kingdom
2. *Form of organization:* Private Limited Liability Company
3. *Name of state, statute under which organized and date of incorporation:*  
Incorporated in England and Wales under the Companies Act 1985 on July 17, 2019.
4. *Brief description of nature and extent of affiliation:* Wholly-owned subsidiary of Cboe Worldwide Holdings Limited.
5. *Brief description of business or functions:* Cboe Europe Indices Limited has applied with the FCA to operate as a Benchmark administrator in the UK and Europe. Once approved, the company intends to transfer the existing European benchmark administrator business from Cboe Europe Limited (which is current an authorized benchmark administrator) to Cboe Europe Indices Limited. It also intends to apply to the FCA to endorse Cboe global indices in accordance with the EU benchmark regulation.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* See attached.
8. *Copy of existing by-laws:* Not applicable.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:*  
  
Current Directors
  - Mark Hemsley
  - Dave Howson  
Current Officers
  - Antonio Amelia (Secretary)
10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* Not applicable.

**OO. The Options Exchange, Incorporated**

1. *Name:* The Options Exchange, Incorporated  
*Address:* 400 South LaSalle Street, Chicago, IL 60605
2. *Form of organization:* Corporation.
3. *Name of state, statute under which organized and date of incorporation:*  
Delaware, Delaware General Corporation Law (8 Del. C. § 101, et seq), January 7, 1974.
4. *Brief description of nature and extent of affiliation:* Wholly-owned subsidiary of Cboe Global Markets, Inc.
5. *Brief description of business or functions:* Not applicable.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* Not applicable.
8. *Copy of existing by-laws:* Not applicable.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:* None
10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* As of December 31, 2018 The Options Exchange, Incorporated ceased to exist

**PP. Cboe International Holdings Limited**

1. *Name:* Cboe International Holdings Limited  
*Address:* 11 Monument Street, London, EC3R 8AF, United Kingdom
2. *Form of organization:* Private Company Limited by Shares.
3. *Name of state, statute under which organized and date of incorporation:*  
Incorporated in England and Wales under the Companies Act 1985 on February 5, 2015.
4. *Brief description of nature and extent of affiliation:* Cboe International Holdings Limited is wholly-owned by Cboe Worldwide Holdings Limited, which is an affiliate of the Exchange.
5. *Brief description of business or functions:* Cboe International Holdings Limited is a holding company of Cboe FX Europe Limited,,
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* Not applicable.
8. *Copy of existing by-laws:* Not applicable.
9. *Name and title of present officers, governors, members of standing committees and persons performing similar functions:* None
10. *Indication of whether such business or organization ceased to be associated with the applicant during previous year:* As of September 24, 2019 Cboe International Holdings Limited ceased to exist

**QQ. CBOE Stock Exchange, LLC**

1. *Name:* CBOE Stock Exchange, LLC  
*Address:* 400 South LaSalle Street, Chicago, Illinois 60605
2. *Form of organization:* Limited Liability Company.
3. *Name of state, statute under which organized and date of incorporation:*  
Delaware, Delaware Limited Liability Company Act (6 Del. C. §18-101, et seq),  
July 31, 2006.
4. *Brief description of nature and extent of affiliation:* CBOE Stock Exchange, LLC  
is a 49.96%-owned subsidiary of Cboe Exchange, Inc.
5. *Brief description of business or functions:* CBOE Stock Exchange, LLC operated  
the CBOE Stock Exchange, which acted as a trading market for securities other  
than options as a facility of Cboe Exchange, Inc. CBOE Stock Exchange, LLC  
was approved by the SEC in March 2007. CBOE Stock Exchange, LLC ceased  
trading operations on April 30, 2014.
6. *Copy of constitution:* Not applicable.
7. *Copy of articles of incorporation or association and amendments:* Not  
applicable.
8. *Copy of existing by-laws:* Not applicable
9. *Name and title of present officers, governors, members of standing committees  
and persons performing similar functions:* None
10. *Indication of whether such business or organization ceased to be associated with  
the applicant during previous year:* As of September 30, 2019 CBOE Stock  
Exchange, LLC ceased to exist.

**Exhibit J**

**Exhibit Request:**

A list of the officers, governors, members of all standing committees, or persons performing similar functions, who presently hold or have held their offices or positions during the previous year, indicating the following for each:

1. Name.
2. Title.
3. Dates of commencement and termination of term of office or position.
4. Type of business in which each is primarily engaged (e.g., floor broker, specialist, odd lot dealer, etc.)

**Response:**

1. Officers

Pursuant to the Certificate of Incorporation and Bylaws of the Exchange, the Exchange's Board of Directors has appointed the individuals listed below as Officers of the Exchange. These individuals will serve in these positions until their successors have been duly chosen or qualified or until the officer's earlier death, resignation or removal.

| <b>Officers</b>    |   |                   |                                       |  |
|--------------------|---|-------------------|---------------------------------------|--|
| Name:              | Title:  | Appointment Date: | Termination/<br>Change Position Date: |  |
| Alexandra Albright | Senior Vice President, Chief Compliance Officer | 02/28/17          | 02/11/19 – Change in title            |  |
| Lawrence Bresnahan | Vice President, Market & Member Regulation      | 02/13/18          |                                       |  |
| Jen Browning       | Vice President, Head of Human Resources         | 07/29/19          |                                       |  |
| Kevin Carrai       | Vice President, Market Data and Access Services | 02/10/15          | 02/11/19 – Change in title            |  |
| Catherine Clay     | Senior Vice President, Information Solutions    | 02/13/18          | 02/11/19 – Change in title            |  |
| Gary Compton       | Vice President, Communications                  | 07/30/18          | 02/11/19 – Change in title            |  |

Cboe EDGA Exchange, Inc. Form I Registration Statement: Exhibit J

|                     |  |          |                            |
|---------------------|--|----------|----------------------------|
| Jeff Connell        | Vice President,<br>Deputy Chief<br>Regulatory Officer  | 11/02/15 | 03/01/18 - Change in title |
| Brent Coonrod       | Vice President,<br>Software Engineering  | 01/07/19 |                            |
| Eric Crampton       | Senior Vice President,<br>CTO  | 05/12/15 | 01/14/19 – Change in title |
| Arianne Criqui      | Senior Vice President,<br>Head of Options and<br>Business Development                        | 01/07/19 |                            |
| John Deters         | Executive Vice<br>President, Chief<br>Strategy Officer &<br>Head of Multi-Asset<br>Solutions | 02/28/17 | 02/11/19 – Change in title |
| Laura Dickman       | Vice President,<br>Associate General<br>Counsel  | 02/13/18 | 03/01/18 - Change in title |
| James Enstrom       | Senior Vice President,<br>Chief Audit Executive  | 02/28/17 | 02/11/19 – Change in title |
| Todd Furney         | Vice President, Chief<br>Risk Officer  | 02/28/17 |                            |
| Alicia Goldberg     | Vice President,<br>Statistical Analysis  | 02/28/17 |                            |
| Jennifer<br>Golding | Vice President,<br>Associate General<br>Counsel, Chief<br>Litigation Officer                 | 07/30/18 |                            |
| Jill Griebenow      | Senior Vice President<br>& Chief Accounting<br>Officer                                       | 08/15/18 |                            |
| Jackie Hancock      | Vice President,<br>Controller  | 11/01/18 |                            |
| Bryan Harkins       | Executive Vice<br>President, Co-Head<br>Markets Division                                     | 02/10/15 | 02/11/19 – Change in title |
| Mark Hemsley        | Executive Vice<br>President, President<br>Europe   |          |                            |

## Cboe EDGA Exchange, Inc. Form I Registration Statement: Exhibit J

|                          |   |          |                            |
|--------------------------|---|----------|----------------------------|
| John Hiatt               | Vice President,<br>Product Development                    | 02/11/19 |                            |
| Rob Hocking              | Senior Vice President,<br>Head of Derivatives<br>Strategy | 12/17/18 |                            |
| Gregory<br>Hoogasian     | Senior Vice President,<br>Chief Regulatory<br>Officer     | 02/28/17 |                            |
| Adam Inzirillo           | SVP, Head of U.S.<br>Equities                             | 10/28/19 |                            |
| Chris Isaacson           | Executive Vice<br>President, COO                          | 02/10/15 | 01/14/19 – Change in title |
| Brett Johnson            | Vice President,<br>Software Engineering                   | 01/07/19 |                            |
| Jennifer Lamie           | Vice President, Chief<br>Regulatory Advisor               | 02/13/18 | 03/01/18 - Change in title |
| Stephanie<br>Marrin Lara | Vice President,<br>Deputy Chief<br>Regulatory Officer     | 02/13/18 | 03/01/18 - Change in title |
| Andrew<br>Lowenthal      | Executive Vice<br>President, Co-Head<br>Markets Division  | 02/28/17 | 02/11/19 – Change in title |
| Marc Magrini             | Vice President,<br>Administration                         | 02/13/18 |                            |
| Michael Mollet           | VP, MAS Product<br>Development                            | 10/28/19 |                            |
| Anthony<br>Montesano     | Vice President, TSD<br>and Registration                   | 02/13/18 | 03/01/18 - Change in title |
| Laura Morrison           | Senior Vice President,<br>ETP Listings                    | 05/12/15 | 03/01/18 - Change in title |
| Kyle Murray              | VP and Associate<br>General Counsel                       | 10/28/19 |                            |
| Mark Novak               | Vice President,<br>Software Engineer                      | 02/13/18 | 02/11/19 – Change in title |
| Dan Overmyer             | Vice President,<br>Options Regulation                     | 12/17/18 |                            |
| Arthur<br>Reinstein      | Senior Vice President<br>and Deputy General<br>Counsel    | 02/28/17 | 03/01/18 - Change in title |

Cboe EDGA Exchange, Inc. Form 1 Registration Statement: Exhibit J

|                        |   |                   |                                       |
|------------------------|---|-------------------|---------------------------------------|
| Bradley Samuels        | Vice President, Systems Development                             | 02/13/18          |                                       |
| Brian N. Schell        | Executive Vice President, Chief Financial Officer, Treasurer    | 02/10/15          |                                       |
| Curt Schumacher        | Vice President, Infrastructure                                  | 02/13/18          | 02/11/19 – Change in title            |
| John Sexton            | Executive Vice President, General Counsel & Corporate Secretary | 02/28/17          | 03/01/18 - Change in title            |
| Steven Sinclair        | Vice President, Systems Development                             | 02/13/18          |                                       |
| Eileen Smith           | Vice President, Data and Analytics                              | 02/13/18          | 02/11/19 – Change in title            |
| Ed Tilly               | President and CEO   | 02/28/17          | 01/14/19 – Change in title            |
| Michael Trees          | Vice President, Trading System Development                      | 02/13/18          |                                       |
| Aaron Weissenfluh      | Vice President, Chief Information Security Officer              | 02/10/15          |                                       |
| Troy Yeazel            | Senior Vice President, Operations                               | 11/02/15          |                                       |
| Vivian Yiu             | Vice President, Product Strategy                                | 11/01/16          | 03/01/18 - Change in title            |
| <b>Former Officers</b> |   |                   |                                       |
| Name:                  | Title:  | Appointment Date: | Termination/<br>Change Position Date: |
| Michael Todd           | Vice President, OSC   | 02/13/18          | 07/30/18                              |
| David Reynolds         | Vice President, & Chief Accounting Officer                      | 02/28/17          | 08/15/18                              |
| Derick Shupe           | Vice President, Controller                                      | 02/10/15          | 11/01/18                              |
| Chris Concannon        | President & COO   | 02/10/15          | 01/14/19                              |

|                       |  |          |          |
|-----------------------|--|----------|----------|
| David Gray            | Senior Vice President,<br>Global Client Services               | 02/28/17 | 01/14/19 |
| Eric Frait            | Vice President,<br>Business Analysis                           | 02/28/17 | 12/11/18 |
| Laura Zinanni         | Senior Vice President<br>and Deputy General<br>Counsel         | 02/13/18 | 12/31/18 |
| Michael<br>Todorofsky | Vice President, US<br>Market Operations                        | 02/13/18 | 12/31/18 |
| Paul Stephens         | Vice President, Global<br>Client Services                      | 02/13/18 | 12/31/18 |
| Rodney Burt           | Vice President,<br>Infrastructure                              | 02/10/15 | 04/01/19 |
| William<br>Looney     | Vice President,<br>Advancement &<br>Strategy, Index<br>Options | 07/30/18 | 04/22/19 |
| William Speth         | Senior Vice President,<br>Research                             | 02/13/18 | 06/03/19 |
| Anders Franzon        | Senior Vice President<br>and Deputy General<br>Counsel         | 11/02/15 | 06/07/19 |
| Paul Ciciora          | Vice President,<br>Systems Infrastructure                      | 02/13/18 | 06/14/19 |
| Bryan Christian       | Senior Vice President,<br>Sales US Equities                    | 02/10/15 | 07/01/19 |

## 2. Directors

The following directors were appointed in accordance with Article III of the Bylaws of the Exchange. Directors will serve one-year terms ending on the annual meeting following the meeting at which such directors were elected or at such time as their successors are elected or appointed and qualified, except in the event of earlier death, resignation, disqualification or removal. The current directors of the Exchange are the persons listed below:

| Directors        |                     |                   |                   |
|------------------|---------------------|-------------------|-------------------|
| Name             | Classification(s)   | Appointment Date: | Termination Date: |
| Ed Tilly         | Chairman & Director | 02/28/17          |                   |
| Bruce<br>Andrews | Director            | 02/13/18          |                   |

|                         |          |                   |                                      |
|-------------------------|----------|-------------------|--------------------------------------|
| Kevin<br>Murphy         | Director | 02/13/18          |                                      |
| David<br>Roscoe         | Director | 10/13/10          |                                      |
| Jill<br>Sommers         | Director | 10/26/15          |                                      |
| Scott<br>Wagner         | Director | 10/27/16          |                                      |
| <b>Former Directors</b> |          |                   |                                      |
| Name:                   | Title:   | Appointment Date: | Termination/Change<br>Position Date: |

3. Committees

The committees of the Board shall consist of an Executive Committee and a Regulatory Oversight Committee.

Executive Committee

- Ed Tilly (Chairman)
- Bruce Andrews
- Kevin Murphy
- David Roscoe
- Jill Sommers
- Scott Wagner

Regulatory Oversight Committee

- Scott Wagner (Chairman)
- Bruce Andrews
- David Roscoe
- Jill Sommers

**Exhibit M**

**Exhibit Request:**

Provide an alphabetical list of all members, participants, subscribers or other users, including the following information:

1. Name,
2. Date of election to membership or acceptance as a participant, subscriber or other user,
3. Principal business address and telephone number,
4. If member, participant, subscriber or other user is an individual, the name of the entity with which such individual is associated and the relationship of such individual to the entity (e.g., partner, officer, director, employee, etc.),
5. Describe the type of activities primarily engaged in by the member, participant, subscriber, or other user (e.g., floor broker, specialist, odd lot dealer, other market maker, proprietary trader, non-broker dealer, inactive or other functions). A person shall be "primarily engaged" in an activity or function for purposes of this item when that activity or function is the one in which that person is engaged for the majority of their time. When more than one type of person at an entity engages in any of the six types of activities or functions enumerated in this item, identify each type (e.g., proprietary trader, Registered Competitive Trader and Registered Competitive Market Maker) and state the number of members, participants, subscribers, or other users in each, and
6. The class of membership, participation or subscription or other access.

**Response:**

Attached please find a list of the current Members and Sponsored Participants accepted as Users of the Exchange.

| Company Name                           | BZX Approval Date | BYX Approval Date | EDGA Approval Date | EDGX Approval Date | CBOE Effective Date | C2 Effective Date | Type of User          | Address  | Phone Number    | Primary Activities  |
|--|-------------------|-------------------|--------------------|--------------------|---------------------|-------------------|-----------------------|--|-----------------|---|
| ABN AMRO Clearing Chicago LLC          | 10/15/2008        | 10/1/2010         | 5/25/2010          | 5/27/2010          | 5/13/1985           | 9/24/2010         | Member TPH            | 175 W Jackson Boulevard<br>Suite 400<br>Chicago, IL 60604                        | 312-604-8000    | Clearing, Transact Business with the Public, Brokerage                                    |
| ACS Execution Services, LLC            | 1/15/2016         | 1/15/2016         | 1/15/2016          | 1/15/2016          | NA                  | NA                | Member TPH            | 12 Broad Street<br>2nd Floor<br>Red Bank, NJ 07701                               | 732-204-8999    | Proprietary Trading   |
| Agency Desk, LLC                       | 7/1/2009          | NA                | NA                 | NA                 | NA                  | NA                | Member TPH            | 500 Madison Avenue<br>21st Floor<br>New York, NY 10022                           | 212-935-9835    | Market Maker  |
| Akuna Securities LLC                   | 9/15/2015         | NA                | NA                 | 8/14/2017          | 2/2/2012            | 2/12/2015         | Member TPH            | 333 S Wabash Avenue<br>Suite 2600<br>Chicago, IL 60604                           | 312-994-4640    | Market Maker, Proprietary Trading   |
| All Rise Trading LLC                   | NA                | NA                | NA                 | NA                 | 8/14/2018           | NA                | Member TPH            | 141 W. Jackson Blvd., Suite 300A,<br>Chicago, IL 60604                           | 312-483-2147    | Floor Broker  |
| Alpha Direct LLC                       | 8/20/2015         | 8/20/2015         | 8/20/2015          | 8/20/2015          | NA                  | NA                | Sponsored Participant | 533 2nd Street<br>Encinitas, CA 92024  | 858-947-8650    | Proprietary Trading   |
| Alpha Trading, LP                      | 10/24/2017        | 10/24/2017        | 10/24/2017         | 10/24/2017         | NA                  | NA                | Member TPH            | 640 W California Avenue<br>Sunnyvale, CA 94088                                   | 408-990-1940    | Market Maker, Proprietary Trading   |
| Alpha Trading, LP                      | 2/22/2019         | 2/22/2019         | 2/22/2019          | 2/22/2019          | NA                  | NA                | Member TPH            | 640 W California Avenue<br>Sunnyvale, CA 94088                                   | 408-990-1940    | Market Maker, Proprietary Trading   |
| Alpine Securities Corporation          | 11/3/2008         | 11/15/2010        | NA                 | NA                 | NA                  | NA                | Member TPH            | 39 Exchange Place<br>Salt Lake City, UT 84111                                    | 801-355-5588    | Agency  |
| AMS Derivatives B.V.                   | 8/14/2019         | 9/10/2019         | 9/10/2019          | 8/14/2019          | 12/1/2017           | 6/5/2019          | Member TPH            | Strawinskylaan 3085<br>Amsterdam, 10772X<br>Netherlands                          | 31-020-708-7000 | Proprietary Trading   |
| Apex Clearing Corporation              | 6/5/2012          | 6/5/2012          | 6/5/2012           | 6/5/2012           | 6/8/2012            | 6/6/2012          | Member TPH            | One Dallas Center<br>350 N St. Paul, Suite 1300<br>Dallas, TX 75201              | 214-765-1055    | Clearing, Transact Business with the Public   |
| Archipelago Securities LLC             | 8/18/2008         | 9/1/2010          | 5/25/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 353 N Clark Street<br>Suite 3200<br>Chicago, IL 60654                            | 312-836-6700    | Limited Routing Facility of ICE affiliated Exchanges                                      |
| Athena Capital Research, LLC           | 7/1/2009          | 10/20/2010        | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 440 9th Avenue<br>11th Floor<br>New York, NY 10001                               | 212-931-9056    | Proprietary Trading   |
| ATM Execution LLC dba Cowen Electronic | 3/15/2012         | 3/15/2012         | 3/21/2012          | 3/21/2012          | NA                  | NA                | Member TPH            | 599 Lexington Avenue<br>21st Floor<br>New York, NY 10022                         | 646-562-1010    | Public Customer Business  |
| Axos Financial LLC                     | 10/15/2009        | NA                | NA                 | NA                 | NA                  | NA                | Member TPH            | 1200 Landmark Center<br>1299 Farnam Street Suite 800<br>Omaha, NE 68102          | 402-384-6100    | Clearing Services   |
| Barclays Capital Inc.                  | 8/18/2008         | 10/1/2010         | 5/14/2010          | 5/14/2010          | 9/22/2008           | 10/6/2010         | Member TPH            | 745 7th Avenue<br>New York, NY 10019   | 212-626-7000    | Clearing, Market Maker, Transact Business with the Public, Brokerage, Proprietary Trading |
| Bay Crest Partners, LLC                | 10/15/2008        | NA                | 5/25/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 40 Wall Street<br>42nd Floor<br>New York, NY 10005                               | 212-480-1400    | Agency  |
| Belvedere Trading LLC                  | 11/1/2011         | 3/1/2012          | 11/29/2011         | 10/16/2018         | 1/3/2005            | 4/4/2011          | Member TPH            | 10 S Riverside Plaza<br>Suite 2100<br>Chicago, IL 60606                          | 312-893-3750    | Market Maker, Proprietary Trading   |
| BOC Financial, LP                      | 8/17/2009         | NA                | NA                 | NA                 | NA                  | NA                | Member TPH            | One Seaport Plaza<br>19th Floor<br>New York, NY 10038                            | 646-346-7000    | Agency  |
| Billmore International Corporation     | NA                | NA                | NA                 | 5/15/2019          | NA                  | NA                | Member TPH            | 1090 King Georges Post Road<br>Edison, NJ 08837                                  | 732-791-4000    | Market Maker, Proprietary Trading   |
| Bluefin Trading, LLC                   | 8/3/2009          | 6/1/2015          | 9/27/2013          | 8/13/2013          | 4/27/2009           | NA                | Member TPH            | 3 Park Avenue<br>37th Floor<br>New York, NY 10016                                | 212-457-9150    | Market Maker, Proprietary Trading   |
| BMO Capital Markets Corp.              | 8/18/2008         | 11/15/2010        | 7/15/2014          | 7/15/2014          | 10/8/2013           | 11/15/2013        | Member TPH            | 3 Times Square<br>New York, NY 10036   | 212-885-4000    | Clearing, Proprietary Trading, Transact Business with the Public, Brokerage               |
| BNP Paribas Securities Corp.           | 8/18/2008         | 9/15/2010         | 5/25/2010          | 5/27/2010          | 1/5/2005            | 10/15/2010        | Member TPH            | 787 7th Avenue<br>New York, NY 10019   | 212-841-2000    | Clearing, Order Flow Provider, Proprietary Trading, Transact Business with the Public     |
| BNY Mellon Capital Markets, LLC        | NA                | NA                | NA                 | 1/17/2017          | NA                  | NA                | Member TPH            | 101 Barclay Street<br>New York, NY 10286   | 212-815-4972    | Market Maker  |
| Boerboel Capital LLC                   | 11/17/2017        | 8/27/2019         | 8/27/2019          | 8/27/2019          | 2/1/2017            | NA                | Member TPH            | 300 N LaSalle Street<br>Suite 2060<br>Chicago, IL 60654                          | 708-967-6843    | Market Maker  |
| Boerboel Capital LLC                   | 1/30/2019         | 1/30/2019         | 1/30/2019          | 1/30/2019          | NA                  | NA                | Sponsored Participant | 300 N LaSalle Street<br>Suite 2060<br>Chicago, IL 60654                          | 708-967-6843    | Market Maker  |
| Boerboel Trading LP                    | 10/15/2018        | 10/15/2018        | 10/15/2018         | 10/15/2018         | NA                  | NA                | Sponsored Participant | Maples Corporate Services<br>PO Box 309, Uglund House<br>Cayman Islands KY1-1104 | #####           | Proprietary Trading   |
| BoFA Securities, Inc.                  | 9/19/2018         | 9/19/2018         | 9/19/2018          | 9/19/2018          | 5/13/2019           | 5/13/2019         | Member TPH            | One Bryant Park<br>New York, NY 10036  | 201-671-5685    | Clearing Services, Firm Proprietary Trading, Public Customer Business                     |
| BTIG, LLC                              | 8/18/2008         | 11/15/2010        | 5/25/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 800 Montgomery Street<br>6th Floor<br>San Francisco, CA 94111                    | 415-249-2200    | Market Maker  |
| C&C Trading LLC                        | 8/18/2008         | 10/11/2010        | 5/25/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 71 Arch Street<br>1st Floor<br>Greenwich, CT 06830                               | 212-706-1227    | Proprietary Trading   |
| Canaccord Genuity LLC                  | 10/1/2013         | 10/1/2013         | 6/10/2010          | 6/10/2010          | NA                  | NA                | Member TPH            | 535 Madison Avenue<br>New York, NY 10022   | 212-389-8000    | Market Maker  |
| Canadian Imperial Holdings, Inc.       | 10/15/2008        | 11/15/2010        | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 300 Madison Avenue<br>5th Floor<br>New York, NY 10017                            | 212-856-3877    | Proprietary Trading   |
| Cantor Fitzgerald & Co.                | 10/23/2008        | 2/13/2015         | 5/25/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 110 E 59th Street<br>4th Floor<br>New York, NY 10022                             | 212-938-5000    | Agency, Institutional Trading   |
| Capital Institutional Services, Inc.   | 8/18/2008         | NA                | 5/25/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 1700 Pacific Avenue<br>Suite 1100<br>Dallas, TX 75201                            | 214-720-0055    | Agency  |
| Cardinal Capital Management, LLC       | 1/24/2019         | NA                | NA                 | NA                 | 10/1/2007           | NA                | Member TPH            | 141 W Jackson Boulevard<br>Suite 2200A<br>Chicago, IL 60604                      | 312-477-8400    | Market Maker/Proprietary  |
| Cboe Trading, Inc.                     | 10/23/2008        | 9/1/2010          | 5/14/2010          | 5/14/2010          | 7/26/2019           | 4/18/2018         | Member TPH            | 8050 Marshall Drive<br>Suite 120<br>Lenexa, KS 66214                             | 913-815-7000    | Limited Routing Facility of Cboe affiliated Exchanges                                     |
| CF Global Trading, LLC                 | 10/23/2008        | 1/3/2011          | NA                 | NA                 | NA                  | NA                | Member TPH            | 60 E 42nd Street<br>Suite 1455<br>New York, NY 10165                             | 212-888-4711    | Market Maker  |
| Charles Schwab & Co., Inc.             | NA                | NA                | NA                 | 4/3/2017           | N/A                 | NA                | Member TPH            | 211 Main Street<br>San Francisco, CA 94105                                       | 415-636-7000    | Clearing, Transact Business with the Public   |
| CIBC World Markets Corp.               | 8/18/2008         | 11/15/2010        | NA                 | NA                 | 2/14/1973           | NA                | Member TPH            | 425 Lexington Avenue<br>New York, NY 10017                                       | 212-856-4000    | Clearing, Transact Business with the Public   |
| Citadel Securities LLC                 | 10/23/2008        | 10/1/2010         | 5/14/2010          | 5/14/2010          | 4/17/2002           | 10/7/2010         | Member TPH            | 131 S Dearborn Street<br>32nd Floor<br>Chicago, IL 60603                         | 312-395-2100    | Market Maker, Order Flow Provider, Brokerage  |
| Citigroup Derivatives Markets Inc.     | 2/15/2018         | NA                | NA                 | 2/15/2018          | 12/3/2004           | 2/25/2011         | Member TPH            | 130 Cheshire Lane<br>Suite 102<br>Minnetonka, MN 55305                           | 212-723-2960    | Market Maker  |

| Company Name                                | BZX Approval Date | BYX Approval Date | EDGA Approval Date | EDGX Approval Date | CBOE Effective Date | C2 Effective Date | Type of User          | Address   | Phone Number | Primary Activities  |
|---|-------------------|-------------------|--------------------|--------------------|---------------------|-------------------|-----------------------|---|--------------|---|
| Citigroup Global Markets Inc.               | 9/24/2008         | 12/15/2010        | 5/25/2010          | 5/27/2010          | 5/2/2011            | 6/3/2019          | Member TPH            | 390-388 Greenwich Street<br>New York, NY 10013                    | 212-816-6000 | Clearing, Proprietary Trading, Transact Business with the Public                          |
| Clarksons Platou Securities, Inc.           | NA                | NA                | 1/15/2015          | NA                 | NA                  | NA                | Member TPH            | 280 Park Avenue<br>21st Floor<br>New York, NY 10017               | 212-317-7080 | Public Customer Business  |
| Clear Street Markets, LLC                   | 7/16/2012         | 7/16/2012         | 8/20/2012          | 8/20/2012          | 6/6/2012            | 3/22/2019         | Member TPH            | 55 Broadway<br>Suite 2102<br>New York, NY 10006                   | 646-738-4066 | Market Maker, Proprietary Trading   |
| Clear Street, LLC                           | 3/18/2019         | 8/14/2019         | 8/14/2019          | 8/14/2019          | NA                  | NA                | Member TPH            | 55 Broadway<br>Suite 2102<br>New York, NY 10006                   | 646-738-4066 | Public Customer Business, Clearing, Proprietary Trading                                   |
| Clearpool Execution Services, LLC           | 5/15/2014         | 5/15/2014         | 6/16/2014          | 6/16/2014          | NA                  | NA                | Member TPH            | 17 State Street<br>38th Floor<br>New York, NY 10004               | 212-531-8500 | Public Customer Business  |
| CM-CIC Market Solutions, Inc.               | 8/18/2008         | NA                | NA                 | NA                 | NA                  | NA                | Member TPH            | 520 Madison Avenue<br>New York, NY 10022                          | 212-659-6292 | Agency  |
| CMT Fund XXV Limited                        | 7/2/2012          | 7/2/2012          | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 500 W Monroe Street<br>Suite 2630<br>Chicago, IL 60661            | 312-320-7887 | Agency  |
| CMT Trading LLC                             | 3/17/2014         | 3/17/2014         | 3/5/2014           | 3/5/2014           | NA                  | NA                | Member TPH            | 500 W Monroe Street<br>Suite 2630<br>Chicago, IL 60661            | 312-930-9050 | Market Maker, Proprietary Trading   |
| CODA Markets, Inc.                          | 10/15/2008        | 10/4/2010         | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 2624 Patriot Boulevard<br>Glenview, IL 60026                      | 224-521-2700 | ATS   |
| Cognitive Capital, LLC                      | NA                | NA                | NA                 | NA                 | 5/13/2004           | NA                | Member TPH            | 141 W Jackson Boulevard<br>Suite 1620<br>Chicago, IL 60604        | 312-431-0400 | Proprietary Trading   |
| Comhar Capital Markets, LLC                 | 2/27/2017         | NA                | NA                 | NA                 | NA                  | NA                | Member TPH            | 311 S Wacker Drive<br>Suite 2280A<br>Chicago, IL 60606            | 872-205-0180 | Proprietary Trading   |
| Consolidated Trading, LLC                   | NA                | NA                | NA                 | NA                 | 1/2/2002            | NA                | Member TPH            | 71 S Wacker Drive<br>Suite 2300<br>Chicago, IL 60606              | 312-360-7300 | Market Maker  |
| Cowen and Company, LLC                      | 8/18/2008         | 10/7/2010         | 5/14/2010          | 5/14/2010          | NA                  | NA                | Member TPH            | 599 Lexington Avenue<br>20th Floor<br>New York, NY 10022          | 646-562-1010 | Market Maker  |
| Cowen Execution Services LLC                | 10/15/2008        | 9/1/2010          | 5/25/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 1633 Broadway<br>48th Floor<br>New York, NY 10019                 | 800-367-8998 | Full Service  |
| Cowen Prime Services LLC                    | 3/15/2011         | 3/15/2011         | NA                 | NA                 | NA                  | NA                | Member TPH            | 599 Lexington Avenue<br>21st Floor<br>New York, NY 10022          | 646-562-1010 | Public Customer Business, Proprietary Trading   |
| Credit Suisse Securities (USA) LLC          | 9/3/2008          | 10/1/2010         | 5/25/2010          | 5/27/2010          | 8/14/1981           | 10/8/2010         | Member TPH            | 11 Madison Avenue<br>New York, NY 10010                           | 212-325-2000 | Clearing, Proprietary Trading, Transact Business with the Public, Brokerage               |
| Critical Trading, LLC                       | 7/1/2014          | 6/8/2018          | NA                 | 6/8/2018           | NA                  | NA                | Member TPH            | 120 W 45th Street<br>15th Floor<br>New York, NY 10036             | 646-918-0529 | Market Maker, Proprietary Trading   |
| CSS, LLC                                    | NA                | NA                | NA                 | NA                 | 8/21/1998           | NA                | Member TPH            | 175 W Jackson Boulevard<br>Suite 440<br>Chicago, IL 60604         | 312-542-8505 | Proprietary Trading   |
| CTC, LLC                                    | 3/15/2018         | NA                | NA                 | NA                 | 3/25/1998           | 3/3/2011          | Member TPH            | 440 S LaSalle Street<br>4th Floor<br>Chicago, IL 60605            | 312-863-8000 | Market Maker  |
| Cutter Group, LP                            | 4/1/2010          | 10/6/2010         | NA                 | 10/16/2015         | 4/5/1999            | NA                | Member TPH            | 101 Montgomery Street<br>Suite 700<br>San Francisco, CA 94104     | 415-293-3956 | Market Maker, Proprietary Trading   |
| Dash Financial Technologies LLC             | 10/23/2008        | 7/2/2012          | 6/9/2010           | 6/9/2010           | 5/19/2000           | 9/30/2010         | Member TPH            | 311 S Wacker Drive<br>Suite 1000<br>Chicago, IL 60606             | 312-996-2006 | Clearing, Floor Broker, Order Flow Provider, Transact Business with the Public, Brokerage |
| Deutsche Bank Securities Inc.               | 10/15/2008        | 10/11/2010        | 5/21/2010          | 5/21/2010          | 4/25/1996           | 8/15/2011         | Member TPH            | 60 Wall Street<br>New York, NY 10005                              | 212-250-2500 | Clearing, Proprietary Trading, Transact Business with the Public, Brokerage               |
| DRW Securities, LLC                         | 9/1/2009          | 11/1/2010         | 5/25/2010          | 5/27/2010          | 11/23/1998          | 1/22/2016         | Member TPH            | 540 W Madison Street<br>Suite 2500<br>Chicago, IL 60661           | 312-542-1000 | Market Maker, Proprietary Trading   |
| DRW Singapore Ltd.                          | 11/19/2018        | NA                | NA                 | 11/19/2018         | NA                  | NA                | Sponsored Participant | 8 Marina View<br>Asia Square Tower 1   #32-05<br>Singapore 018960 | 312-542-1005 | Proprietary Trading   |
| Dynamic Technology Lab Pte. Ltd.            | 11/5/2018         | 11/5/2018         | 11/5/2018          | 11/5/2018          | NA                  | NA                | Sponsored Participant | 07-00, 178 Clemenceau Avenue<br>Singapore 239926                  | 656-810-4693 | Proprietary Trading   |
| E D & F Man Capital Markets Inc.            | NA                | NA                | NA                 | NA                 | 3/1/2019            | 6/7/2019          | Member TPH            | 140 E. 45th Street<br>10th Floor<br>New York, NY 10017            | 212-816-2800 | Clearing, Public Customer Business  |
| E*TRADE Securities LLC                      | NA                | NA                | NA                 | 6/10/2010          | NA                  | NA                | Member TPH            | 11 Times Square<br>32nd Floor<br>New York, NY 10036               | 646-521-4300 | Public Customer Business  |
| Electronic Transaction Clearing, Inc.       | 10/23/2008        | 9/1/2010          | 5/25/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 680 S Figueroa Street<br>Los Angeles, CA 90017                    | 949-533-1885 | Market Maker  |
| Evercore Group LLC                          | NA                | NA                | 5/10/2017          | NA                 | NA                  | NA                | Member TPH            | 55 E 52nd Street<br>New York, NY 10055                            | 212-857-3100 | Public Customer Business  |
| FIS Brokerage & Securities Services LLC     | 8/18/2008         | 10/1/2010         | 5/6/2010           | 5/6/2010           | NA                  | NA                | Member TPH            | 2100 Enterprise Avenue<br>Geneva, IL 60134                        | 630-482-7100 | Agency  |
| Flow Traders U.S. Institutional Trading LLC | NA                | NA                | 6/1/2016           | NA                 | NA                  | NA                | Member TPH            | 1114 Avenue of the Americas<br>4th Floor<br>New York, NY 10036    | 917-210-5000 | Riskless Principal  |
| Flow Traders U.S. LLC                       | 10/1/2009         | 8/1/2012          | 2/28/2014          | 2/28/2014          | 8/31/2010           | NA                | Member TPH            | 1114 Avenue of the Americas<br>4th Floor<br>New York, NY 10036    | 917-210-5000 | Proprietary Trading   |
| G1 Execution Services, LLC                  | 8/18/2008         | 12/1/2010         | 4/17/2010          | 4/17/2010          | NA                  | NA                | Member TPH            | 175 W Jackson Boulevard<br>Suite 1700<br>Chicago, IL 60604        | 312-362-0404 | Market Maker  |
| Gair Loch Enterprises Ltd.                  | 2/22/2019         | 2/22/2019         | 4/8/2019           | 4/8/2019           | NA                  | NA                | Member TPH            | 640 W. Madison<br>Suite 2500<br>Chicago, IL 60661                 | 312-542-1193 | Proprietary Trading   |
| Geneva Stock, LLC                           | NA                | NA                | NA                 | NA                 | 4/6/2001            | NA                | Member TPH            | 440 S LaSalle Street<br>Suite 1711<br>Chicago, IL 60605           | 312-362-4404 | Market Maker  |
| Global Execution Brokers, LP                | 2/1/2010          | 10/5/2010         | 12/1/2015          | 10/15/2015         | 12/23/2003          | 9/24/2010         | Member TPH            | 401 City Avenue<br>Bala Cynwyd, PA 19004                          | 610-617-2600 | Floor Broker, Transact Business with the Public, Brokerage                                |
| Goldman Sachs & Co. LLC                     | 10/23/2008        | 10/12/2010        | 5/14/2010          | 5/14/2010          | 2/21/1973           | 10/8/2010         | Member TPH            | 200 West Street<br>New York, NY 10282                             | 212-902-1000 | Clearing, Market Maker, Proprietary Trading, Transact Business with the Public, Brokerage |
| Gordon, Haskett Capital Corporation         | NA                | NA                | NA                 | 5/2/2016           | NA                  | NA                | Member TPH            | 441 Lexington Avenue<br>10th Floor<br>New York, NY 10017          | 212-983-0600 | Agency, Institutional Trading   |
| Group One Trading, LP                       | 6/2/2015          | NA                | NA                 | 9/28/2015          | 11/23/1994          | NA                | Member TPH            | 440 S LaSalle Street<br>Suite 3232<br>Chicago, IL 60605           | 312-347-8864 | Market Maker  |
| GTS Securities LLC                          | 12/17/2013        | 5/1/2012          | 6/2/2014           | 6/2/2014           | NA                  | NA                | Member TPH            | 545 Madison Avenue<br>15th Floor<br>New York, NY 10022            | 212-715-2830 | Market Maker, Proprietary Trading   |
| Hainey Investments Limited                  | 6/16/2014         | NA                | NA                 | NA                 | NA                  | NA                | Sponsored Participant | Themistoki Dervi 41 #808-807<br>Nicosia, Cyprus                   | 704-248-8221 | Proprietary Trading   |

| Company Name   | BZX Approval Date | BYX Approval Date | EDGA Approval Date | EDGX Approval Date | CBOE Effective Date | C2 Effective Date | Type of User          | Address  | Phone Number | Primary Activities  |
|--|-------------------|-------------------|--------------------|--------------------|---------------------|-------------------|-----------------------|--|--------------|---|
| HAP Trading, LLC   | 10/1/2009         | 11/15/2010        | NA                 | 6/2/2010           | 3/16/2001           | NA                | Member TPH            | 395 Hudson Street<br>Suite 701<br>New York, NY 10014                           | 212-380-5100 | Market Maker, Proprietary Trading   |
| Hardcastle Trading USA LLC                                     | 4/15/2009         | NA                | 5/25/2010          | 5/27/2010          | 5/16/2005           | NA                | Member TPH            | 755 Secaucus Road<br>Suite F-1110<br>Secaucus, NJ 07094                        | 201-305-8888 | Proprietary Trading   |
| Headlands Technologies LLC                                     | 10/15/2018        | 10/15/2018        | 10/15/2018         | 10/15/2018         | NA                  | NA                | Sponsored Participant | 155 N. Wacker Drive, Suite 1900<br>Chicago, IL 60606                           | 312-601-8649 | Proprietary Trading   |
| Hehmeyer, LLC  | 10/3/2016         | 10/3/2016         | 10/3/2016          | 10/3/2016          | NA                  | NA                | Sponsored Participant | 801 S LaSalle Street<br>2nd Floor<br>Chicago, IL 60605                         | 312-327-4112 | Proprietary Trading   |
| Henning-Carey Proprietary Trading, LLC                         | 8/15/2012         | NA                | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 141 W Jackson Boulevard<br>Suite 1801<br>Chicago, IL 60604                     | 312-789-8764 | Proprietary Trading   |
| Highbridge Capital Management, LLC                             | 10/23/2008        | NA                | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 9 West 57th Street<br>27th Floor<br>New York, NY 10019                         | 212-287-4900 | Proprietary Trading   |
| Hilltop Securities Inc.  | 10/23/2008        | 9/1/2010          | NA                 | 5/21/2013          | 10/1/2010           | NA                | Member TPH            | 1201 Elm Street<br>Suite 3500<br>Dallas, TX 75270                              | 214-859-1800 | Clearing, Transact Business with the Public                                 |
| HRT Financial LLC  | 2/1/2010          | 10/1/2010         | 5/18/2010          | 5/18/2010          | 1/24/2011           | 1/24/2011         | Member TPH            | 4 World Trade Center<br>150 Greenwich Street, 57th Floor<br>New York, NY 10007 | 212-293-1444 | Proprietary Trading   |
| HSBC Securities (USA) Inc.                                     | 4/3/2017          | 4/3/2017          | 4/3/2017           | 4/3/2017           | 11/21/2005          | NA                | Member TPH            | 452 Fifth Avenue<br>New York, NY 10018   | 224-880-7116 | Clearing, Transact Business with the Public                                 |
| IEX Services LLC   | 10/1/2013         | 10/1/2013         | 9/24/2013          | 9/24/2013          | NA                  | NA                | Member TPH            | 4 World Trade Center<br>44th Floor<br>New York, NY 10007                       | 646-343-2000 | Limited Routing Facility of IEX affiliated Exchanges                        |
| IMC-Chicago LLC dba IMC Financial Markets                      | 8/18/2008         | 10/1/2010         | 5/25/2010          | 5/27/2010          | 7/5/2000            | 9/24/2010         | Member TPH            | 233 S Wacker Drive<br>Suite 4300<br>Chicago, IL 60606                          | 312-244-3300 | Market Maker, Proprietary Trading   |
| IMC-Chicago LLC dba IMC Financial Markets                      | 11/6/2018         | 11/5/2018         | 11/5/2018          | 11/5/2018          | NA                  | NA                | Sponsored Participant | 233 S Wacker Drive<br>Suite 4300<br>Chicago, IL 60606                          | 312-244-3300 | Market Maker, Proprietary Trading   |
| Industrial and Commercial Bank of China Financial Services LLC | 5/15/2014         | 5/15/2014         | NA                 | NA                 | NA                  | NA                | Member TPH            | 1633 Broadway<br>28th Floor<br>New York, NY 10019                              | 212-993-7300 | Clearing Services   |
| Instinet LLC   | 8/18/2008         | 9/1/2010          | 5/14/2010          | 5/14/2010          | 12/29/2009          | 10/6/2010         | Member TPH            | Worldwide Plaza<br>309 W 49th Street<br>New York, NY 10019                     | 212-310-9500 | Clearing, Transact Business with the Public, Brokerage                      |
| Interactive Brokers Corp.                                      | NA                | NA                | NA                 | NA                 | 4/21/2009           | 10/6/2010         | Member TPH            | 8 Greenwich Office Park<br>Greenwich, CT 06831                                 | 203-618-5700 | Floor Broker, Brokerage   |
| Interactive Brokers LLC  | 8/18/2008         | 9/15/2010         | 5/25/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | One Pickwick Plaza<br>2nd Floor<br>Greenwich, CT 06830                         | 203-618-5710 | Full Service  |
| International Correspondent Trading, Inc.                      | 8/18/2008         | NA                | NA                 | NA                 | NA                  | NA                | Member TPH            | One University Plaza<br>Suite 301<br>Hackensack, NJ 07601                      | 201-222-9300 | Agency  |
| ITG Inc.   | 8/18/2008         | 10/1/2010         | 5/25/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | One Liberty Plaza<br>165 Broadway, 4th Floor<br>New York, NY 10006             | 212-588-4000 | Agency  |
| J.P. Morgan Securities LLC                                     | 8/18/2008         | 9/15/2010         | 5/14/2010          | 5/14/2010          | 10/29/1985          | 11/18/2010        | Member TPH            | 383 Madison Avenue<br>New York, NY 10179                                       | 212-272-2000 | Clearing, Transact Business with the Public                                 |
| Jane Street Capital, LLC                                       | 5/1/2009          | 11/15/2010        | 5/14/2010          | 5/14/2010          | 9/4/2012            | 1/2/2019          | Member TPH            | 250 Vesey Street<br>5th Floor<br>New York, NY 10281                            | 646-759-6000 | Market Maker, Proprietary Trading   |
| Jane Street Execution Services LLC                             | 1/24/2019         | 1/24/2019         | 1/24/2019          | 1/24/2019          | NA                  | NA                | Member TPH            | 250 Vesey Street<br>6th Floor<br>New York, NY 10281                            | 646-759-6381 | Proprietary Trading   |
| Jane Street Options, LLC                                       | 4/15/2016         | NA                | NA                 | 11/9/2018          | 5/2/2005            | 1/2/2019          | Member TPH            | 250 Vesey Street<br>5th Floor<br>New York, NY 10281                            | 646-759-6000 | Market Maker  |
| Jefferies Investment Advisers                                  | 7/1/2011          | 7/15/2011         | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 520 Madison Avenue<br>New York, NY 10022                                       | 212-323-3993 | Full Service  |
| Jefferies LLC  | 10/23/2008        | 10/19/2010        | 5/25/2010          | 5/27/2010          | 7/9/2012            | 7/18/2012         | Member TPH            | 520 Madison Avenue<br>New York, NY 10022                                       | 212-284-2300 | Clearing, Proprietary Trading, Transact Business with the Public, Brokerage |
| JNK Securities Corp.   | 11/17/2008        | 11/15/2010        | NA                 | NA                 | NA                  | NA                | Member TPH            | 140 E 45th Street<br>27th Floor<br>New York, NY 10017                          | 212-885-6300 | Agency  |
| Juliet Group, LLC  | 3/1/2011          | 3/1/2011          | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 240 E 35th Street<br>#3A<br>New York, NY 10016                                 | 646-360-0595 | Proprietary Trading   |
| Juliet Labs, LLC   | 9/20/2017         | 9/20/2017         | 9/20/2017          | 9/20/2017          | NA                  | NA                | Sponsored Participant | 1 Northside Piers<br>Suite 14H<br>Brooklyn, NY 11249                           | 646-360-0595 | Proprietary Trading   |
| Jump Trading, LLC  | 8/18/2008         | 10/1/2010         | 5/14/2010          | 5/14/2010          | 4/2/2012            | 6/6/2017          | Member TPH            | 600 W Chicago Avenue<br>Suite 825<br>Chicago, IL 60654                         | 312-205-8900 | Market Maker, Proprietary Trading   |
| Keefe, Bruyette & Woods, Inc.                                  | 8/18/2008         | 12/1/2010         | 6/8/2010           | 6/8/2010           | NA                  | NA                | Member TPH            | 787 7th Avenue<br>New York, NY 10019   | 212-897-7777 | Agency  |
| Lakeshore Securities, LP                                       | NA                | NA                | NA                 | NA                 | 1/24/1983           | NA                | Member TPH            | 401 S LaSalle Street<br>Suite 1000<br>Chicago, IL 60605                        | 312-663-1307 | Clearing, Floor Broker, Market Maker, Transact Business with the Public     |
| Lamberson Capital LLC  | NA                | NA                | NA                 | NA                 | 3/23/2016           | NA                | Member TPH            | 71 S Wacker Drive<br>Suite 2300<br>Chicago, IL 60606                           | 312-360-7300 | Market Maker  |
| Lampert Capital Markets Inc.                                   | NA                | 2/18/2014         | 2/28/2014          | NA                 | NA                  | NA                | Member TPH            | 444 Madison Avenue<br>Suite 401<br>New York, NY 10022                          | 646-833-4900 | Introducing Broker  |
| Lamport Capital, LC  | NA                | NA                | NA                 | 3/15/2016          | NA                  | NA                | Member TPH            | 1800 Glades Road<br>Suite 205<br>Boca Raton, FL 33431                          | 561-883-0454 | Public Customer Business, Proprietary Trading                               |
| Latour Trading LLC   | 8/17/2009         | 10/1/2010         | 5/28/2010          | 5/27/2010          | 4/8/2011            | NA                | Member TPH            | 377 Broadway<br>10th Floor<br>New York, NY 10013                               | 917-388-8000 | Proprietary Trading   |
| LEK Securities Corporation                                     | 8/18/2008         | 10/1/2010         | 5/26/2010          | 5/27/2010          | 1/9/2001            | 9/24/2010         | Member TPH            | 1 Liberty Plaza<br>165 Broadway, 52nd Floor<br>New York, NY 10006              | 212-509-2300 | Clearing, Transact Business with the Public                                 |
| Lime Brokerage LLC   | 8/18/2008         | 10/1/2010         | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 11 E 44th Street<br>Suite 705<br>New York, NY 10017                            | 212-824-5000 | Transact Business with the Public   |
| Liquidnet, Inc.  | 9/1/2009          | 9/15/2010         | NA                 | NA                 | NA                  | NA                | Member TPH            | 498 7th Avenue<br>15th Floor<br>New York, NY 10018                             | 646-674-2000 | Agency  |
| Lupo Securities, LLC   | NA                | NA                | NA                 | NA                 | 8/1/1997            | NA                | Member TPH            | 141 W Jackson Boulevard<br>Suite 2200A<br>Chicago, IL 60604                    | 312-477-8400 | Market Maker, Proprietary Trading   |
| Macquarie Capital (USA) Inc.                                   | 12/1/2009         | NA                | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 125 W 55th Street<br>Level 22<br>New York, NY 10019                            | 212-231-1000 | Agency  |
| Marathon Trading Group LLC                                     | 2/13/2015         | NA                | NA                 | NA                 | 1/30/2013           | NA                | Member TPH            | 100 Matsonford Road<br>Building 2, Suite 107<br>Wayne, PA 19087                | 610-254-4890 | Market Maker, Proprietary Trading   |
| Matrix Executions, LLC   | 8/18/2008         | 11/15/2010        | NA                 | 11/12/2015         | 2/1/2008            | 10/26/2010        | Member TPH            | 801 S LaSalle Street<br>Suite 300<br>Chicago, IL 60605                         | 312-334-8000 | Transact Business with the Public, Brokerage                                |

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|--|-------------------|-------------------|--------------------|--------------------|---------------------|-------------------|-----------------------|--|--------------|---|
| Merrill Lynch Professional Clearing Corp.          | 8/18/2008         | 10/5/2010         | 5/14/2010          | 5/14/2010          | 4/8/1985            | 9/24/2010         | Member TPH            | One Bryant Park, 6th Floor<br>NY-100-06-01<br>New York, NY 10036           | 646-743-1296 | Clearing, Brokerage, Transact Business with the Public                                    |
| Merrill Lynch, Pierce, Fenner & Smith Incorporated | 8/18/2008         | 10/4/2010         | 5/14/2010          | 5/14/2010          | 4/25/1973           | NA                | Member TPH            | One Bryant Park<br>New York, NY 10036                                      | 800-637-7455 | Clearing, Transact Business with the Public, Brokerage, Market Maker, Proprietary Trading |
| Mint Global Markets, Inc.                          | NA                | NA                | 5/28/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 1717 Route 6<br>Suite 102<br>Carmel, NY 10512                              | 800-874-3039 | Agency  |
| Mizuho Securities USA, LLC                         | 6/1/2010          | 1/3/2011          | NA                 | NA                 | NA                  | NA                | Member TPH            | 320 Park Avenue<br>12th Floor<br>New York, NY 10022                        | 212-209-9300 | Agency  |
| MKM Partners LLC                                   | 8/3/2009          | NA                | 5/14/2010          | 5/14/2010          | NA                  | NA                | Member TPH            | 300 First Stamford Place<br>4th Floor East Wing<br>Stamford, CT 06902      | 203-861-9060 | Agency  |
| Monednock Capital Management, LP                   | NA                | NA                | NA                 | NA                 | 12/1/2014           | NA                | Member TPH            | 1845 Walnut Street<br>Suite 940<br>Philadelphia, PA 19103                  | 287-239-0367 | Market Maker  |
| Morgen Stanley & Co. International plc             | NA                | NA                | NA                 | NA                 | 4/12/2017           | NA                | Sponsored Participant | 20 Bank Street<br>Canary Wharf<br>London, UK E14 4A                        | #####        |   |
| Morgen Stanley & Co. LLC                           | 10/23/2008        | 9/1/2010          | 5/14/2010          | 5/14/2010          | 8/20/1980           | 9/24/2010         | Member TPH            | 1585 Broadway<br>New York, NY 10036  | 212-761-4000 | Clearing, Market Maker, Proprietary Trading, Transact Business with the Public, Brokerage |
| Nasdaq Execution Services, LLC                     | 8/19/2008         | 9/1/2010          | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | One Liberty Plaza<br>185 Broadway<br>New York, NY 10006                    | 212-231-5100 | Limited Routing Facility of Nasdaq affiliated Exchanges                                   |
| National Financial Services LLC                    | 10/23/2008        | 10/4/2010         | 5/28/2010          | 5/27/2010          | 10/8/1987           | 4/16/2012         | Member TPH            | 200 Seaport Boulevard<br>Boston, MA 02210                                  | 617-563-7000 | Clearing, Floor Broker, Transact Business with the Public                                 |
| National Securities Corporation                    | 7/1/2009          | NA                | NA                 | NA                 | NA                  | NA                | Member TPH            | One Union Square<br>600 University Street, Suite 2900<br>Seattle, WA 98101 | 206-622-7200 | Agency  |
| Needham & Company, LLC                             | 10/23/2008        | 10/1/2010         | NA                 | NA                 | NA                  | NA                | Member TPH            | 445 Park Avenue<br>New York, NY 10022                                      | 212-371-8300 | Market Maker  |
| Nomura Securities International, Inc.              | 10/23/2008        | 10/1/2010         | 5/26/2010          | 5/27/2010          | 9/1/2009            | 11/16/2010        | Member TPH            | Worldwide Plaza<br>309 W 49th Street<br>New York, NY 10019                 | 212-667-9000 | Clearing, Transact Business with the Public, Proprietary Trading                          |
| Northern Trust Securities, Inc.                    | 8/18/2008         | 10/5/2010         | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 50 S LaSalle Street<br>Chicago, IL 60603                                   | 312-557-2000 | Market Maker  |
| Old Mission Capital, LLC                           | 4/16/2012         | 4/16/2012         | 4/25/2012          | 4/25/2012          | 9/27/2017           | NA                | Member TPH            | 314 W Superior<br>Suite 200<br>Chicago, IL 60654                           | 312-260-3031 | Market Maker  |
| Olivetree Financial, LLC                           | NA                | NA                | 9/1/2016           | NA                 | NA                  | NA                | Member TPH            | 420 Lexington Avenue<br>Suite 800<br>New York, NY 10170                    | 646-930-6600 | Agency  |
| Oppenheimer & Co. Inc.                             | NA                | NA                | NA                 | NA                 | 5/17/1973           | NA                | Member TPH            | 85 Broad Street<br>22nd, 24th Floors<br>New York, NY 10004                 | 212-668-8000 | Clearing, Transact Business with the Public   |
| Optiver US, LLC                                    | 6/15/2009         | NA                | NA                 | 5/30/2018          | 6/1/2005            | 9/24/2010         | Member TPH            | 130 E Randolph Street<br>14th Floor<br>Chicago, IL 60601                   | 312-821-9500 | Market Maker  |
| Oscar Gruss & Son Incorporated                     | 8/7/2017          | NA                | NA                 | NA                 | NA                  | NA                | Member TPH            | 430 Park Avenue<br>6th Floor<br>New York, NY 10022                         | 212-419-4000 | Agency  |
| PEAK6 Capital Management LLC                       | 8/1/2014          | NA                | NA                 | 2/1/2016           | 12/2/1997           | NA                | Member TPH            | 141 W Jackson Boulevard<br>Suite 500<br>Chicago, IL 60604                  | 312-444-8000 | Proprietary Trading   |
| Pershing LLC                                       | 8/18/2008         | 9/15/2010         | 5/26/2010          | 5/27/2010          | 2/21/1973           | 9/28/2010         | Member TPH            | One Pershing Plaza<br>Jersey City, NJ 07399                                | 201-413-2000 | Clearing, Transact Business with the Public   |
| Phillip Capital Inc.                               | NA                | NA                | NA                 | 11/27/2017         | NA                  | NA                | Member TPH            | 141 W Jackson Boulevard<br>Suite 3050<br>Chicago, IL 60604                 | 312-368-9001 | Clearing Services   |
| Pictet Overseas Inc.                               | 6/1/2015          | 6/1/2015          | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 1000 de la Gaucheliere West<br>Suite 3100<br>Montreal, Quebec H3B 4W6      | 514-288-8161 | Agency  |
| Piper Jaffray & Co.                                | 10/15/2008        | 11/15/2012        | 5/14/2010          | 5/14/2010          | NA                  | NA                | Member TPH            | 800 Nicollet Mall<br>Minneapolis, MN 55402                                 | 612-303-6000 | Market Maker  |
| Potarnus Trading, LLC                              | 4/15/2013         | 4/15/2013         | 4/11/2013          | 4/11/2013          | NA                  | NA                | Member TPH            | 2 Seaport Lane<br>8th Floor<br>Boston, MA 02210                            | 617-855-8722 | Market Maker, Proprietary Trading   |
| Princeton Alpha Management, LP                     | 12/1/2015         | 12/1/2015         | 12/1/2015          | 12/1/2015          | NA                  | NA                | Sponsored Participant | 61 Princeton Hightstown Road<br>West Windsor, NJ 08550                     | 609-269-9212 | Agency  |
| Puma Capital, LLC                                  | NA                | NA                | 6/15/2016          | 6/15/2016          | NA                  | NA                | Member TPH            | 287 Bowman Avenue<br>3rd Floor<br>Purchase, NY 10577                       | 212-269-4100 | Market Maker, Proprietary Trading   |
| Pundion LLC  | 2/27/2017         | 2/27/2017         | 2/27/2017          | 2/27/2017          | NA                  | NA                | Member TPH            | 230 Park Avenue<br>10th Floor<br>New York, NY 10169                        | 718-818-4929 | Proprietary Trading   |
| Pundion LLC  | 10/15/2018        | 10/15/2018        | 10/15/2018         | 10/15/2018         | NA                  | NA                | Sponsored Participant | 230 Park Avenue<br>10th Floor<br>New York, NY 10169                        | 718-818-4929 | Proprietary Trading   |
| Quantbot Technologies LP                           | 3/27/2018         | 3/27/2018         | 3/27/2018          | 3/27/2018          | NA                  | NA                | Sponsored Participant | 369 Lexington Avenue<br>New York, NY 10017                                 | 212-622-6510 | Proprietary Trading   |
| Quantex Clearing, LLC                              | 10/3/2011         | 12/27/2011        | 5/17/2011          | 5/17/2011          | NA                  | NA                | Member TPH            | 70 Hudson Street<br>Hoboken, NJ 07030                                      | 201-706-7157 | Clearing Services   |
| Quantlab Securities LP                             | 8/18/2008         | 11/1/2010         | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 3 Greenway Plaza<br>Suite 200<br>Houston, TX 77046                         | 713-333-3700 | Transact Business with the Public, Brokerage  |
| Quiet Light Securities, LLC                        | NA                | NA                | NA                 | NA                 | 5/1/2001            | NA                | Member TPH            | 141 W Jackson Boulevard<br>Suite 2020A<br>Chicago, IL 60604                | 312-431-0573 | Market Maker, Proprietary Trading   |
| R.W. Pressprich & Co.                              | 2/17/2009         | 11/15/2010        | 6/2/2010           | 6/2/2010           | NA                  | NA                | Member TPH            | 452 5th Avenue<br>New York, NY 10018                                       | 212-832-6200 | Agency  |
| Rackson Asset Management, LLC                      | 10/1/2009         | NA                | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 2000 Broadway<br>Suite 22C<br>New York, NY 10023                           | 212-724-2567 | Proprietary Trading   |
| Radix Trading LLC                                  | 11/5/2018         | 11/5/2018         | 11/5/2018          | 11/5/2018          | NA                  | NA                | Sponsored Participant | 353 N Clark Street<br>Suite 3200<br>Chicago, IL 60654                      | 773-377-8080 | Research Firm   |
| Rainier Investment Management, Inc.                | 1/4/2010          | NA                | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 601 Union Street<br>Suite 2801<br>Seattle, WA 98101                        | 206-518-6858 | Hedge Fund  |
| RBC Capital Markets, LLC                           | 9/18/2008         | 10/14/2010        | 5/14/2010          | 5/14/2010          | 11/24/1993          | 10/19/2010        | Member TPH            | 3 World Financial Center<br>200 Vesey Street<br>New York, NY 10281         | 212-858-7000 | Clearing, Proprietary Trading, Transact Business with the Public                          |
| Robert W. Baird & Co. Incorporated                 | 10/23/2008        | 1/3/2011          | NA                 | NA                 | NA                  | NA                | Member TPH            | 777 E Wisconsin Avenue<br>Milwaukee, WI 53202                              | 414-765-3500 | Market Maker  |
| Ronin Capital, LLC                                 | NA                | NA                | NA                 | NA                 | 12/17/2001          | NA                | Member TPH            | 350 N Orleans Street<br>Suite 2N<br>Chicago, IL 60654                      | 312-244-5000 | Market Maker  |
| Ronin Professional, LLC                            | 8/18/2008         | 10/1/2010         | 5/25/2010          | 5/27/2010          | 1/2/2008            | 10/20/2010        | Member TPH            | 350 N Orleans Street<br>Suite 2N<br>Chicago, IL 60654                      | 312-244-5400 | Order Flow Provider, Transact Business with the Public, Brokerage                         |

| Company Name                                  | BZX Approval Date | BYX Approval Date | EDGA Approval Date | EDGX Approval Date | CBOE Effective Date | C2 Effective Date | Type of User          | Address   | Phone Number | Primary Activities  |
|---|-------------------|-------------------|--------------------|--------------------|---------------------|-------------------|-----------------------|---|--------------|---|
| Rosenblatt Securities Inc.                    | 8/18/2008         | 10/8/2010         | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 40 Wall Street<br>59th Floor<br>New York, NY 10005                            | 212-607-3100 | Agency  |
| Roth Capital Partners, LLC                    | 8/18/2008         | NA                | NA                 | NA                 | NA                  | NA                | Member TPH            | 888 San Clemente<br>Suite 400<br>Newport Beach, CA 92660                      | 949-720-5700 | Market Maker  |
| SAC Capital Advisors, LP                      | 10/23/2008        | NA                | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 72 Cummings Point Road<br>Stamford, CT 06902                                  | 203-890-2275 | Hedge Fund  |
| Safra Securities LLC                          | NA                | NA                | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 546 5th Avenue<br>New York, NY 10036  | 212-704-5500 | Market Maker  |
| SegeTrader, LLC                               | 3/1/2016          | 6/5/2017          | 6/5/2017           | 6/1/2016           | NA                  | NA                | Member TPH            | 340 Pine Street<br>Suite 501<br>San Francisco, CA 94104                       | 415-293-3894 | Public Customer Business  |
| SAL Equity Trading, GP                        | 9/3/2008          | 10/5/2010         | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 401 City Avenue<br>Suite 220<br>Bala Cynwyd, PA 19004                         | 610-617-3000 | Agency, Institutional Trading   |
| Sanford C. Bernstein & Co, LLC                | 9/10/2008         | 10/21/2010        | 5/26/2010          | 5/27/2010          | 8/13/2013           | NA                | Member TPH            | 1345 Avenue of the Americas<br>New York, NY 10105                             | 212-969-1000 | Clearing, Proprietary Trading, Transact Business with the Public            |
| Santander Investment Securities Inc.          | 4/15/2009         | 1/3/2011          | NA                 | NA                 | NA                  | NA                | Member TPH            | 45 E 53rd Street<br>New York, NY 10022  | 212-350-3500 | Institutional Trading   |
| Scotia Capital (USA) Inc.                     | 3/2/2009          | 9/15/2010         | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 250 Vesey Street<br>New York, NY 10281  | 212-225-6500 | Institutional Trading   |
| Sea Otter Securities Group LLC                | 10/9/2018         | 10/9/2018         | NA                 | 10/9/2018          | NA                  | NA                | Sponsored Participant | 107 Grand Street<br>7th Floor<br>New York, NY 10013                           | 646-762-9972 | Proprietary Trading   |
| SG Americas Securities, LLC                   | 9/17/2008         | 11/15/2011        | 5/14/2010          | 5/14/2010          | 4/23/2004           | 1/2/2015          | Member TPH            | 245 Park Avenue<br>New York, NY 10167   | 212-278-6000 | Clearing, Proprietary Trading, Transact Business with the Public, Brokerage |
| Simplex Trading, LLC                          | 3/16/2015         | NA                | NA                 | 4/13/2017          | 8/12/2010           | 3/1/2017          | Member TPH            | 230 S LaSalle Street<br>Suite 4-100<br>Chicago, IL 60604                      | 312-380-2440 | Market Maker, Proprietary Trading   |
| SMBC Nikko Securities America, Inc.           | 8/7/2017          | 8/7/2017          | 8/7/2017           | 8/7/2017           | NA                  | NA                | Member TPH            | 277 Park Avenue<br>5th Floor<br>New York, NY 10172                            | 212-224-5039 | Institutional Trading   |
| SogoTrade, Inc.                               | NA                | NA                | NA                 | 6/19/2017          | NA                  | NA                | Member TPH            | 11 Broadway<br>Suite 514<br>New York, NY 10004                                | 646-885-6486 | Public Customer Business  |
| SRT Securities LLC                            | NA                | NA                | NA                 | NA                 | 10/27/1995          | 9/24/2010         | Member TPH            | 666 5th Avenue<br>14th Floor<br>New York, NY 10103                            | 212-841-4567 | Floor Broker, Transact Business with the Public, Brokerage                  |
| Stifel, Nicolaus & Company, Incorporated      | 8/18/2008         | NA                | 6/2/2010           | 6/2/2010           | NA                  | NA                | Member TPH            | 501 N Broadway<br>St. Louis, MO 63102   | 314-342-2000 | Agency  |
| Sumo Capital, LLC                             | 7/15/2013         | NA                | NA                 | 10/15/2015         | 3/3/2008            | NA                | Member TPH            | 440 S LaSalle Street<br>Suite 2101<br>Chicago, IL 60605                       | 312-324-0326 | Market Maker, Proprietary Trading   |
| SumRidge Partners, LLC                        | NA                | NA                | NA                 | 12/27/2017         | NA                  | NA                | Member TPH            | 111 Town Square Place<br>Suite 320<br>Jersey City, NJ 07310                   | 201-898-2620 | Proprietary Trading   |
| Susquehanna Financial Group, LLLP             | 9/3/2008          | 10/5/2010         | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 401 City Avenue<br>Suite 220<br>Bala Cynwyd, PA 19004                         | 800-825-9550 | Agency, Institutional Trading   |
| Susquehanna Investment Group                  | NA                | NA                | NA                 | NA                 | 5/1/1987            | NA                | Member TPH            | 401 City Avenue<br>Suite 220<br>Bala Cynwyd, PA 19004                         | 610-617-2800 | Market Maker  |
| Susquehanna Securities, LLC                   | 10/15/2014        | 10/15/2014        | 10/15/2014         | 10/15/2014         | 4/4/1994            | 9/24/2010         | Member TPH            | 401 City Avenue<br>Suite 220<br>Bala Cynwyd, PA 19004                         | 610-617-2800 | Market Maker, Proprietary Trading   |
| SVB Leerink LLC                               | 8/18/2008         | 10/5/2010         | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 1 Federal Street<br>37th Floor<br>Boston, MA 02110                            | 617-918-4900 | Agency  |
| Synergy Capital Management, LLC               | 8/1/2016          | NA                | NA                 | NA                 | 6/5/2007            | NA                | Member TPH            | 141 W Jackson Boulevard<br>Suite 1530<br>Chicago, IL 60604                    | 312-986-8869 | Proprietary Trading   |
| TD Ameritrade Clearing, Inc.                  | 5/3/2011          | 5/3/2011          | NA                 | 5/27/2010          | NA                  | NA                | Member TPH            | 200 S 108th Avenue<br>Omaha, NE 68154   | 800-669-3900 | Public Customer Business, Clearing Services                                 |
| Telsey Advisory Group, LLC                    | 1/24/2011         | 8/15/2014         | NA                 | NA                 | NA                  | NA                | Member TPH            | 555 5th Avenue<br>7th Floor<br>New York, NY 10017                             | 212-973-9700 | Public Customer Business  |
| Tewksbury Investment Fund, Ltd.               | 7/1/2011          | 7/1/2011          | 1/6/2015           | 1/6/2015           | NA                  | NA                | Sponsored Participant | Washington Mall I<br>20th Church Street, 4th Floor<br>Hamilton, HI 11 Bermuda | 610-871-5000 | Proprietary Trading   |
| Tewksbury Investment Fund, Ltd.               | 10/23/2008        | 11/15/2010        | NA                 | NA                 | NA                  | NA                | Sponsored Participant | Washington Mall I<br>20th Church Street, 4th Floor<br>Hamilton, HI 11 Bermuda | 212-310-7076 | Proprietary Trading   |
| Themis Trading LLC                            | 8/18/2008         | 10/1/2010         | NA                 | NA                 | NA                  | NA                | Member TPH            | 10 Town Square<br>Suite 100<br>Chatham, NJ 07928                              | 973-665-9600 | Agency  |
| ThinkTrade, LLC                               | 2/1/2010          | 10/20/2010        | 1/9/2015           | 1/9/2015           | NA                  | NA                | Sponsored Participant | 2210 Encinitas Boulevard<br>Suite 1<br>Encinitas, CA 92024                    | 760-452-2451 | Proprietary Trading   |
| Timber Hill LLC                               | NA                | NA                | NA                 | NA                 | 12/27/1996          | 12/15/2010        | Member TPH            | One Pickwick Plaza<br>Suite 200<br>Greenwich, CT 06830                        | 203-618-5800 | Clearing, Market Maker  |
| TJM Investments, LLC                          | NA                | NA                | NA                 | NA                 | 3/11/2013           | NA                | Member TPH            | 318 W Adams Street<br>9th Floor<br>Chicago, IL 60606                          | 312-432-6100 | Floor Broker, Transact Business with the Public                             |
| Tradebot Systems, Inc.                        | 8/18/2008         | 9/1/2010          | 5/26/2010          | 5/27/2010          | NA                  | NA                | Member TPH            | 1251 NW Briarcliff Parkway<br>Suite 700<br>Kansas City, MO 64116              | 816-285-6400 | Proprietary Trading   |
| TradeStation Securities, Inc.                 | 8/18/2008         | 9/1/2010          | 5/25/2010          | 5/25/2010          | NA                  | NA                | Member TPH            | 8050 SW 10th Street<br>Suite 2000<br>Plantation, FL 33324                     | 954-652-7900 | Market Maker  |
| TRC Halepolis, Ltd.                           | 12/11/2009        | NA                | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 377 Broadway<br>11th Floor<br>New York, NY 10013                              | 646-472-1792 | Proprietary Trading   |
| TRC Markets LLC                               | 4/13/2017         | 4/13/2017         | 4/13/2017          | 4/13/2017          | NA                  | NA                | Member TPH            | 710 Johnnie Dodds Boulevard<br>Suite 300<br>Mt. Pleasant, SC 29464            | 917-388-8644 | Agency  |
| Trinity Executions, LLC                       | NA                | NA                | NA                 | NA                 | 11/1/2011           | NA                | Member TPH            | 141 W Jackson Boulevard<br>Suite 3900<br>Chicago, IL 60604                    | 312-878-4704 | Floor Broker, Transact Business with the Public                             |
| Tudor, Pickering, Holt & Co. Securities, Inc. | 8/18/2008         | 10/17/2011        | NA                 | NA                 | NA                  | NA                | Member TPH            | 1111 Bagby<br>Suite 4900<br>Houston, TX 77002                                 | 713-333-7100 | Agency  |
| Two Sigma Investments, LLC                    | 9/1/2009          | NA                | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 100 Avenue of the Americas<br>4th Floor<br>New York, NY 10013                 | 212-775-6678 | Proprietary Trading   |
| Two Sigma Partners Master Fund, Ltd.          | 3/2/2009          | NA                | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 100 Avenue of the Americas<br>4th Floor<br>New York, NY 10013                 | 212-775-6678 | Proprietary Trading   |
| Two Sigma Securities, LLC                     | 7/1/2009          | NA                | NA                 | NA                 | NA                  | NA                | Sponsored Participant | 100 Avenue of the Americas<br>4th Floor<br>New York, NY 10013                 | 646-292-6643 | Proprietary Trading   |
| Two Sigma Securities, LLC                     | 10/1/2009         | 10/5/2010         | 5/27/2010          | 5/27/2010          | 9/15/2017           | 7/18/2018         | Member TPH            | 100 Avenue of the Americas<br>19th Floor<br>New York, NY 10013                | 212-625-5700 | Market Maker, Broker  |

| Company Name                           | BZX Approval Date | BYX Approval Date | EDGA Approval Date | EDGX Approval Date | CBOE Effective Date | C2 Effective Date | Type of User             | Address   | Phone Number | Primary Activities  |
|--|-------------------|-------------------|--------------------|--------------------|---------------------|-------------------|--------------------------|---|--------------|---|
| U.S. Securities, Intl. Corp.           | NA                | NA                | NA                 | NA                 | 7/3/1973            | NA                | Member<br>TPH            | 120 Broadway<br>Suite 1017<br>New York, NY 10271                      | 212-227-0800 | Transact Business with the Public   |
| UBS Financial Services Inc.            | NA                | NA                | NA                 | NA                 | 12/11/1972          | NA                | Member<br>TPH            | 1200 Harbor Boulevard<br>Weehawken, NJ 07086                          | 201-352-3000 | Clearing, Transact Business with the Public                                       |
| UBS Securities LLC                     | 10/15/2008        | 10/1/2010         | 4/12/2010          | 4/12/2010          | 10/1/1998           | 10/8/2010         | Member<br>TPH            | 1285 Avenue of the Americas<br>New York, NY 10019                     | 203-719-3000 | Clearing, Proprietary Trading,<br>Transact Business with the Public               |
| Ultraviolet Securities LLC             | 6/17/2019         | 6/17/2019         | 6/17/2019          | 6/17/2019          | NA                  | NA                | Sponsored<br>Participant | 151 Bodman Place<br>Suite 301<br>Red Bank, NJ 07701                   | 732-450-7462 | Proprietary Trading   |
| Ultraviolet Securities LLC             | 10/24/2019        | 10/24/2019        | 10/24/2019         | 10/24/2019         | NA                  | NA                | Sponsored<br>Participant | 151 Bodman Place<br>Suite 301<br>Red Bank, NJ 07701                   | 732-450-7462 | Proprietary Trading   |
| Ustocktrade Securities, Inc.           | 4/17/2015         | NA                | NA                 | NA                 | NA                  | NA                | Member<br>TPH            | 275 Grove Street<br>Suite 2-400<br>Newton, MA 02466                   | 617-340-3041 | Public Customer Business,<br>Proprietary Trading                                  |
| Velox Clearing LLC                     | 9/5/2019          | 9/5/2019          | 9/5/2019           | 9/5/2019           | NA                  | NA                | Member<br>TPH            | 2400 E. Katella Ave<br>Suite 725<br>Anaheim, CA 92806                 | 949-352-4694 | Clearing Services   |
| Verition Fund Management LLC           | 10/21/2019        | 10/21/2019        | 10/21/2019         | 10/21/2019         | NA                  | NA                | Sponsored<br>Participant | 1 American Lane<br>Greenwich, CT 06831                                | 203-742-7711 | Proprietary Trading   |
| ViewTrade Securities, Inc.             | 8/18/2008         | 11/15/2010        | 6/10/2010          | 6/10/2010          | NA                  | NA                | Member<br>TPH            | 7280 W Palmetto Park Road<br>Suite 310<br>Boca Raton, FL 33433        | 561-620-0306 | Agency  |
| Virtu Americas LLC                     | 9/15/2009         | 10/14/2010        | 1/3/2011           | 1/3/2011           | 9/18/2009           | 3/17/2011         | Member<br>TPH            | 300 Vesey Street<br>New York, NY 10282                                | 646-682-6000 | Clearing, Proprietary Trading,<br>Transact Business with the Public,<br>Brokerage |
| Virtu Financial BD LLC                 | 11/17/2008        | 10/7/2010         | 5/27/2010          | 5/27/2010          | 3/1/2010            | 6/12/2012         | Member<br>TPH            | 307 Camp Craft Road<br>Austin, TX 78743                               | 800-544-7508 | Proprietary Trading   |
| Virtu Financial Capital Markets LLC    | 8/18/2008         | 9/1/2010          | 5/25/2010          | 5/27/2010          | NA                  | NA                | Member<br>TPH            | 300 Vesey Street<br>New York, NY 10282                                | 212-418-0100 | Proprietary Trading   |
| Vision Financial Markets LLC           | 4/1/2009          | 11/15/2010        | 7/13/2012          | 7/13/2012          | 12/11/2006          | NA                | Member<br>TPH            | 120 Long Ridge Road<br>3 North<br>Stamford, CT 06902                  | 203-388-2700 | Clearing, Transact Business with the Public                                       |
| Volant Execution, LLC                  | 6/15/2011         | NA                | NA                 | 10/1/2015          | 4/12/2005           | 9/24/2010         | Member<br>TPH            | 111 W Jackson Boulevard<br>20th Floor<br>Chicago, IL 60604            | 312-692-5000 | Clearing, Brokerage   |
| Volant Liquidity, LLC                  | 4/15/2011         | NA                | 5/27/2010          | 5/27/2010          | 2/1/2010            | 3/23/2011         | Member<br>TPH            | 250 Vesey Street<br>Suite 2601<br>New York, NY 10281                  | 646-804-7900 | Market Maker, Order Flow Provider,<br>Brokerage                                   |
| Wall Street Access                     | 11/3/2008         | 10/17/2011        | 5/27/2010          | 5/27/2010          | NA                  | NA                | Member<br>TPH            | 17 Battery Place<br>11th Floor<br>New York, NY 10004                  | 212-709-9400 | Agency  |
| Wallaye Trading LLC                    | 12/1/2008         | 11/12/2010        | NA                 | 4/17/2018          | 6/1/2006            | NA                | Member<br>TPH            | 2800 Niagara Lane North<br>Plymouth, MN 55447                         | 952-345-8611 | Market Maker  |
| Wedbush Securities Inc.                | 8/18/2008         | 9/1/2010          | 5/27/2010          | 5/27/2010          | 2/23/2012           | 3/8/2012          | Member<br>TPH            | 1000 Wilshire Boulevard<br>Suite 900<br>Los Angeles, CA 90017         | 213-688-8090 | Clearing  |
| Wells Fargo Clearing Services, LLC     | 7/1/2016          | NA                | NA                 | NA                 | 11/14/2016          | NA                | Member<br>TPH            | One N Jefferson Avenue<br>Mail Code: H0004-050<br>St. Louis, MO 63103 | 314-875-3000 | Clearing, Transact Business with the Public                                       |
| Wells Fargo Securities, LLC            | 8/18/2008         | 10/11/2010        | 6/9/2010           | 6/9/2010           | 4/1/2014            | 4/1/2014          | Member<br>TPH            | 550 S Tryon Street, 6th Floor<br>D1086-060<br>Charlotte, NC 28202     | 704-410-1913 | Clearing, Proprietary Trading   |
| Western International Securities, Inc. | 8/18/2008         | 11/15/2010        | NA                 | NA                 | NA                  | NA                | Member<br>TPH            | 70 S Lake Avenue<br>Suite 700<br>Pasadena, CA 91101                   | 626-793-7717 | Market Maker  |
| Wolverine Execution Services, LLC      | 8/18/2008         | 10/19/2010        | 5/14/2010          | 5/14/2010          | 3/1/2006            | 9/24/2010         | Member<br>TPH            | 175 W Jackson Boulevard<br>Suite 200<br>Chicago, IL 60604             | 312-884-4000 | Clearing, Floor Broker, Transact<br>Business with the Public, Brokerage           |
| Wolverine Securities, LLC              | NA                | NA                | NA                 | 5/31/2017          | NA                  | NA                | Member<br>TPH            | 175 W Jackson Boulevard<br>Suite 200<br>Chicago, IL 60604             | 312-884-4000 | Market Maker  |
| Wolverine Trading, LLC                 | 10/3/2011         | NA                | NA                 | 10/1/2015          | 7/12/1994           | 9/24/2010         | Member<br>TPH            | 175 W Jackson Boulevard<br>Suite 200<br>Chicago, IL 60604             | 312-884-4000 | Market Maker, Proprietary Trading   |
| X-Change Financial Access, LLC         | NA                | NA                | NA                 | NA                 | 5/1/2003            | NA                | Member<br>TPH            | 440 S LaSalle Street<br>Suite 2900<br>Chicago, IL 60605               | 312-235-0320 | Clearing, Floor Broker, Transact<br>Business with the Public                      |
| XR Securities LLC                      | 1/15/2009         | 11/15/2010        | 5/10/2012          | 5/10/2012          | 11/30/2007          | NA                | Member<br>TPH            | 550 W Jackson Boulevard<br>Suite 1000<br>Chicago, IL 60661            | 312-244-4712 | Market Maker, Proprietary Trading   |