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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

SCHEDULE 14A

Proxy Statement Pursuant to Section 14(a) of
the Securities Exchange Act of 1934 (Amendment No.)

Filed by the Registrant

Filed by a Party other than the Registrant

Check the appropriate box:

- Preliminary Proxy Statement
- Confidential, for Use of the Commission Only (as permitted by Rule 14a-6(e)(2))**
- Definitive Proxy Statement
- Definitive Additional Materials
- Soliciting Material under §240.14a-12

Axcelis Technologies, Inc.

(Name of Registrant as Specified In Its Charter)

(Name of Person(s) Filing Proxy Statement, if other than the Registrant)

Payment of Filing Fee (Check the appropriate box):

- No fee required.
 - Fee computed on table below per Exchange Act Rules 14a-6(i)(1) and 0-11.
 - (1) Title of each class of securities to which transaction applies:

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 - (3) Per unit price or other underlying value of transaction computed pursuant to Exchange Act Rule 0-11 (set forth the amount on which the filing fee is calculated and state how it was determined):

 - (4) Proposed maximum aggregate value of transaction:

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 - Fee paid previously with preliminary materials.
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 - (2) Form, Schedule or Registration Statement No.:

 - (3) Filing Party:

 - (4) Date Filed:

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**NOTICE OF ANNUAL MEETING OF STOCKHOLDERS
to be Held May 16, 2017**

The 2017 annual meeting of the stockholders of Axcelis Technologies, Inc., a Delaware corporation, will be held at the offices of Locke Lord LLP, 111 Huntington Avenue, Boston, Massachusetts, at 12:30 p.m. on Tuesday, May 16, 2017 for the following purposes:

1. To elect as directors eight nominees to serve until the 2018 annual meeting of stockholders, with the Axcelis Board of Directors' recommended director candidates named in the attached proxy statement.
2. To ratify, by an advisory vote, the appointment of our independent registered public accounting firm to audit our financial statements for the year ending December 31, 2017.
3. To approve an amendment to the 2012 Equity Incentive Plan to increase the number of shares reserved for issuance thereunder, and to reapprove the material terms of the performance goals under the plan for the purposes of Internal Revenue Code Section 162(m).
4. To approve, by an advisory vote, the 2016 compensation of our named executive officers.
5. To recommend to the Board of Directors, by an advisory vote, the frequency of future stockholder votes to approve executive compensation.
6. To transact such other business as may properly come before the meeting or any adjournment thereof.

These business items are described more fully in the Proxy Statement accompanying this Notice.

Only stockholders of record at the close of business on March 22, 2017 will be entitled to vote at the annual meeting or at any adjournment.

By order of the Board of Directors,

Dated: March 29, 2017

Lynnette C. Fallon, *Secretary*

A map showing the offices of Locke Lord LLP at 111 Huntington Avenue, Boston, Massachusetts, can be found at www.lockelord.com, under the Firm/Offices tab.

Stockholders should bring identification and, after checking in with the Security Desk in the building lobby, present themselves at the office's main reception on the 9th floor.

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GENERAL INFORMATION ABOUT VOTING

The Board of Directors of Axcelis Technologies, Inc. ("Axcelis" or the "Company") is soliciting your proxy for use at the 2017 annual meeting of stockholders to be held on Tuesday, May 16, 2017 and at any adjournment of the meeting. This proxy statement and the accompanying proxy card are first being sent or given to stockholders of Axcelis on or about March 29, 2017. The meeting will be held at the offices of Locke Lord LLP, 111 Huntington Avenue, Boston, Massachusetts. A map showing these offices can be found at www.lockelord.com, under the Firm/Offices tab. Stockholders should bring identification and, after checking in with the Security Desk in the building lobby, present themselves at the office's main reception on the 9th floor.

Important Notice Regarding the Availability of Proxy Materials for the Stockholder Meeting to Be Held on May 16, 2017: This proxy statement and our Annual Report to Stockholders are available on our website at: www.axcelis.com/proxy.html.

Who can vote. You may vote your shares of Axcelis common stock at the annual meeting if you were a stockholder of record at the close of business on March 22, 2017. On that date, there were 29,932,286 shares of common stock outstanding. You are entitled to one vote for each share of common stock that you held on the record date.

How to vote your shares. You may vote either by proxy or by attending the meeting and voting in person. To vote by proxy, either (A) complete, sign, date and mail the proxy card or voting instruction form or (B) follow the instructions on the card or form for voting online or by telephone. If your shares are held by a nominee (e.g., a bank or broker), you must request a legal proxy from your nominee as proof of ownership in order to vote in person at the meeting.

The proxies named in the proxy card will vote your shares as you have instructed. If you sign and return the proxy card without indicating how your votes should be cast, the proxies will vote your shares in favor of each proposal, as recommended by our Board of Directors. Even if you plan to attend the meeting, please vote by mail, telephone or online as instructed on the proxy card or voting instruction form to ensure that your shares are represented at the meeting. If you attend the meeting, you can still revoke your proxy by voting in person. If your shares are held in a brokerage or bank account, you must make arrangements with your broker or bank to vote your shares in person.

Proposals to be considered at the annual meeting. The principal business expected to be transacted at the meeting, as more fully described below, will be the re-election of eight directors whose current terms end in 2017, an advisory vote to ratify the selection of independent auditors of the Company, the approval of an amendment to the 2012 Equity Incentive Plan (including the reapproval of the material terms of the performance goals under the plan for the purposes of Internal Revenue Code Section 162(m)), an advisory vote on our 2016 executive compensation, and an advisory vote regarding the frequency of stockholder votes to approve executive compensation.

Quorum. A quorum of stockholders is required to transact business at the meeting. A majority of the outstanding shares of common stock entitled to vote, represented at the meeting in person or by proxy, constitutes a quorum for the transaction of business.

Number of votes required and the Axcelis Board of Directors' recommendation. The votes required to approve the proposals that are scheduled to be presented at the meeting and the recommendation of Axcelis' Board of Directors on each are as follows:

Proposal	Required Vote	Axcelis Board Recommendation
Election of eight nominees as directors.	Each nominee must receive a plurality of the votes cast.	FOR ALL of the Axcelis Board-recommended nominees named in this proxy statement and on the proxy card
Ratification of the appointment of our independent registered public accounting firm (our "independent auditors") to audit our financial statements for 2017.	This non-binding proposal will be considered approved if more votes are cast in favor than against.	FOR ratification
Approval of the proposed amendment to the 2012 Equity Incentive Plan and reapproval of the material terms of the performance goals under the plan for the purposes of IRC 162(m)	The amendment will be considered approved if more votes are cast in favor than against.	FOR approval
Approval of the compensation of our named executive officers as described under "Executive Compensation" in this proxy statement.	This non-binding proposal will be considered approved if more votes are cast in favor than against.	FOR approval
To recommend whether future stockholder votes on the compensation of our named executive officers should be held every one, two or three years.	The choice that receives a plurality of the votes cast will be considered the stockholders' recommendation, although it will not be binding on our Board of Directors.	FOR a frequency of every year

Abstentions. Abstaining from voting on any of the proposals will reduce the number of votes cast as well as the number of votes in favor so will have no impact on the results of voting.

Broker non-votes. A broker non-vote occurs when a broker cannot vote a customer's shares registered in the broker's name because the customer did not send the broker instructions on how to vote on the matter and the broker is barred by law or stock exchange regulations

from exercising its discretionary voting authority in the particular matter. Brokers will have voting discretion for shares registered in their own name on the proposal to ratify the appointment of our independent auditors, but not in the election of directors or the other proposals. Broker non-votes will not be included in the votes cast, so will have no impact on the results of voting with respect to the election of directors and the other proposals.

If your shares are held in a stock brokerage account or by a bank or other nominee. You are considered the beneficial owner of shares held in a brokerage or bank account, and these proxy materials are being forwarded to you by your broker, bank, or other nominee, which is considered the stockholder of record with respect to those shares. As a beneficial owner, you have the right to direct your broker, bank, or other nominee on how to vote the shares in your account. **Your broker, bank, or other nominee will only be able to vote your shares with respect to the proposals at the annual meeting (other than the ratification of the auditor appointment) if you have instructed them how to vote.** Your broker, bank, or other nominee has enclosed a voting instruction form for you to use to direct the broker, bank, or other nominee regarding how to vote your shares. Please instruct your broker, bank, or other nominee how to vote your shares using the voting instruction form. Please return your completed proxy card or voting instruction form to your broker, bank or other nominee and contact the person responsible for your account so that your vote can be counted. If your broker, bank, or other nominee permits you to provide voting instructions via the Internet or by telephone, you may vote that way as well.

Discretionary voting by proxies on other matters. Aside from the proposals for the election of directors, the ratification of our selection of auditors, the approval of an amendment to the 2012 Equity Incentive Plan, the advisory vote on 2016 executive compensation, and the advisory vote on the frequency of votes on executive compensation, we do not know of any other proposals that may be presented at the 2017 annual meeting. If another matter is properly presented for consideration at the meeting, the persons named in the accompanying proxy card will exercise their discretion in voting on the matter.

How you may revoke your proxy. You may revoke the authority granted by your executed proxy card at any time before we exercise it by filing with our Corporate Secretary, Lynnette C. Fallon, a written revocation or a duly executed proxy card bearing a later date, or by voting in person at the meeting. If your shares are held in a brokerage account, you must make arrangements with your broker or bank to revoke your proxy.

Expenses of solicitation. We will bear all costs of soliciting proxies. We will upon request reimburse brokers, custodians and fiduciaries for out-of-pocket expenses incurred in forwarding proxy solicitation materials to the beneficial owners of stock held in their names. In addition to solicitations by mail, our directors, officers and employees may solicit proxies from stockholders in person or by other means of communication, including telephone, facsimile and e-mail, without additional remuneration.

Householding of Annual Meeting Materials. Some banks, brokers and other nominee record holders may be "householding" our proxy statements and annual reports. This means that only one copy of our proxy statement and annual report to stockholders may have been sent to multiple stockholders in your household. We will promptly deliver a separate copy of either document to you if you call or write us at the following address or telephone number: Axcelis

Technologies, Inc., 108 Cherry Hill Drive, Beverly, Massachusetts 01915, Attn: Corporate Secretary, telephone: (978) 787-4000. If you want to receive separate copies of the proxy statement or annual report to stockholders in the future, or if you are receiving multiple copies and would like to receive only one copy per household, you should contact your bank, broker, or other nominee record holder, or you may contact us at the above address and telephone number. Our annual report is also available on our website at www.axcelis.com.

SHARE OWNERSHIP OF 5% STOCKHOLDERS

The following table shows the amount of our common stock beneficially owned as of December 31, 2016 by persons known by us to own more than 5% of our common stock.

Beneficial Owner (1)	Shares Owned	Percent of Class
PRIMECAP Management Company (2) 225 South Lake Ave., #400, Pasadena, CA 91101	3,478,393	11.8%
Donald Smith & Co., Inc. (3) 152 West 57th Street, New York, NY 10019	2,804,540	9.5%
Senvest Management, LLC and Richard Mashaal (4) 540 Madison Avenue, 32 nd Floor, New York, NY 10022	2,798,907	9.5%
BlackRock Inc. (5) 55 East 52 nd Street, New York, NY 10055	1,902,772	6.4%
Dimensional Fund Advisors LP (6) 6300 Bee Cove Road, Austin, TX 78746	1,602,993	5.4%

- (1) Unless otherwise noted, the number of shares beneficially owned by each person listed includes any shares over which a person has sole or shared voting or investment power. The percentage ownership of each person listed in the table was calculated using the total number of shares outstanding on December 31, 2016 (29,518,452 shares).
- (2) Based on a Schedule 13G/A filed with the Securities and Exchange Commission (the "SEC") in February 2017 reporting on ownership as of December 31, 2016. This filing states that PRIMECAP Management Company is a registered investment adviser. According to the Schedule 13G, PRIMECAP Management Company has sole voting power over 2,896,793 shares and sole dispositive power over all of the shares reported in the table.
- (3) Based on a Schedule 13G filed with the SEC in February 2017 reporting on ownership as of December 31, 2016, which states that such shares are owned by advisory clients of Donald Smith & Co., Inc., a registered investment adviser. According to the Schedule 13G, Donald Smith & Co., Inc. has sole voting power over 2,532,690 of such shares and the sole power to dispose of all of such shares. According to the Schedule 13G, Donald Smith Value Fund, L.P., Donald Smith Long/Short Equities Fund, L.P. and Velin Mezinev each have sole dispositive power over all the shares reported in the table and sole voting power over 71,900, 11,500, and 12,050 of such shares, respectively.
- (4) Based on a Schedule 13G filed with the SEC in February 2017 reporting on ownership as of December 31, 2016. This filing reports on beneficial ownership of Senvest Management, LLC ("Senvest") and Richard Mashaal, the managing member of Senvest. It states that the shares are owned by two funds managed by Senvest, and that both Senvest and Mr. Mashaal have shared voting and shared dispositive power over all the shares reported in the table.
- (5) Based on a Schedule 13G/A filed with the SEC in January 2017 reporting on ownership as of December 31, 2016. This filing states that BlackRock, Inc. is a holding company whose investment management subsidiaries acquired the shares reported. According to the Schedule 13G/A, BlackRock, Inc. has sole voting power over 1,861,568 shares and sole dispositive power of all the shares reported in the table.
- (6) Based on a Schedule 13G filed with the SEC in February 2017 reporting on ownership as of December 31, 2016. This filing states that Dimensional Fund Advisors LP is a registered investment adviser. According to the Schedule 13G, Dimensional Fund Advisors LP has sole voting power over 1,519,834 shares and sole dispositive power over all of the shares reported in the table.

SHARE OWNERSHIP OF DIRECTORS AND EXECUTIVE OFFICERS

The following table shows the amount of our common stock beneficially owned as of March 22, 2017 (the record date for the 2017 annual meeting) by our directors, the executive officers named in the *Executive Compensation—Summary Compensation Table* below, and all of our current executive officers and directors as a group.

Beneficial Owner (1)	Shares Owned as of March 22, 2017	Shares Subject to Exercisable Rights to Acquire as of May 21, 2017 (4)	Total Shares Beneficially Owned	Percent of Class
Non-Executive Directors				
Richard J. Faubert	14,449	2,813	17,262	*
R. John Fletcher	36,433	65,000	101,433	*
Arthur L. George, Jr.	27,262	10,000	37,262	*
Joseph P. Keithley	21,637	40,000	61,637	*
John T. Kurtzweil	16,949	2,813	19,762	*
Patrick H. Nettles	27,558	65,000	92,558	*
Thomas St. Dennis	14,449	2,813	17,262	*
Named Executive Officers				
Mary G. Puma (2)	124,086	464,063	588,149	1.93%
Kevin J. Brewer	25,689	191,484	217,173	*
William Bintz	22,712	188,231	210,943	*
John E. Aldeborgh	7,338	189,489	196,827	*
Lynnette C. Fallon	25,400	158,679	184,079	*
All current Executive Officers and Directors as a Group (14 persons) (3)	375,568	1,398,829	1,774,398	5.66%

* Indicates less than 1%.

(1) Unless otherwise noted, the number of shares beneficially owned by each person listed includes any shares over which the person has sole or shared voting or investment power. In accordance with the rules of the Securities and Exchange Commission, the shares shown in the table also include shares that the persons named in this table have the right to acquire on or before May 21, 2017 (60 days after March 22, 2017) by exercising a stock option or other right. Unless otherwise noted, to the knowledge of the Company based on information provided to the Company or filed with the Securities and Exchange Commission, each person has sole investment and voting power (or shares that power with his or her spouse) over the shares listed in the table. The percentage ownership of each person listed in the table was calculated using the total number of shares outstanding on March 22, 2017 (29,932,286 shares), plus any shares that person could acquire upon the exercise of any options or other rights on or before May 21, 2017. None of the shares owned or rights to acquire shares are held in a margin account or subject to a pledge.

(2) Ms. Puma's ownership includes 5,000 shares owned by her husband.

- (3) Includes shares owned and shares issuable on restricted stock units and options vesting on or before May 21, 2017 which are held by the directors and current named executive officers and one other executive officer holding 11,606 shares (including 3,125 held by the officer's spouse).
- (4) The shares subject to exercisable rights to acquire as of May 21, 2017 include, for the executive officers, shares issuable on restricted stock units vesting in May 2017, assuming continuation of employment. A portion of these vesting shares will be withheld to cover payroll taxes on the value of the vesting shares, which have not been subtracted from the amounts in this table.

STOCKHOLDER ENGAGEMENT

2016 Annual Meeting Vote Results

At our 2016 annual meeting, 97% of votes cast were FOR approval of the advisory vote on the Company's 2015 executive compensation (commonly referred to as "Say-on-Pay"). This was consistent with the approval of the Say-on-Pay vote regarding the Company's 2014 executive compensation. In addition, in 2016, the average vote in favor of the election of our Board nominees was 98%, consistent with the vote in 2015.

We believe that these voting results reflect our improving financial performance and our Board refreshment initiative. We have also worked to ensure that we align with best practices in corporate governance, and that our executive compensation programs are consistent with peers and other benchmarks.

2016 Stockholder Outreach

We rely on our regular disclosure documents and routine investor relations to ensure that our stockholders understand our performance, our potential, our governance policies and compensation practices.

Routine Investor Relations. We routinely engage with our stockholders to discuss our business, performance, and strategy. These discussions sometimes also cover Board composition, governance policies and executive compensation. Our investor relations program includes press releases on product shipments, earnings, and other material matters; quarterly earnings conference calls; participation in industry conferences arranged by investment banks; non-deal roadshows arranged by investment analysts and others supporting our stock; one-on-one meetings in connection with conferences, roadshows or otherwise; and routine phone and email conversations with stockholders.

During 2016, in addition to our routine quarterly earnings calls and follow up meetings, Axcelis presented and held one-on-one meetings at seven investor conferences, held in New York City, San Francisco, Los Angeles, Boston and Minneapolis. We also conducted three "non-deal" roadshows with two different equity analysts, visiting a total of 25 investment firms in New York, San Francisco, San Diego, Portland, St. Louis and Detroit. Additionally, during 2016, Axcelis held a technology seminar for equity analysts to educate them on future uses for ion implant technology and advantages of the Axcelis Purion ion implanters. In October 2016, we also hosted a well-attended investor day event at Nasdaq in New York City, where the full executive team, along with our Chairman and one of our other Board members, were made available to investors.

Addressing Stockholder Concerns. In our discussions with our investors and analysts, it is clear that our stockholders are primarily interested in our financial performance. Board refreshment, governance policies and executive compensation are also important. Below we summarize our position on these key issues during 2016:

- **Expanded Purion Customer Base.** During 2016, our customer base for Purion ion implanters expanded significantly, and we successfully introduced several new product extensions to our core Purion systems. In 2016, the Company placed Purion ion

implanters with seven new customers, and in seven new fabs owned by existing customers.

- *Improved Gross Margin Performance.* The Company's gross margins for 2016 were 37.3%, up from 33.7% in 2015. We believe that the most fundamental interest of our stockholders is in consistent, profitable, financial performance.
- *Commitment to Governance Best Practices.* We continue to monitor best practices in corporate governance, and make changes to our policies and practices where appropriate. Key governance policies are outlined below under "*Corporate Governance—Governance Policies.*"
- *Benchmarked Compensation Programs.* In 2016, our Compensation Committee engaged Pearl Meyer & Partners, an independent compensation consultant ("Pearl Meyer"), to develop a revised peer group and to assess the alignment of our executive compensation with this revised peer group and our performance. No changes were made in 2016 to the independent director compensation terms we set in 2015 following Pearl Meyer's benchmarking. See "*Proposal 1: Election of Directors—Compensation of Directors,*" and "*Executive Compensation—2016 Compensation Discussion and Analysis*" below.

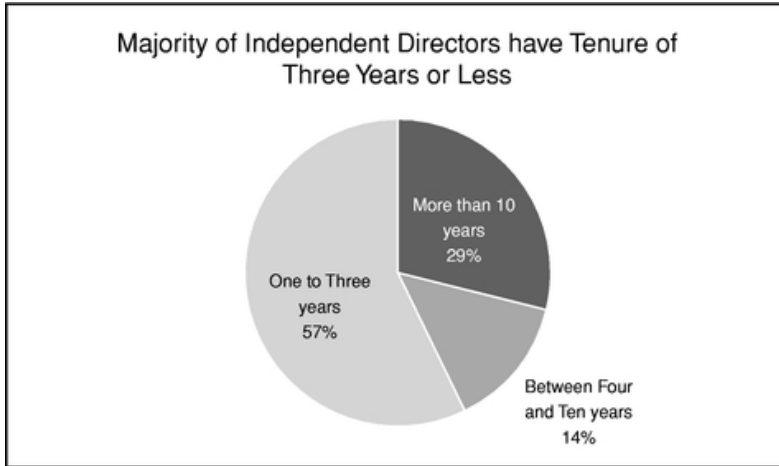
Outcome of Outreach Efforts. We found both our direct interaction with investors and third party input extremely informative and valuable, and we are very appreciative of the time that our investors took to speak with us.

PROPOSAL 1: ELECTION OF DIRECTORS

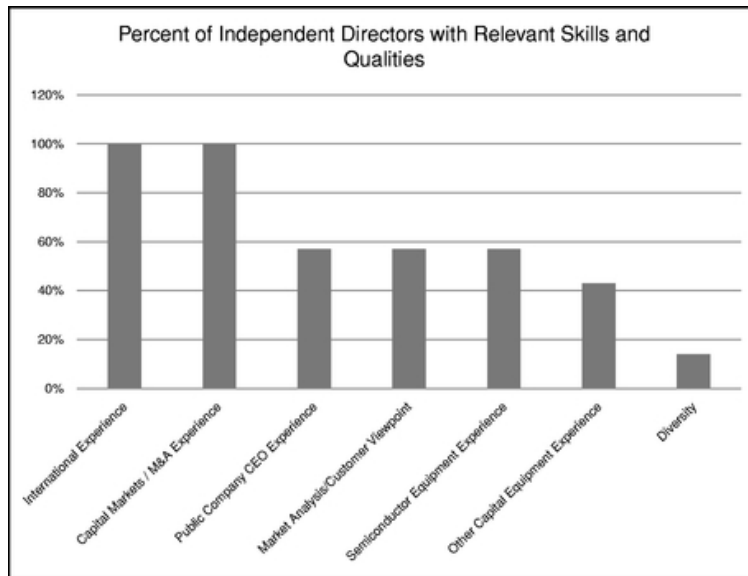
Our Board of Directors has fixed the number of directors at eight effective as of the 2017 annual meeting. The number of directors is subject to increase or decrease by action of the Board. Our Board of Directors is nominating all of the current directors for re-election at the 2017 annual meeting. Each director and nominee will, if elected, hold office for a term of one year until our annual meeting in 2018 and until the director's successor is elected and qualified. Each of the Board's nominees has consented to serve if elected. However, if any nominee is unable to serve, proxies will be voted for any other candidate nominated by the Board.

The Board recommends a vote FOR each of the eight Axcelis nominees. These nominees represent a balance of long tenured and newer directors with a strong mix of relevant experience. Axcelis' Nominating and Governance Committee and Board have evaluated each of the Axcelis nominees against the factors and principles Axcelis uses to select nominees for director. Based on this evaluation, our Nominating and Governance Committee and Board have concluded that it is in the best interests of Axcelis and its stockholders for each of the proposed nominees listed below to serve as a director of Axcelis.

The average tenure of the seven Axcelis independent director nominees is six years:



Our independent nominees bring a strong mix of relevant experience:



The following table contains biographical information about the nominees for election and the specific experience, qualifications, attributes or skills of the nominees that led to the conclusion that each of these individuals should serve as a director of the Company, in light of our business and structure:

2017 NOMINEES FOR ELECTION TO THE BOARD OF DIRECTORS

Richard J. Faubert: director since 2015, age 69

Business Experience and Other Directorships

Richard J. Faubert retired in 2010 as President, Chief Executive Officer and Chairman of AmberWave Systems Corporation, a semiconductor technology company, where he had served from 2003. From 1998 through 2002, Mr. Faubert served as President, Chief Executive Officer and Director of SpeedFam-IPEC, Inc., a manufacturer of semiconductor equipment. Upon the sale of SpeedFam-IPEC to Novellus Systems, Inc., a supplier of deposition, thermal processing and surface preparation equipment used in the manufacturing of semiconductors, Mr. Faubert served as Executive Vice President of Novellus Systems until April 2003. Prior to his employment with SpeedFam-IPEC, Mr. Faubert held executive and management positions at Tektronix, Inc., a test, measurement, and monitoring company, and GenRad, Inc., an electronics testing and manufacturing company. Mr. Faubert has served on the Board of Directors of Electro Scientific Industries, Inc., a provider of laser-based manufacturing solutions for the microtechnology industry, from 2003 to 2015. Mr. Faubert previously served on the Board of Directors of RadiSys Corporation, a provider of wireless infrastructure solutions for telecom, aerospace, and defense applications, from 1993 until 2012. Mr. Faubert also served on the North American Advisory Board of SEMI, a global industry association serving the manufacturing supply chain for the micro- and nano-electronics industries, from 2001 to 2011.

Experience, Qualifications and Attributes

Mr. Faubert's qualifications to serve as a director include his extensive technology leadership experience in the semiconductor-capital equipment industry. He also brings significant manufacturing, engineering, research and development, business and operations experience in a high technology environment. Mr. Faubert has served on the Nominating and Governance Committee and the Technology Committee since his election to the Board in 2015. The Board highly values his contributions in these roles.

R. John Fletcher: director since 2003, age 71

Business Experience and Other Directorships

Mr. Fletcher is Chief Executive Officer of Fletcher Spaght, Inc., a strategy consulting organization, which he founded in 1983, and Managing Director of Fletcher Spaght Ventures, a venture capital fund. Prior to founding Fletcher Spaght, Inc., Mr. Fletcher was a Manager at the Boston Consulting Group. Mr. Fletcher is also a director of The Spectranetics Corporation, a manufacturer of single-use medical devices used in cardiovascular procedures. During the past five years, he was also a director of AutoImmune, Inc. and Marina Biotech, Inc.

Experience, Qualifications and Attributes

Mr. Fletcher's extensive work experience in strategic planning, especially in the area of market analysis for technology-based businesses, has been beneficial to the Board's understanding of the Company's business opportunities. Mr. Fletcher's work also provides him with insight into capital formation matters which may be beneficial in the future. Mr. Fletcher has served on the Compensation Committee since 2006 (and as Committee Chairman since 2015), on the Audit Committee from 2004 to 2014 and again beginning in February 2017. Mr. Fletcher also served on the Technology Committee from 2014 until February 2017. The Board highly values his contributions in these roles.

Arthur L. George, Jr.: director since 2014, age 55

Business Experience and Other Directorships

Mr. George retired in 2014 after a 30-year career at Texas Instruments, one of the world's largest semiconductor companies and a highly innovative, high performing global leader in analog, embedded processing and wireless technologies. Mr. George's career began in 1984 as a test engineer in TI's Logic Operations, and he most recently served as Senior Vice President and Manager of TI's Analog Engineering Operations, a position he held from 2010. Prior to that, beginning in 2006, Mr. George served as Senior Vice President and General Manager of TI's High Performance Analog business unit. Mr. George also serves on the Board of Directors of Nordson Corporation, a manufacturer of precision dispensing equipment for applying industrial liquid and powder coatings, adhesives, and sealants.

Experience, Qualifications and Attributes

Mr. George brings to the Board significant executive general management experience as well as extensive operational and new product development experiences in high technology markets. Mr. George's experience with Texas Instruments' high performance analog products used in a wide range of industrial products gives him insight into the semiconductor and semiconductor capital equipment industries and affords the Board a unique perspective in identifying strategic opportunities and tactical risks attendant to the semiconductor electronics market. Mr. George has served on the Compensation Committee and the Technology Committee since 2014. The Board highly values his contributions in these roles.

Joseph P. Keithley: director since 2011, age 68

Business Experience and Other Directorships

Mr. Keithley is Non-Executive Chairman of the Board of Nordson Corporation, a position he has held since 2010. Nordson Corporation manufactures precision dispensing equipment for applying industrial liquid and powder coatings, adhesives, and sealants. Mr. Keithley served as Chairman of the Board of Keithley Instruments, Inc., a provider of measurement solutions to the semiconductor, fiber optics, telecommunications and electronics industries from 1991 to 2010. He also served as Keithley Instruments, Inc.'s Chief Executive Officer from 1993 to 2010 and as President from 1994 to 2010. Mr. Keithley also currently serves as a director of Materion, Inc., an integrated producer of high performance specialty engineered materials used in a variety of electrical, electronic, thermal and structural applications.

Experience, Qualifications and Attributes

Mr. Keithley brings extensive, broad-based international business and executive management and leadership experience from his leadership roles at Keithley Instruments, Inc. to his role as a member of our Board of Directors. Among other things, Mr. Keithley draws upon his extensive knowledge in the global semiconductor and electronics industries garnered while leading Keithley Instruments, Inc. Mr. Keithley also has extensive public company board and governance experience. Mr. Keithley has served as a member of the Audit Committee since joining the Board in 2011 and the Board has benefited from his continuing service on that committee. In addition, Mr. Keithley served as a member of the Technology Committee until 2015, at which time he joined the Nominating and Governance Committee as chair. The Board highly values his contributions in these roles.

John T. Kurtzweil: director since 2015, age 60

Business Experience and Other Directorships

Mr. Kurtzweil was VP Finance of Cree, Inc. and Chief Financial Officer of Wolfspeed, a Cree Company, from 2015 until March 2017. He is currently providing consulting services to a number of businesses. Prior to his employment at Cree, Mr. Kurtzweil was an independent consultant beginning in 2014. From 2012 until 2014, Mr. Kurtzweil served as Senior Vice President, Chief Financial Officer and Special Advisor to the CEO of Extreme Networks, Inc., a provider of high-performance, open networking innovations for enterprises, services providers, and Internet exchanges, and also served as its Chief Accounting Officer. From 2006 to 2012, Mr. Kurtzweil served as Executive Vice President, Finance and as Chief Financial Officer and Treasurer of Cree, Inc. From 2004 to 2006, Mr. Kurtzweil was Senior Vice President and Chief Financial Officer at Cirrus Logic, Inc., a fabless semiconductor company. Mr. Kurtzweil also currently serves as a director of Akoustis Technologies, Inc., a provider of acoustic wave filters for the mobile-wireless market using single crystal piezoelectric materials. Mr. Kurtzweil served as a Board member for Meru Networks, Inc. for a portion of 2015.

Experience, Qualifications and Attributes

Mr. Kurtzweil brings to the Board significant senior executive leadership experience, including nineteen years as chief financial officer of publicly traded technology companies and placing an aggregate of \$1.9 billion in equity and debt instruments. His technology industry experience includes several M&A transactions and when combined with his treasury experience, gives him a valuable perspective as a director. His qualifications to serve as a director also include that he is a certified public accountant and certified management accountant, his financial market experience, training through the Stanford Directors College, active membership with National Association of Corporate Directors and his qualifications as an audit committee financial expert. Mr. Kurtzweil has served on the Audit Committee and Compensation Committee since his election to the Board in 2015, and was appointed Chairman of the Audit Committee in February 2017. The Board highly values his contributions in these roles.

Patrick H. Nettles: director since 2001, age 73

Business Experience and Other Directorships

Mr. Nettles has served as the non-executive Chairman of the Axcelis Board of Directors since 2015. He also has served as the Executive Chairman of the Board of Directors of CIENA Corporation, a manufacturer of optical networking equipment since 2001, having joined the CIENA Board in 1994. Prior to that, Mr. Nettles served as Chief Executive Officer of CIENA from 1994 to 2001, holding the President title from 1994 to 2000. Mr. Nettles is also a director of The Progressive Corporation, an insurance holding company whose subsidiaries and affiliates provide personal and commercial automobile and property insurance, other specialty property-casualty insurance and related services.

Experience, Qualifications and Attributes

Mr. Nettles' work experience as a chief executive officer and chief financial officer of a global capital equipment business gives him the skills to provide leadership and guidance to management and the other Board members in respect to the financial and operational matters affecting Axcelis. Mr. Nettles has also had meaningful experience in corporate transactions, especially in the area of mergers and acquisitions, which has been helpful to management and the other Board members in recent years and may be beneficial in the future. In addition to serving as Axcelis' Chairman of the Board of Directors, Mr. Nettles has served as Chairman of the Nominating and Governance Committee from 2002 to 2015 and the Board has benefited from his strong leadership in that area. Mr. Nettles also served as a member of the Audit Committee during a portion of 2011 and 2012. In addition, Mr. Nettles serves as Chairman of the Technology Committee. The Board highly values his contributions in these roles.

Mary G. Puma: director since 2000, age 59

Business Experience and Other Directorships

Ms. Puma is Axcelis' Chief Executive Officer (since 2002) and President (since 2000). Ms. Puma also served as Chairman of the Board from 2005 to the 2015 annual meeting. Prior to becoming Chief Executive Officer, Ms. Puma served as Chief Operating Officer from 2000. In 1998, she became General Manager and Vice President of the Company's predecessor, the Implant Systems Division of Eaton Corporation, a global diversified industrial manufacturer. In 1996, she joined Eaton as General Manager of the Commercial Controls Division. Prior to joining Eaton, Ms. Puma spent 15 years in various marketing and general management positions for General Electric Company. Ms. Puma is also a director of Nordson Corporation, a manufacturer of precision dispensing equipment for applying industrial liquid and powder coatings, adhesives, and sealants. She also serves as a director of Semiconductor Equipment and Materials International (SEMI), a trade association.

Experience, Qualifications and Attributes

Ms. Puma's long experience in our industry, as well as her role as Axcelis' Chief Executive Officer and President allow her to provide essential insight into the Company's past and current business operations which is critical to the Board's decision-making in all financial and operational matters affecting Axcelis. Ms. Puma's strong leadership during challenging periods of the Company's history, notably her oversight of a complete revitalization of the Company's product lines while implementing substantial cost reductions, have been highly valued by the Board.

Thomas St. Dennis: director since 2015, age 63

Business Experience and Other Directorships

Thomas St. Dennis is the non-executive Chairman of FormFactor, Inc., a leading provider of semiconductor wafer test technologies and expertise. Prior to this, Mr. St. Dennis was the Executive Chairman of FormFactor, from 2013 to February 2016, and served as FormFactor's Chief Executive Officer from 2010 to 2014. Mr. St. Dennis has held various positions at Applied Materials, Inc., a semiconductor equipment manufacturer, from 1992 to 1999 and again from 2005 to 2009. His most recent role at Applied Materials was as Senior Vice President and General Manager of the Silicon Systems Group. From 2003 to 2005, Mr. St. Dennis was Executive Vice President of Sales and Marketing at Novellus Systems, Inc., a supplier of deposition, thermal processing and surface preparation equipment used in the manufacturing of semiconductors. Novellus was acquired by Lam Research Corporation in 2012. Mr. St. Dennis currently serves on the boards of directors of FormFactor and Veeco Instruments Inc., a company that designs, manufactures and markets thin film equipment for semiconductor processing applications. Mr. St. Dennis previously served as a director of Mattson Technology, Inc., a supplier of dry strip and rapid thermal processing equipment to the semiconductor industry from 2013 to May 2016, when Mattson was acquired.

Experience, Qualifications and Attributes

Mr. St. Dennis's prior experience in the semiconductor industry as well as his extensive international business background will make him an effective advisor to the Board regarding strategic and marketing issues. His experience and skills are highly valued by our Board. Mr. St. Dennis has served on the Nominating and Governance Committee and the Technology Committee since his election to the Board in 2015. The Board highly values his contributions in these roles.

BOARD OF DIRECTORS

Board of Directors Independence and Meetings

The Board of Directors has determined that, other than Ms. Puma, all directors who served on the Board during 2016, who are nominated for re-election in 2017, are independent under the criteria established by Nasdaq, and that the members of the Audit Committee also meet the additional independence requirements of the SEC. None of the directors, to the Company's knowledge, had any business, financial, family or other type of relationship in 2016 with the Company or its management (other than as a director and stockholder of the Company), except for any relationships that the Board considered to be immaterial under the Nasdaq independence standards.

In determining that each such director is independent, the Board considers whether Axcelis purchases and sells products and services from and to companies (or their affiliates) at which directors are or have been employed as officers or serve as directors. In 2016, Mr. Kurtzweil served as a vice president of Cree, Inc., a customer of the Company. The Company's transactions with Cree, Inc. are carried on in an arms-length commercial relationship, and there is no reason to conclude that the relationship interfered with the exercise of Mr. Kurtzweil's independent judgment in carrying out the responsibilities of a director. The amount received from Cree, Inc. by the Company in any of the past three fiscal years was below the total revenue threshold in the Nasdaq independence standards (that is, the greater of \$200,000 or 5% of Axcelis' consolidated gross annual revenues). Accordingly, this relationship was not determined by the Board to impair the independence of Mr. Kurtzweil. See also "*Corporate Governance—Certain Relationships and Related Transactions—2016 Related Party Disclosures.*"

The Board also determined that the members of the Audit and Compensation Committees meet additional independence requirements under Securities and Exchange Commission ("SEC") rules, Internal Revenue Code ("IRC") rules and additional Nasdaq rules.

Our Board of Directors held five meetings during 2016, and acted once by unanimous written consent. Independent directors have regularly scheduled executive sessions at which only independent directors are present. The rate of attendance at 2016 Board meetings, and of those committees of which a director is a member, was 96.1%. All Board members are expected to attend the annual meeting of stockholders, subject to special circumstances. All current Board members attended the annual meeting in 2016.

Board of Directors Leadership Structure

Mr. Nettles has been Chairman of the Board of Directors since May 2015. Mr. Nettles is an Independent Director (as defined in the listing standards for the Nasdaq Stock Market), as required for the Chairman position by our Governance Guidelines. Our Governance Guidelines enumerate the responsibilities of the Chairman. We believe this leadership structure serves the Company and our stockholders well by providing independent leadership of the Board of Directors. However, the Board could modify our Governance Guidelines in the future to permit a non-independent Chairman, if they felt that was in the best interests of our stockholders. In that case, our policy has been to have an independent Lead Director who assumes the primary duties of the Chairman of the Board.

Chairman's Responsibility for an Annual Evaluation of the CEO

A critical responsibility of the Chairman of the Board under the Company's Governance Guidelines is to lead the Board in conducting an annual evaluation of the Chief Executive Officer (the "CEO"). The process for the annual CEO evaluation may be modified from time to time by the Nominating and Governance Committee with the consent of the Chairman, but currently involves the following steps:

- Prior to the last Board meeting of the fiscal year, the CEO submits a self-evaluation to the Chairman;
- The Chairman discusses the self-evaluation with the CEO and solicits input from other Directors at the last Board meeting of the fiscal year, and also in one-on-one conversations;
- The Chairman consolidates the CEO self-evaluation with Board feedback for report at the first Board meeting of the fiscal year; and
- The Chairman communicates the Board's evaluation to the Chief Executive Officer.

Our Governance Guidelines provide that the CEO evaluation should consider aspects of corporate performance, including progress against strategic goals and the capacity of the Company to achieve future goals. The evaluation should use a combination of objective and subjective criteria.

Compensation of Directors

The Nominating and Governance Committee has responsibility under its charter to review and recommend non-employee director compensation for adoption by the full Board.

2016 Director Cash Compensation. Board cash compensation in effect in 2016 was fixed in May 2015 by the Board of Directors on the recommendation of the Nominating and Governance Committee, following a benchmark study by Pearl Meyer. Beginning in July 2015, cash

compensation for non-employee directors has been based solely on retainers in accordance with the following schedule:

Annual Cash Retainers, paid quarterly in advance

Board Member Retainer	\$50,000
Independent Chairman Premium	\$20,000
Committee Chairmen Retainers	
Audit Committee Chairman	\$15,000
Compensation Committee Chairman	\$10,000
Nominating and Governance Committee Chairman	\$7,500
Technology Committee Chairman	\$7,500
Other Committee Member Retainers	
Audit Committee Member	\$10,000
Compensation Committee Member	\$7,500
Nominating and Governance Committee Member	\$5,000
Technology Committee Member	\$5,000

Non-employee directors also receive reimbursement of reasonable (coach-only airfare) and customary out-of-pocket expenses incurred in attending Board and committee meetings. Non-employee directors do not receive any Company-paid perquisites.

The Board of Directors may, from time to time, form committees in addition to the Audit, Compensation, Nominating and Governance and Technology Committees and set compensation for service on such additional committees.

2016 Equity Awards. On February 11, 2016, upon recommendation of the Nominating and Governance Committee and the Compensation Committee, the full Board of Directors approved the grant to each non-employee director, effective May 16, 2016, of restricted stock units ("RSUs") valued at \$84,000. The number of units was determined based on a 30-day average closing price of the Company's common stock over a period ending May 11, 2016. In accordance with this formula, each non-employee director received a restricted stock unit exercisable for 7,637 shares of common stock (adjusted for the June 30, 2016 reverse stock split). These RSU grants became fully vested on November 12, 2016 (180 days after the date of grant) as each director remained in service on that date. Long-term ownership of Company equity by directors is encouraged through the Company's director stock ownership guidelines, which are discussed below under "*Corporate Governance—Governance Policies.*"

The chart below shows compensation for all non-employee directors who served the Company during 2016:

Name	Fees earned or paid in cash (\$)	Stock awards (\$)(1)(2)(3)	Total (\$)
Richard J. Faubert	\$ 60,000	\$ 73,621	\$ 133,621
R. John Fletcher	\$ 65,000	\$ 73,621	\$ 138,621
Arthur L. George, Jr.	\$ 62,500	\$ 73,621	\$ 136,121
Joseph P. Keithley	\$ 67,500	\$ 73,621	\$ 141,121
John T. Kurtzweil	\$ 67,500	\$ 73,621	\$ 141,121
Barbara J. Lundberg	\$ 70,000	\$ 73,621	\$ 143,621
Patrick H. Nettles	\$ 85,000	\$ 73,621	\$ 158,621
Thomas St. Dennis	\$ 60,000	\$ 73,621	\$ 133,621

- (1) The amount shown represents the grant date fair value of the equity awards received by the director in 2016 determined in accordance with FASB ASC Topic 718, using the assumptions described in the Stock Award Plans and Stock Based Compensation Note to the Company's Financial Statements included in the 2016 Form 10-K filed with the SEC.
- (2) The stock awards reflect the grant date fair value of 7,637 RSUs (after adjustment for the reverse stock split effected June 30, 2016) to each of non-employee directors on May 16, 2016. These awards vested as to 100% of the RSUs on November 12, 2016. The only other stock awards held by non-employee directors at December 31, 2016 were 8,438 unvested RSUs held by each of Messrs. Faubert, Kurtzweil and St. Dennis, and 5,625 unvested RSUs held by each of Mr. George and Ms. Lundberg.
- (3) None of the non-employee directors received stock option grants in 2016. As of December 31, 2016, the non-employee directors in office held the following total stock options, all of which were fully vested and had exercise prices as set forth below (after adjustment for the reverse stock split effected June 30, 2016):

Name	Aggregate # of shares subject to outstanding options	Lowest and highest exercise price
R. John Fletcher	65,000	\$1.76/\$7.96
Arthur L. George, Jr.	10,000	\$7.20/\$7.20
Joseph P. Keithley	40,000	\$3.72/\$7.96
Barbara J. Lundberg	10,000	\$7.20/\$7.20
Patrick H. Nettles	65,000	\$1.76/\$7.96

BOARD COMMITTEES

Our Board has standing Audit, Compensation, Nominating and Governance, and Technology and Product Development committees, each of which has a Chairman and two or more additional members from among the independent directors. The current composition of each of these committees is set forth below:

Audit Committee	Compensation Committee	Nominating and Governance Committee	Technology and Product Development Committee
<ul style="list-style-type: none">• John T. Kurtzweil, Chairman• Joseph P. Keithley• R. John Fletcher	<ul style="list-style-type: none">• R. John Fletcher, Chairman• Patrick H. Nettles• Arthur L. George, Jr.• John T. Kurtzweil	<ul style="list-style-type: none">• Joseph P. Keithley, Chairman• Richard J. Faubert• Thomas St. Dennis	<ul style="list-style-type: none">• Patrick H. Nettles, Chairman• Richard J. Faubert• Arthur L. George, Jr.• Thomas St. Dennis

Committee membership is reviewed by the Board annually after each annual meeting. In January 2017, Barbara J. Lundberg, who served as a director of the Company beginning in 2014, died unexpectedly. As a result, changes to the composition of our Board committees were made in February 2017. At that time, Mr. Fletcher moved from the Technology and Product Development Committee to the Audit Committee, and Mr. Kurtzweil was appointed Chairman of the Audit Committee, as shown above.

Audit Committee

The Audit Committee operates under a written charter and is responsible for assisting the Board of Directors in monitoring and oversight of (1) the integrity of the Company's financial statements and its systems of internal accounting and financial controls and (2) the independence and performance of the Company's independent auditors and any internal auditors engaged by management or the Audit Committee. The Audit Committee has adopted procedures for the handling of complaints regarding accounting, internal controls and auditing matters which are described in our Ethics policy. The Audit Committee's charter and the Company's Ethics policy are both available on our website at www.axcelis.com. During 2016, the Audit Committee consisted of Ms. Lundberg (Chairman), Mr. Keithley and Mr. Kurtzweil.

The Board of Directors determined that each of Messrs. Keithley, Kurtzweil and Fletcher, and Ms. Lundberg, were audit committee financial experts as defined by the SEC. The Board's conclusions regarding the qualifications of a director as an audit committee financial expert are based on the director's certification that the director has (1) an understanding of generally accepted accounting principles and financial statements; (2) the ability to assess the general application of such principles in connection with the accounting for estimates, accruals and reserves; (3) experience preparing, auditing, analyzing or evaluating financial statements that present a breadth and level of complexity of accounting issues that are generally comparable to the breadth and complexity of issues that can reasonably be expected to be raised by the Company's financial statements, or experience actively supervising one or more persons engaged in such activities; (4) an understanding of internal controls and procedures for financial reporting; and (5) an understanding of audit committee functions.

For a report on the Audit Committee's actions during 2016, see the "2016 Audit Committee Report" below.

2016 Audit Committee Report

The Audit Committee schedules meetings to occur after the preparation of quarterly and annual financial statements and prior to the public release of financial results for the period. The Committee met in May, August and October of 2016, prior to the release of the financial results for the first, second and third quarters of 2016, respectively, and in January 2017, prior to the release of our 2016 year-end results. If appropriate, additional meetings may also be held during the year to address a variety of recurring and non-recurring topics, such as the Company's internal control systems, changes to the Audit Committee charter and other matters.

The Audit Committee met ten times during 2016. At all meetings relating to the release of financial results, Axcelis' Chief Financial Officer and Corporate Controller were present for all or a portion of the meeting, as were our independent auditors. Our General Counsel also participated in all of these meetings. The Committee's agenda is established by the Committee's Chairman, with input from the Company's Chief Financial Officer. Depending on the content of the meeting, the Committee holds private sessions with the Company's independent auditors, and, separately, with management, at which candid discussions of financial management, accounting and internal control issues can take place. In its executive sessions with representatives of the independent auditors, the Committee seeks to engage in a meaningful dialogue to address any questions or concerns identified by the Committee and to obtain an understanding of any questions or concerns of the auditors.

Under its charter, the Audit Committee has responsibility for recommending to the Board the appointment of the independent auditing firm, which firm will be accountable directly to the Audit Committee, as representative for the stockholders of the Company. In selecting and evaluating an independent auditing firm, the Audit Committee considers the firm's history with the Company, if any; the firm's familiarity with the Company's industry and the significant accounting principles relating to the Company's business; the firm's general reputation; and the firm's estimated fees. Once the firm is appointed, the Audit Committee has the sole authority for the compensation of the firm, as well as the definition of the scope of, and oversight of, the work of the independent auditor. All audit and non-audit fees due the independent auditing firm are pre-approved by the Audit Committee based on the type of service and level of fees. The Audit Committee also provides oversight and input to the selection of the audit engagement partner at the appointed firm.

At the recommendation of the Audit Committee, the Board of Directors appointed Ernst & Young LLP as our Independent Registered Public Accounting Firm to audit our financial statements for 2016. At the 2016 annual meeting of stockholders, our stockholders ratified this appointment. The Audit Committee discussed with our independent auditors and the Company's Chief Financial Officer overall audit scopes and plans, the results of external audit examinations, evaluations by the auditors of the Company's internal controls and the quality of the Company's financial reporting.

Management has reviewed with the Audit Committee the audited consolidated financial statements for the year ended December 31, 2016 prepared by management and audited by Ernst & Young LLP, management's assessment of the effectiveness of our internal control over financial reporting and Ernst & Young LLP's evaluation of our internal control over financial reporting. The review of these audited financial statements included a discussion of the quality, not just the acceptability, of the accounting principles, the reasonableness of significant judgments, and the clarity of disclosures in the financial statements.

In addition, the Committee discussed with the independent auditors the matters required to be discussed by Auditing Standard No. 1301, *Communications with Audit Committees*, as adopted by the Public Company Accounting Oversight Board ("PCAOB"), and received from the independent auditors their annual written reports covering matters required to be discussed by the auditors with the Committee under the PCAOB's Rule 3526, *Communication with Audit Committees Concerning Independence*. These items were discussed with the auditors and management at an Audit Committee meeting, including a discussion of any relationship that may impact the objectivity and independence of our auditors and whether the provision of any non-audit services by the auditors is compatible with maintaining their independence.

In reliance on these reviews and discussions, and the report of our Independent Registered Public Accounting Firm, the Audit Committee recommended to the Board of Directors that such audited financial statements be included in the Company's 2016 Annual Report on Form 10-K for filing with the SEC and in the Annual Report to Stockholders which accompanies this proxy statement.

The Committee and the Board have also recommended, subject to reconsideration in the absence of stockholder ratification, the selection of the Company's independent auditors for the current year, as discussed below under "*Proposal 2: Ratification of the Appointment of Our Independent Registered Public Accounting Firm.*"

In performing all of these functions, the Audit Committee acts only in an oversight capacity. Necessarily, in its oversight role, the Committee relies on the work and assurances of the Company's management, who have the primary responsibility for financial statements and reports, and of the independent auditors, who in their report on the audited annual financial statements, express an opinion on the conformity of the Company's annual financial statements to accounting principles generally accepted in the United States.

By the Audit Committee,

John T. Kurtzweil, Chairman
Joseph P. Keithley
R. John Fletcher

Compensation Committee

During 2016, the Compensation Committee consisted of Messrs. Fletcher (Chairman), George, Kurtzweil and Nettles. The Compensation Committee holds four regularly scheduled meetings per year and occasionally calls special meetings or acts by written consent to address

particular matters. In 2016, the Compensation Committee met five times. The Compensation Committee operates under a written charter, a copy of which is available on our website at www.axcelis.com.

The Compensation Committee establishes the compensation philosophy for Axcelis and has all the authority of the Board of Directors to act or exercise corporate powers with respect to the compensation of the executive officers and the administration of Axcelis' equity compensation plans. The annual CEO evaluation is considered by the Compensation Committee in the course of its deliberations on the Chief Executive Officer's compensation.

The Compensation Committee meets in the first quarter of each year to establish the goals and targets applicable to the executives' annual incentive compensation for the coming year, as well as to determine the results for the year just ended. In 2016, annual equity compensation decisions for executive officers were made on February 11, 2016 with the grants effective on May 16, 2016. Other compensation decisions are made throughout the year, as circumstances warrant and as described in detail in *"Executive Compensation—2016 Compensation Discussion and Analysis"* below.

To support its decision-making processes, from time to time, the Compensation Committee accesses the advice of an independent compensation consultant with respect to the structure and competitiveness of the Company's executive compensation programs, as well as the programs' consistency with the Company's executive compensation philosophy. The Committee has the sole authority to hire and fire all outside compensation consultants providing information and advice to the Committee. In 2016, the Company engaged Pearl Meyer to review compensation paid to the seven executive officers. Pearl Meyer did not provide any other services to the Company in 2016. Under its charter, the Compensation Committee must assess and consider the independence of any retained advisor under the criteria set forth in the Nasdaq listing standards.

At the request of the Committee, the Chief Executive Officer will make specific proposals to the Committee regarding compensation for executive officers. Management will often work with the Committee's outside consultant to ensure that the consultant has access to the appropriate information to enable the consultant to complete its analyses for the Committee. Management ensures that the consultant's invoices are paid from Company funds. The Chief Executive Officer and the Executive Vice President HR/Legal usually participate in Compensation Committee meetings to present and discuss the material. After such a discussion, executives other than the Chief Executive Officer will leave the meeting, allowing the Compensation Committee time to meet alone with Ms. Puma, after which she leaves the Committee in executive session. All decisions on executive compensation are made by the Compensation Committee in executive session without Ms. Puma. The Committee delegates to the Chief Executive Officer the authority to make equity grants to employees other than executive officers on commencement of employment or as a bonus award, provided that the Committee establishes maximum grant sizes that limit the delegation of authority.

For a discussion on the Compensation Committee's decisions relating to executive compensation during 2016, see *"Executive Compensation—2016 Compensation Discussion and Analysis"* below. The Compensation Committee also makes recommendations to the Board with respect to policies relating to compensation, including the Company's director and officer stock

ownership guidelines, executive compensation clawback policy, and policies relating to the ownership of Axcelis securities by directors and officers. See "*Corporate Governance—Governance Policies*" below.

Compensation Committee Interlocks and Insider Participation

During 2016, the Compensation Committee of the Board of Directors consisted of Mr. Fletcher (Chairman), Mr. George, Mr. Kurtzweil and Mr. Nettles. None of these directors has been an officer or employee of Axcelis or had a relationship during 2016 requiring disclosure under Item 404 of Regulation S-K.

Nominating and Governance Committee

During 2016, the Nominating and Governance Committee was comprised of Mr. Keithley (Chairman), Ms. Lundberg, Mr. Faubert and Mr. St. Dennis.

The Nominating and Governance Committee is responsible for identifying and nominating candidates for membership on the Board of Directors, making recommendations to the Board on non-employee director compensation and establishing governance policies for the Board and management. The Committee operates under a written charter and Governance Guidelines, copies of which are available on our website at www.axcelis.com. The Committee held three meetings in 2016. The Committee has the sole authority to hire and fire all outside consultants providing information and advice to the Committee.

Under a process established by the Nominating and Governance Committee, the Board of Directors undertakes an annual self-evaluation of Board size, function and management interaction. In addition, each Board member completes an annual self and peer performance review.

The Nominating and Governance Committee manages the process of identifying and recommending individuals to either (A) be nominated by the Board of Directors to be elected as directors by the stockholders or (B) to be appointed by the Board as a director until the next annual meeting of stockholders, as discussed below under "*Corporate Governance—Board Nomination Process and Requirements*."

The Nominating and Governance Committee also takes the lead in advising the Board on the adoption of Bylaw provisions relating to the nomination of directors and the process for determining the agenda for stockholder meetings. See "*Corporate Governance—Board Nomination Process and Requirements*" and "*Corporate Governance—Annual Meeting Stockholder Deadlines*" below. The Nominating and Governance Committee also adopts, or recommends to the Board the adoption of, Bylaw provisions and governance policies that relate to the operation of the Board and committees and the Company's relationship with stockholders, which are described below under "*Corporate Governance—Governance Policies*." The Nominating and Governance Committee, together with the Compensation Committee, makes recommendations to the Board with respect to the Company's director and officer stock ownership guidelines, executive compensation clawback policy, and policies relating to the ownership of Axcelis securities by directors and officers. See "*Corporate Governance—Governance Policies*" below.

The Nominating and Governance Committee has developed a comprehensive statement of the Company's governance standards and processes arising from its charter, bylaws and policies, called Governance Guidelines. These were adopted by the Board of Directors in February 2016.

CORPORATE GOVERNANCE

Governance Policies

Our Board and committees seek to implement best governance practices, both on general corporate governance matters and on compensation. Key policies are as follows:

Corporate Governance: What We Do

Adhere to High Ethical Standards and Legal Compliance: Our ethics policy applies to our directors, executive officers and all other employees. This policy promotes ethical actions and legal compliance. We provide employee training on ethics, compliance with the Foreign Corrupt Practices Act, Export Controls regulation, employment laws, and Insider Trading regulation.

Ensure we have an Independent Chairman of the Board: Our Governance Guidelines require that the Chairman of the Board be an independent director and specify the responsibilities of that role.

Ensure Directors and Officers Hold Stock in Axcelis: Our Stock Ownership Guidelines require that non-employee directors own shares having a value at least equal to three times the amount of the annual base Board retainer (which is currently \$50,000). Our Chief Executive Officer is required to own shares having a value equal to three times her base salary. The other executive officers are required to hold the lesser of 16,250 shares or shares having a value equal to 150% of such officer's base salary. Executive officers are encouraged to retain 50% of any shares received on exercise of options or vesting of whole share awards (after payment of the exercise price and tax withholding), until stock ownership guidelines are met. Directors and executive officers have five years to meet guideline ownership.

Strong CEO Performance Review Process: As described above under "*Board of Directors—Chairman's Responsibility for an Annual Evaluation of the CEO*," our Governance Guidelines specify the process by which an annual Chief Executive Officer performance review is developed and submitted to the full Board for their consideration, with input from the Chief Executive Officer, the independent Chairman of the Board and other Board members.

Corporate Governance: What We Don't Do

Fail to Refresh our Board: Our Governance Guidelines require an annual Board self-evaluation prior to the re-election nomination process. These Guidelines also require Board members to tender their resignation on a change in principal occupation, and if he or she receives a greater number of votes "withheld" in an uncontested election than votes "for" his or her election. Directors who have reached the age of 75, or will reach that age on or before the date of the next annual meeting, will not be nominated for election.

Allow Directors and Officers to Hedge or Pledge Their Stock Positions: Our policies prohibit directors and executive officers from pledging Axcelis stock in a margin account or otherwise, or entering into transactions designed to hedge or offset any decrease in the market value of Axcelis stock. The Company's policies also prohibit the purchase of publicly traded options on Axcelis

securities and place limitations on the use of standing or limit orders to purchase or sell Axcelis securities.

Allow Stockholder Rights to be Harmed: Our charter and bylaws protect all stockholders by requiring advance notice of stockholder proposals, and prohibit stockholders from calling a special meeting, acting by written consent or filing governance litigation outside of Delaware. These provisions ensure that stockholders have notice and an opportunity to vote on all matters properly brought before them, and that claims are heard by sophisticated Delaware courts.

Compensation Governance: What We Do

Align Compensation Annually with Median Pay at Peer Companies and Relevant Survey Data. Executive officer compensation is benchmarked annually to median levels at peer companies and in surveys. We re-evaluate these peers at least biennially to ensure they are comparable companies.

Align Compensation with Company and Individual Performance: We set compensation with strong pay-for-performance orientation, using both a cash annual incentive plan tied to financial metrics and restricted stock unit grants tied to operational goals. Performance evaluations are obtained and considered in compensation decision-making. Only the Chief Executive Officer has an employment agreement setting a minimum salary and bonus opportunity, with a one-year term.

Executive Compensation Clawback: Our policy authorizes the Board to seek recovery of incentive cash and equity compensation that complies with Dodd-Frank and extends beyond the requirements of that law to allow a clawback of incentive compensation in the event of any violation of an agreement with the Company or of any policy of the Company or a voluntary departure to work for a competitor.

Require Termination of Employment prior to a Change of Control Payout: Agreements with our executive officers provide for "double trigger" change of control benefits, due only if the employee experiences a qualifying termination of employment.

Executive Equity Awards Require Multi Year Vesting Unless Performance Vested. Under our equity incentive plan, equity grants to executive officers that are solely based on continued employment, service or the passage of time must vest over not less than a four year period (and as to no more than $\frac{1}{3}$ of the shares subject to the award in any one year), except for grants received in lieu of cash compensation otherwise due.

Maintain Compensation Committee Practices that Ensure Independence: All of the members of the Compensation Committee are determined to be independent, and they have authority to engage an independent consultant of their choice. All compensation decisions involving executive officers are made in executive sessions of the independent directors without management. In addition, the Committee receives feedback from stockholders through an annual Say on Pay vote.

Compensation Governance: What We Don't Do

Pick Aspirational Peer Companies or Benchmark above Median Compensation Levels: Our Compensation Committee avoids these practices and re-evaluates our compensation peer group at least biennially, with the help of an independent compensation consultant chosen by the Compensation Committee Chairman.

Allow for Unlimited Cash Incentive Payouts or Guaranteed Bonuses: Payout under our annual cash incentive plan is capped at 200% of target, which insures outperformance reaches our stockholders after a fixed return to executives. We do not provide guaranteed minimum bonuses under any compensation arrangements with executives, other than occasionally for the year in which an executive joins the Company.

No Special Perquisites or Retirement Benefits: In 2016, we eliminated a program to reimburse financial or tax planning services up to \$5,500, since it no longer was market-aligned. As a result, we do not provide any perquisites or retirement benefits to our executive officers that are not generally made available to all of our employees.

No "Single Trigger" Severance Payments or Golden Parachute Arrangements: We do not provide "single trigger" severance payments due solely on account of the occurrence of a change of control event.

No New Tax Gross-Ups: In 2014, the Board adopted a policy that any future change of control agreement with any future executive officer of the Company will not include a reimbursement for the effects of any excise tax due on severance compensation. An executive officer who joined the Company in 2016 was given a new form of change of control agreement without reimbursement for the effects of excise tax on severance compensation. All other executive officers who hold change of control agreements with excise tax indemnification provisions were notified in 2017 that these agreements will not be renewed. As a result, no executive officers will have change of control agreements with excise tax indemnifications after February 2020.

Re-Price or Buyback Equity Awards: Our equity plans prohibit repricing of equity awards or cash repurchase of equity awards (except in the case of a corporate transaction).

Offer Nonqualified Defined Contribution or Other Deferred Compensation Plan. We do not have any such plans.

Our Governance Guidelines, other policies and our Certificate of Incorporation and Bylaws are posted on the Investors page of our website at www.axcelis.com. Any waivers of our Ethics policy would also be disclosed on that site.

Stockholder Communications to the Directors

Stockholders may communicate with the Axcelis Board of Directors by mailing a communication to the entire Board or to one or more individual directors in care of the Corporate Secretary, Axcelis Technologies, Inc., 108 Cherry Hill Drive, Beverly, Massachusetts 01915. All communications from security holders to Board members (other than communications soliciting the

purchase of products and services) will be promptly relayed to the Board members to whom the communication is addressed.

Annual Meeting Stockholder Deadlines

The Company's annual meeting of stockholders provides our stockholders with an opportunity to propose actions for adoption by the stockholders and to nominate individuals for election to the Board of Directors. The Company's Bylaws include provisions requiring advance notice of proposals by stockholders for items to include in the agenda for the annual meeting and for director nominations. Our Bylaws have been filed with the SEC and are also posted on the Investors page of our website at www.axcelis.com.

If you intend to bring proposed business to the 2018 annual meeting and you would like us to consider the inclusion of your proposal in our proxy statement for the meeting, you must provide written notice to Axcelis of such proposal by November 30, 2017 (120 days before the anniversary date of the mailing of this proxy statement). Any such proposal should comply with the requirements of SEC Rule 14a-8.

If you wish to bring business before or propose director nominations at the 2018 annual meeting, you must give written notice to Axcelis between January 16, 2018 and February 15, 2018 (the dates 120 days and 90 days, respectively, before the anniversary of the 2017 annual meeting). These dates assume that the 2018 annual meeting is held not more than 30 days before or 30 days after May 16, 2018. If that is not the case, you must give written notice to Axcelis between the date 120 days before the 2018 annual meeting date and the later of (A) 90 days before the 2018 annual meeting date or (B) the date 10 days after public announcement of the 2018 annual meeting date.

Notices of stockholder proposals and nominations shall be given in writing to Axcelis Technologies, Inc., 108 Cherry Hill Drive, Beverly, Massachusetts 01915, Attn: Corporate Secretary.

Board Nomination Process and Requirements

In an on-going effort to refresh the Board of Directors, the Nominating and Governance Committee from time to time seeks new nominees for election to the Board through a variety of channels, including the engagement of director search firms, less formal recommendations from stockholders of the Company and through business and personal contacts. Director search firms engaged by the Company are paid a retainer fee to identify and screen candidates meeting specifications established by the Committee for a particular Board nominee search. Such specifications will change from one search to another based on the Committee's determination of the needs of Board composition at the time a particular search is initiated.

The Nominating and Governance Committee will evaluate any candidate recommended for nomination as a director, whether proposed by a stockholder in accordance with the nomination provisions in our Bylaws, or identified through the Committee's own search processes, about whom it is provided appropriate information. In evaluating a candidate, the Committee must, at a minimum, determine that the candidate is capable of discharging his or her fiduciary duties to the stockholders of the Company. The Committee will determine whether the particular nomination would be consistent with Axcelis' Governance Guidelines. These Governance

Guidelines provide in part that all new candidates for election to the Board and all Board members eligible for nomination for re-election to the Board shall be evaluated on the following criteria:

- (a) such candidate or Board member's current level of, and on-going commitment to, education regarding the responsibilities of a member of a board of directors under standards set forth in the Company's Governance Guidelines;
- (b) the adequacy of such candidate or Board member's time available to commit to responsibilities as a member of the Board;
- (c) the existence of any financial relationship with the Company other than that arising as an employee of the Company, as a Board member and/or as a stockholder; and
- (d) in the case of re-election, such member's compliance with our Director Stock Ownership Guidelines.

If a candidate is presented to the Nominating and Governance Committee at a time when it has established specifications for a particular Board search, the Committee will consider whether the candidate satisfies the established specifications. More generally, the Committee will consider a candidate's skills, character, leadership experience, business experience and judgment, and familiarity with relevant industry, national and international issues in light of the backgrounds, skills and characteristics of the current Board and the needs of the Company's business. The Nominating and Governance Committee will consider whether a nominee's regional background contributes to Board diversity that is beneficial to the Company for business reasons. Finally, the Committee must consider whether a nominee (in conjunction with the existing Board members) will assist the Company in meeting the requirements of applicable law, the rules of the SEC, the Nasdaq listing standards, and the IRC regarding the independence, sophistication and skills of the members of the Board of Directors and the Audit, Compensation and Nominating and Governance committees.

In order to provide clarity to our stockholders on the information required to support the consideration of an individual as a candidate for nomination for election as a director, the Company amended its Bylaws in 2014 to expand the amount and nature of information required about a director candidate and the stockholder proposing his election. These disclosure requirements also ensure that all stockholders entitled to vote on a director nomination have all relevant information about the nominee. Our Bylaws have been filed with the SEC and are also posted on the Investors page of our website at www.axcelis.com. Nomination information should be sent to the Nominating and Governance Committee of Axcelis Technologies, Inc., 108 Cherry Hill Drive, Beverly, Massachusetts 01915, Attn: Corporate Secretary. The Committee may require further information, including but not limited to the completion of a questionnaire designed to elicit disclosures required by the securities laws and to determine eligibility for Board and committee membership.

Certain Relationships and Related Transactions

Review Process

Nasdaq listing rules require the Company to conduct an appropriate review of all related party transactions which are disclosable under Item 404 of Regulation S-K. In its charter, the Nominating and Governance Committee is given responsibility to review and approve any such related party transactions, including (a) business arrangements between the Company and directors or their affiliates or between the Company and employees, other than compensation for service as a director or as an employee of the Company, and (b) any other relationships between a director or employee and the Company or a third party (including membership on the boards of directors of a third party) which create the appearance or reality of a current or potential conflict of interest.

Axcelis reviews all relationships and transactions reported to it in which the Company and our directors and executive officers or their immediate family members are participants to determine whether such persons have a direct or indirect material interest. The Company's General Counsel is primarily responsible for the development and implementation of processes and controls to obtain information from the directors and executive officers with respect to related person transactions and for then determining, based on the facts and circumstances, whether the Company or a related person has a direct or indirect material interest in the transaction. As required under SEC rules, transactions that are determined to be directly or indirectly material to the Company or a related person are disclosed in the Company's proxy statement. In addition, the Nominating and Governance Committee reviews and approves or ratifies any related person transaction that is required to be disclosed. In the course of its review and approval or ratification of a disclosable related party transaction, the Nominating and Governance Committee considers:

- the nature of the related person's interest in the transaction;
- the material terms of the transaction, including, without limitation, the amount and type of transaction;
- the importance of the transaction to the related person;
- the importance of the transaction to the Company;
- whether the transaction would impair the judgment of a director or executive officer to act in the best interest of the Company; and
- any other matters the Committee deems appropriate.

Any member of the Nominating and Governance Committee who is a related person with respect to a transaction under review may not participate in the deliberations or vote respecting approval or ratification of the transaction, provided, however, that such director may be counted in determining the presence of a quorum at a meeting of the Committee that considers the transaction.

2016 Related Party Disclosures

During 2016, no related person transactions requiring disclosure in the proxy statement were identified or submitted to the Nominating and Governance Committee for approval. As discussed above under "*Board of Directors—Board of Directors Independence and Meetings*," during 2016, Mr. Kurtzweil served as a vice president of Cree, Inc., a customer of the Company. This is an arms-length commercial relationship which is not material to the Company or Cree, Inc. This amount did not exceed \$120,000 in 2016 (although it did in 2015 and 2014). Mr. Kurtzweil has no direct or indirect material interest in Cree's payments to the Company or the services and products provided by the Company.

Three of the current Board members nominated for re-election (Mr. Keithley, Mr. George and Ms. Puma) are also Board members of Nordson Corporation. The Company has no business relationship with Nordson Corporation.

Risk Oversight by the Board of Directors

Axcelis' business involves many unavoidable operational and financial risks which management and our Board seek to mitigate through careful planning and execution. Our risks include:

- The highly competitive nature of the semiconductor equipment industry, which may limit the rate and level of acceptance of our current products by customers;
- We may be unable to continually invest in product improvement and new product development to meet customer expectations for both technological and cost factors;
- We may be unable to maintain an adequate global infrastructure to support our customers;
- The cyclical nature of the semiconductor industry and its overall condition in a particular period;
- We may be unable to access sufficient capital to meet fluctuating capital requirements; and
- The uncertainties of global economies, including the availability of credit.

A more extensive list of risk factors associated with our business can be found in the Company's 2016 Annual Report on Form 10-K filed with the SEC and in the Annual Report to Stockholders which accompanies this proxy statement.

The Board of Directors has two primary methods of overseeing risk. The first method is through its Enterprise Risk Management ("ERM") process, which allows for full Board oversight of the most significant risks facing the Company. The second is through the functioning of the Board committees. The goal of the ERM process is to provide an ongoing effort, effected at all levels of the Company across all corporate functions, to identify, assess and monitor risk, and to agree on mitigating action. At each quarterly in-person Board meeting, senior management provides a

report on specific risks within identified core areas, commenting on the trend and the status of the risk at the time of the report. The Audit Committee will periodically review the ERM process to ensure that it is robust and functioning effectively.

In addition to the ERM process, each committee of the Board oversees specific areas of risk relevant to the committee through direct interactions with the Chief Executive Officer and the heads of corporate functions. For instance, the Audit Committee oversees risk relating to financial reporting through its interactions with the Chief Financial Officer, Corporate Controller and the Company's independent auditors. The Technology Committee oversees risk in the Company's technology and product development initiatives. A committee may address risks directly with management or, where appropriate, may elevate a risk for consideration by the full Board.

The separate ERM process and Board committee approach to risk management leverages the Board's leadership structure to ensure that risk is overseen by the Board both company-wide and through specific areas of competency. In order to ensure that longer term risks are also considered by the Board in a timely and consistent matter, the full Board dedicates an in-person meeting each year to review and approve a strategic plan and to review and approve a profit plan. These plans are used to manage the business throughout the year. In addition, one Board meeting each year is focused on longer term technology development to ensure that emerging market trends are identified and understood and that their implications for Axcelis' products are appropriately addressed. Finally, the Board dedicates an in-person meeting each year to an executive talent review, which includes a review and discussion of succession planning for the CEO, the other executive officers, and other key management positions.

Section 16(a) Beneficial Ownership Reporting Compliance

Section 16(a) of the Exchange Act requires our directors, executive officers and persons owning more than 10% of our registered equity securities to file with the SEC reports of their initial ownership and of changes in their ownership of our common stock and to provide us with copies of all Section 16(a) reports they file.

To our knowledge, based solely on our review of copies of reports furnished to us and written representations that no other reports were required, during 2016, our directors, officers, and 10% stockholders complied with all Section 16(a) filing requirements.

PROPOSAL 2: RATIFICATION OF THE APPOINTMENT OF OUR INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Upon the recommendation of the Audit Committee, the Board of Directors has appointed the independent registered public accounting firm of Ernst & Young LLP as independent auditors to conduct the annual audit of our financial statements for 2017 and is seeking stockholder ratification of the appointment. Ernst & Young LLP is an internationally recognized independent registered public accounting firm that audited the Company's financial statements in 2016 and which the Audit Committee believes is well qualified to continue.

Ernst & Young LLP has audited the Company's financial statements since our initial public offering in 2000. Prior to recommending the re-appointment of the Company's independent auditor each year, the Audit Committee receives input from the Chief Executive and Chief Financial Officer on management's relationship with the auditor and input from the independent auditor on the engagement. In its decision to recommend re-appointment, the Audit Committee also considers the fees charged by the independent auditor and the potential benefits and challenges from switching independent audit firms. The audit engagement partner assigned to the Company's account rotates every 5 years, and the Audit Committee provides oversight and input to the selection of a successor audit engagement partner, along with management.

Representatives of Ernst & Young LLP are expected to attend the annual meeting and be available to respond to appropriate questions. They will also have the opportunity to make a statement if they desire.

The aggregate audit fees billed for, and other fees billed in, each of the last two fiscal years for professional services rendered by Ernst & Young LLP were as follows:

	2015	2016
Audit Fees	\$1,409,500	\$1,567,250
Audit Related Fees	\$73,995	\$23,995
Tax Fees		
<i>Tax compliance and preparation of returns</i>	\$29,200	\$106,110
<i>Tax planning</i>	\$10,318	\$-
Total Tax Fees	\$39,518	\$106,110
All Other Fees	\$-	\$-
Total Fees	\$1,523,013	\$1,697,355

Audit fees include statutory audits for subsidiaries and branches operating in countries outside of the United States. Audit related fees include the audit for the Company's 401(k) plan required under ERISA. International tax planning relates to the setting of fair compensation for services provided to us by our foreign subsidiaries to ensure appropriate revenue levels are reported for taxation in those foreign countries.

Under its charter, the Audit Committee must pre-approve the fees to be paid to the independent auditor for audit services. In addition, the Audit Committee has adopted a policy requiring the Committee's pre-approval of the engagement of the Company's independent auditor

to perform specific audit-related or non-audit (including tax) services and fees for such services. This pre-approval of audit-related and non-audit services performed by the independent auditor is designed to avoid any engagements which could impair the auditor's independence. The policy also prohibits engagement of the independent auditor to perform certain types of services that are always viewed as inconsistent with independence. The Audit Committee does not delegate its responsibility to approve services performed by the independent auditor to any member of management.

The standard applied by the Audit Committee in determining whether to grant approval of any type of non-audit service, or of any specific engagement to perform a non-audit service, is whether the services to be performed, the compensation to be paid therefor and other related factors are consistent with the independent auditor's independence under guidelines of the SEC, the PCAOB and applicable professional standards. Relevant considerations include whether the work product is likely to be subject to, or implicated in, audit procedures during the audit of our financial statements, whether the independent auditor would be functioning in the role of management or in an advocacy role, whether the independent auditor's performance of the service would enhance our ability to manage or control risk or improve audit quality, whether such performance would increase efficiency because of the independent auditor's familiarity with our business, personnel, culture, systems, risk profile and other factors, and whether the amount of fees involved, or the proportion of the total fees payable to the independent auditor in the period that is for non-audit services, would tend to reduce the independent auditor's ability to exercise independent judgment in performing the audit.

All of the non-audit services rendered by Ernst & Young LLP in respect of the 2015 and 2016 fiscal years were pre-approved by the Audit Committee in accordance with this policy.

Ernst & Young LLP informed the Company that they are not aware of any relationship with the Company that, in their professional judgment, may reasonably be thought to bear on the independence of Ernst & Young LLP.

Ratification of the appointment of Ernst & Young LLP by the stockholders is not required by law or by our Bylaws. The Board of Directors is nevertheless submitting it to the stockholders to ascertain their views. If this proposal is not approved at the annual meeting by the affirmative vote of holders of a majority of the votes cast at the meeting, the Audit Committee intends to reconsider its recommendation of Ernst & Young LLP as independent auditors. The Company may retain the firm for 2017 notwithstanding a negative stockholder vote.

The Board of Directors recommends a vote FOR ratification of the appointment of Ernst & Young LLP.

PROPOSAL 3: APPROVAL OF AMENDMENT TO THE 2012 EQUITY INCENTIVE PLAN AND REAPPROVAL OF THE MATERIAL TERMS OF THE PERFORMANCE GOALS THEREUNDER

We are seeking stockholder approval of an amendment to our 2012 Equity Incentive Plan (the "2012 EIP") adopted, subject to stockholder approval, by our Board, increasing the number of shares authorized for issuance by 1,000,000 shares (or such lesser amount as may be fixed by our Chief Executive Officer prior to the 2017 annual meeting). Of the shares previously approved (including, in accordance with the terms of the 2012 EIP, shares recaptured as a result of the expiration or forfeiture of prior grants made under our 2000 Stock Plan), 677,590 shares remained available for grant as of December 31, 2016. If approved, we expect to use the additional authorized shares for continued periodic equity grants to employees (including executive officers), directors and consultants.

In addition, approval of this proposal by stockholders will constitute reapproval of the material terms of the performance goals under the 2012 EIP for the purposes of Section 162(m) of the IRC.

Our Board of Directors recommends a vote FOR this proposal for the following reasons, each of which is discussed below in more detail:

- Our ability to attract, motivate and retain high-performing individuals as employees, directors and consultants depends on the availability of equity compensation.
- Our three-year average burn rate for equity grants (counting restricted stock and RSUs at 2.0 shares per the ISS burn rate calculation protocol) is 3.69%, significantly less than both the mean (4.87%) and ISS's 2017 benchmark (7.66%) for Russell 3000 companies in the semiconductors and semiconductor equipment business.
- The total voting power dilution from the 2012 EIP and our prior equity grant plan will be less than 20% after the proposed share reserve increase.
- Reapproval of the material terms of the 2012 EIP's performance goals would make the Company eligible to obtain tax deductions for certain awards, as described below.

Why the 2012 EIP is Important

The 2012 EIP is our sole vehicle for making equity awards to our employees (including executive officers), directors and consultants. Our ability to attract, motivate and retain high-performing individuals in these roles is vital to our ability to compete successfully in the market and to increase stockholder value. We believe our ability to grant equity incentives as an element of compensation is essential for us to remain competitive in attracting and retaining such employees, consultants and directors. We believe equity incentives motivate high levels of performance and provide an effective means of recognizing employee contributions to the success of Axcelis. Moreover, equity incentives align the interests of the employees, consultants and directors with the interests of our stockholders—when Axcelis performs well, employees, consultants and directors are rewarded along with other stockholders.

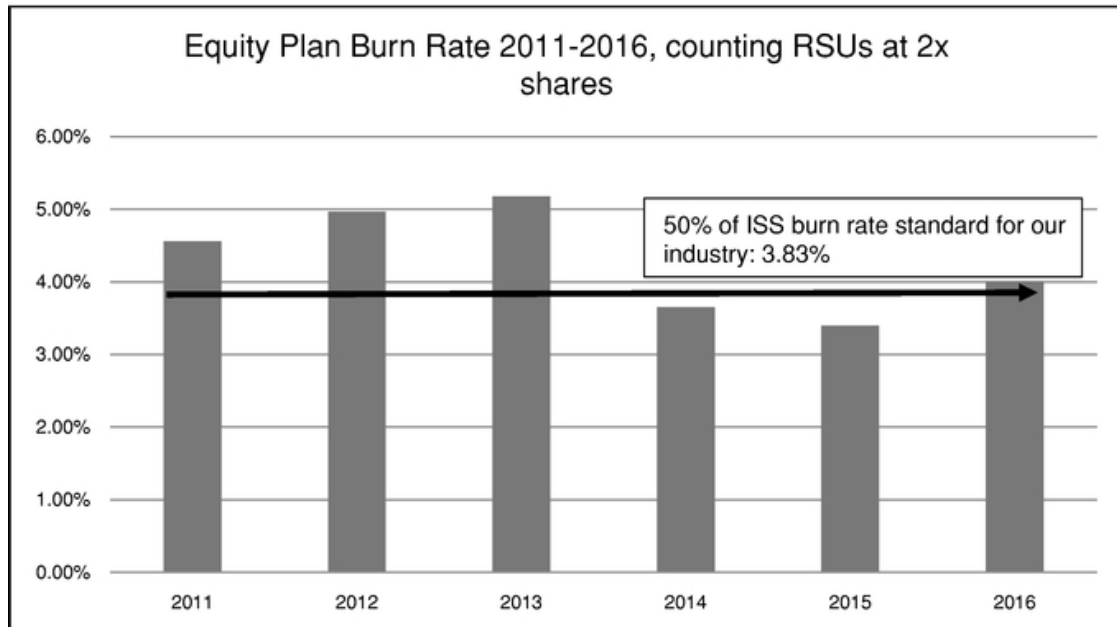
Because the 2012 EIP is the only plan under which we can grant equity incentives, maintaining its viability by increasing the number of shares available for grant is essential for us to be able to continue to use equity incentives to attract, motivate and retain the employees, consultants, and directors necessary for our future success. Without this amendment, we believe that the shares available for grant under the 2012 EIP will be insufficient to meet our anticipated recruiting and retention needs.

Careful Management of Equity Award Use: Burn Rate and Voting Power Dilution from the Axcelis Equity Award Plans

The proposed increase, together with the shares available under the 2012 EIP at year end 2016, for the purposes of counting the available shares, will make approximately 1.67 million shares available for grant in 2017 and beyond (noting that plan provisions count restricted stock and restricted stock units at 1.5x the actual number of shares issuable). We believe that this increase is necessary and reasonable for us to maintain annual equity programs over the next several years, using 300,000 to 500,000 shares annually. We expect to reduce the number of shares granted under the plan as our stock price increases, since grant sizes are benchmarked on a value basis to peer companies.

We seek to maximize stockholder value by granting only the number of equity awards necessary to attract, retain and reward key employees, consultants, and directors, which amount can vary from year to year. We ensure our burn rate is below the Russell 3000 average burn rate for the semiconductors and semiconductor equipment industries plus a standard deviation, which ISS uses as a benchmark. Our three-year average burn rate (counting restricted stock and RSUs at two shares for every share actually issuable) for 2014, 2015 and 2016 is 3.69%, less than half of the 2017 ISS benchmark of 7.66% and even below the industry mean burn rate (without the

standard deviation) of 4.87%. The chart below illustrates our burn rate for the past six years in comparison to 50% of the ISS 2017 benchmark (3.83%):



The Board is cognizant of voting power dilution and, accordingly, has limited the proposed increase to one million shares in order to keep the total percentage voting power dilution associated with our equity award plans ("Plan VPD") to less than 20% of total capitalization. We have calculated Plan VPD by dividing the sum of (1) the proposed 2012 EIP reserve increase, (2) the shares currently available under the 2012 EIP and (3) the number of shares issuable in respect of outstanding unexercised stock options and unvested RSUs granted under the 2012 EIP and our prior award plan, the 2000 Stock Plan (the "Equity Plan Overhang") by the total shares outstanding plus the sum of (1)-(3) above. This calculation, at year end 2016 with the proposed reserve increase of one million shares, is shown below:

Shares outstanding on 12/31/2016	29,518,452
Options outstanding at 12/31/2016	4,950,988
Unvested RSUs outstanding at 12/31/2016	548,474
Equity Plan Overhang at 12/31/2016	5,499,462
2012 EIP Available Reserve at 12/31/2016	677,590
Equity Plan Overhang and Reserve at 12/31/2016	6,177,052
Plan VPD at 12/31/2016	17.30%
Proposed Equity Plan Increase for 2017	1,000,000
Plan VPD with Proposed Reserve Increase	19.56%

The bulk of our Plan VPD shares consists of the Equity Plan Overhang, which represented 89% of the Plan VPD shares at year end 2016. Our Equity Plan Overhang is high primarily because employees have delayed exercising options until the price of our stock reached attractive levels. At December 31, 2016, the options in our Equity Plan Overhang had a weighted average exercise

price of \$7.29 and a weighted average remaining term of 3.94 years. These options were vested and exercisable as to 75.6% of the underlying shares. We expect increased exercise activity, which will reduce the Equity Plan Overhang, as our stock price increases and as in-the-money options reach the end of their terms, beginning in 2018. We do not, as a matter of course, make public forecasts as to our total shares outstanding and utilization of various equity awards due to the unpredictability of the underlying assumptions and estimates. We have included the above summary to give our stockholders access to the information that was considered by our Board for purposes of evaluating the approval of the amendment to the 2012 EIP.

Why Reapproval of the Material Terms of the Performance Goals is Important

Section 162(m) of the IRC limits to \$1 million the amount of compensation the Company may deduct for "covered employees," which includes our principal executive officer and each of our other three most highly compensated executive officers (other than our principal executive officer and our principal financial officer). There is an exception to this limit for compensation that qualifies as "performance-based" compensation within the meaning of Section 162(m) of the IRC. One of the requirements of "performance-based" compensation is that stockholders approve, every five years, the material terms of the performance goals under which the compensation may be paid if the Compensation Committee has retained the discretion to vary the targets under the performance goals from year to year. The material terms of the performance goals under which the compensation may be paid under the 2012 EIP include (i) the individuals eligible to receive awards thereunder, (ii) the business criteria on which the performance goals are based, and (iii) the applicable award limits. Each of these terms is discussed under "*Summary of the 2012 Equity Incentive Plan*" below. Such stockholder approval was previously received at the time of the adoption of the 2012 EIP in 2012. Reapproval would mean that certain awards granted under 2012 EIP would continue to qualify as "performance-based compensation" allowing for favorable tax treatment for those awards, as described under "*Tax Consequences to the Company*" below.

Board Recommendation

The Board of Directors believes that the amendment to the 2012 EIP promotes important corporate goals and is therefore in the best interests of Axcelis' stockholders. The amendment to the 2012 EIP will provide Axcelis with the shares necessary to offer effective equity incentives, which are essential for Axcelis to attract, motivate and retain employees and to align Axcelis' compensation with our stockholders' interests.

The Board of Directors recommends that you vote FOR Proposal 3, including the amendment to the 2012 EIP, and for the reapproval of the material terms of the performance goals.

Outstanding Equity Awards and Shares Available to Grant

The following table shows the awards outstanding and that may be made under our equity incentive plans as of December 31, 2016.

	Number of Options Outstanding(1)	Number of Restricted Stock Units Outstanding	Shares Available to Grant under Plan
2012 Equity Incentive Plan	3,183,764	548,474	677,590
2000 Stock Plan (terminated)	1,767,224	0	0
<i>Total</i>	<i>4,950,988</i>	<i>548,474</i>	<i>677,590</i>

(1) At December 31, 2016, the weighted average exercise price of outstanding options was \$7.29, and the weighted average remaining term of those options was 3.94 years.

Summary of the 2012 Equity Incentive Plan

The following is a brief description of the material features of the 2012 EIP, as amended, and is qualified in its entirety by reference to the terms of the 2012 EIP. Stockholders may obtain a copy of the 2012 EIP upon written request to the Corporate Secretary of the Company.

Administration The 2012 EIP is administered by the Compensation Committee or other committee appointed by the Board. The Compensation Committee has authority to: select the participants who will receive awards, grant awards, determine the terms, conditions, and restrictions applicable to the awards, determine how any exercise price is paid, modify or replace outstanding awards within the limits of the 2012 EIP, accelerate the date on which awards become exercisable, waive the restrictions and conditions applicable to awards, and establish rules governing the 2012 EIP, including special rules applicable to awards made to employees who are foreign nationals or are employed outside the United States. Subject to specific limitations under the Plan, as discussed below, the Compensation Committee is given the broad authority to establish these terms in order best to achieve the purpose of the 2012 EIP. The Compensation Committee may also assume awards granted by an organization acquired by the Company or may grant awards in replacement of any such awards.

Types of Awards The 2012 EIP provides for the grant of stock options (incentive stock options or "non-qualified" stock options), restricted stock, RSUs, stock appreciation rights, awards of common stock that are not subject to restrictions or forfeiture and other awards, the value of which is based in whole or in part on the value of common stock and which may be settled in cash, common stock or other property ("stock equivalents"). These awards are payable in cash or common shares, or any combination thereof, as established by the Compensation Committee.

Eligibility All employees and consultants of Axcelis and its subsidiaries, and all directors of Axcelis, are eligible to participate in the 2012 EIP. Participants are selected by the Compensation Committee of our Board of Directors in its discretion. At December 31, 2016, the Company had 814 employees and 8 non-employee directors.

Plan Limitations on Award Terms The 2012 EIP establishes certain limits on the terms of awards granted under the 2012 EIP:

- The exercise price of options and stock appreciation rights granted under the 2012 EIP must be not less than the fair market value of the common stock on the date of grant.
- The term of options and stock appreciation rights granted under the 2012 EIP may not exceed seven years.
- In the case of awards granted to the Company's executive officers, the vesting, settlement or lapse of forfeiture restrictions solely based on continued employment, service or the passage of time must (with certain exceptions) occur (i) with respect to no more than $\frac{1}{3}$ of the shares subject to the award in any one year, and (ii) over not less than four years from the date of grant for all shares subject to the award.
- The 2012 EIP prohibits the Committee, without obtaining stockholder approval, from amending any outstanding option or stock appreciation right to reduce the exercise price or canceling and replacing an option or stock appreciation right with an award exercisable for common stock at a lower exercise price. No award may be canceled in exchange for a cash payment from the Company to the award owner, except in the event of a corporate transaction in which a company other than the Company is the surviving, continuing, successor or purchasing entity and in which the stockholders of the Company receive consideration that is all or predominantly cash in exchange for their shares of common stock in the transaction.
- In order to comply with the exemption from Section 162(m) of the IRC relating to performance-based compensation, no participant may be granted stock options, stock appreciation rights or other awards intended to satisfy the requirements for "qualified performance-based compensation" within the meaning of Section 162(m) of the IRC, that in the aggregate, exceed 312,500 shares during any fiscal year, and no performance-based award settled in cash may pay a participant more than \$1,000,000 in any one year.

Share Counting Under the Plan

The following provisions apply to determining how the available shares under the 2012 EIP are deemed to be used:

- Each share subject to an award under the 2012 EIP, other than options and stock appreciation rights, shall be counted as 1.5 shares per plan terms;
- Shares subject to an award granted under the 2000 Stock Plan or the 2012 EIP that is forfeited, terminated, or canceled without having been issued will become available for grant under the 2012 EIP, subject to certain exceptions relating to incentive stock options;
- Shares subject to awards granted under the 2012 EIP on assumption of, or substitution for, equity awards of a company acquired by Axcelis will not count against the share reserve under the 2012 EIP; and
- Outstanding shares used to pay the exercise price of an option or stock appreciation right or shares which are withheld by the Company to satisfy the exercise price or tax withholding due on exercise or vesting may not be netted out against the shares issued on an award granted under the 2012 EIP.

Performance Goals for Performance-Based Awards

The 2012 EIP provides that, when so determined by the Compensation Committee, awards may specify performance objectives that, if achieved, will result in vesting, exercisability or the lapse of restrictions on awards. Awards with performance objectives may be intended to satisfy the requirements for "performance-based compensation" under Section 162(m) of the IRC. Such grants should specify one or more objective performance goals and the effect of achieving the goal at or above a specified level for or within a requisite period or at a requisite date. For purposes of Section 162(m), the Compensation Committee must establish any performance goal near the beginning of any performance period and at a time when the outcome of the goals is substantially uncertain, and it must certify that the goal was achieved before the award is paid. Performance objectives may be based on any of the following criteria: revenue; revenue growth; sales; expenses; margins; net income; earnings or earnings per share; cash flow; stock price; stockholder return; return on investment; return on invested capital, assets, or equity; profit before or after tax; operating profit; operating margin; return on research and development investment; market capitalization; quality improvements; market share; cycle time reductions; customer satisfaction measures; strategic positioning or marketing programs; market penetration or expansion; business / information systems improvements; expense management; infrastructure support programs; human resource programs; customer programs; technology development programs; goals relating to acquisitions or divestitures, or any combination of the foregoing, including without limitation goals based on any of such measures relative to peer groups or market indices, and may be particular to an award recipient or may be based, in whole or in part, on the performance of the division, department, line of business, subsidiary, or other business unit, whether or not legally constituted, in which the award recipient works or on the performance of the Company generally.

Treatment of Awards in an Extraordinary Event	In the event of a recapitalization, stock dividend, stock split, reverse stock split (or combination), other distribution to stockholders (other than normal cash dividends), or similar transaction, the Compensation Committee will adjust the number and class of shares that may be issued under the 2012 EIP (including the number of shares that may be subject to awards granted to a participant in any fiscal year) and the number and class of shares, and the exercise price, applicable to outstanding awards. Similar adjustments may be made in the event of reorganization, merger, spin-off or other corporate transaction affecting the common stock where an adjustment is required in order to preserve the benefits intended to be provided by the plan. If considered appropriate, the Committee may make provision for a cash payment with respect to all or part of an outstanding award instead of or in addition to any such adjustment.
	In the event of a corporate transaction in which a company other than Axcelis is the surviving, continuing, or successor purchasing entity, outstanding awards may be assumed by such other company or may be exchanged for substituted awards from such other company. The terms of such assumed or substituted awards shall be appropriate in light of (A) the consideration received by the Company's stockholders in the transaction and (B) the terms of the outstanding awards. Awards outstanding under the 2012 EIP which are not assumed or exchanged shall terminate on such terms as the Committee may determine. Notwithstanding the foregoing, if in such a transaction the stockholders of the Company receive consideration that is predominantly cash, then either (A) any vesting or lapse of forfeiture provisions on outstanding awards under the 2012 EIP shall accelerate on the closing of the transaction and the award holder may share in the transaction consideration or (B) such awards shall be compensated through a separate payment in an amount that the award holder would have received in the transaction assuming such acceleration, as determined by the Compensation Committee.
Non-Assignability of Awards	No award granted under the 2012 EIP may be transferred or assigned by a participant or eligible transferee except on such terms as the Compensation Committee determines, and incentive stock options may be transferred only to the extent permitted by the Internal Revenue Code.
Amendment and Termination of the 2012 EIP	The Board of Directors may amend, suspend, or terminate the 2012 EIP at any time, subject to stockholder approval as needed to comply with tax or regulatory requirements.

Summary of U.S. Federal Income Tax Consequences of Awards under the 2012 EIP

The following is a brief summary of certain consequences under current U.S. federal income tax law of certain transactions under the 2012 EIP. This summary is not intended to be complete and does not describe state, local, foreign or other tax consequences.

Incentive Stock Options. In general, an employee will not recognize taxable income at the time an incentive stock option is granted or exercised. However, the excess of the fair market value of

the common shares acquired upon exercise over the exercise price will be considered income for the purposes of the alternative minimum tax. If the option is not exercised by a specified date after termination of the holder's employment, the income tax treatment will be the same as that for a non-qualified stock option, described below. Upon disposition of the shares acquired upon exercise, the holder will recognize capital gain or capital loss in an amount equal to the difference, if any, between the sale price and the exercise price, so long as minimum holding period requirements are satisfied. If the holding period requirements are not satisfied, the employee will recognize ordinary income upon disposition of the shares equal to the difference between the exercise price and the lesser of the fair market value of the common shares on the date the option is exercised or the amount realized in the disposition. Any remaining gain or loss is treated as a capital gain or capital loss.

Non-Qualified Stock Options. In general, a participant will not recognize taxable income upon the grant of a stock option that does not qualify as an incentive stock option (a "non-qualified stock option"). Upon exercise, the participant will recognize ordinary income in an amount equal to the difference between the exercise price and the fair market value of the common shares acquired upon exercise. Upon disposition of the common shares, appreciation or depreciation after the date of exercise will be treated as either capital gain or capital loss.

Restricted Stock Units. The participant will recognize no income at the time RSUs are awarded to the participant. When shares are issued on the vesting of RSUs, the participant will recognize compensation income equal to the excess of the fair market value of the vested shares stock at that time over the amount, if any, paid by the participant for the shares. Upon disposition of shares after issuance, any gain or loss realized by a participant will be treated as capital gain or loss.

Restricted Stock. Unless a participant makes an election under Section 83(b) of the IRC, the participant will recognize no income at the time restricted stock is awarded to the participant. When the restrictions lapse or are otherwise removed, the participant will recognize compensation income equal to the excess of the fair market value of the restricted stock at that time over the amount, if any, paid by the participant for the restricted stock. Dividends paid on restricted stock during any restriction period will, unless the participant has made an election under Section 83(b) of the IRC, constitute compensation income. Upon disposition of common shares after the restrictions lapse or are otherwise removed, any gain or loss realized by a participant will be treated as capital gain or loss. If a participant makes an election under Section 83(b) of the IRC, the participant will recognize compensation income equal to the excess of the fair market value of the common shares on the date of grant over the price paid for those common shares. Dividends paid on the stock thereafter will be treated as dividends taxable to the participant.

Stock Appreciation Rights and Stock Equivalents. The grant of stock appreciation rights and stock equivalents will have no immediate tax consequences to the participant receiving the grant. The amount received by the participant upon the exercise of the stock appreciation rights or stock equivalent will be included in the participant's ordinary income in the taxable year in which award is exercised or vested.

Parachute Payment Tax. The value of any accelerated vesting or exercisability of options or stock appreciation rights, or any accelerated lapse of restrictions on restricted stock or RSUs, in connection with a change in control of the Company will be taken into account in determining whether the participant is deemed to have received an "excess parachute payment" under Section 280G of the IRC. This may subject the participant to an excise tax.

Tax Consequences to the Company. To the extent that a participant recognizes ordinary income in the circumstances described above, the Company or the subsidiary for which the participant performs services will be entitled to a corresponding tax deduction provided that, among other things, (a) the income meets the test of reasonableness, (b) is an ordinary and necessary business expense, (c) is not an "excess parachute payment" and (d) is not disallowed by the \$1 million limitation on certain executive compensation under Section 162(m) of the IRC.

Under Section 162(m), the Company's federal income tax deductions may be limited to the extent total annual compensation in excess of \$1,000,000 is paid to any of our principal executive officer and our other three most highly compensated executive officers, other than our principal financial officer. However, deductions for certain "performance based compensation" are exempted from this limitation. The 2012 EIP has been structured with the intention to enable the Compensation Committee to make awards (including cash-based awards) that qualify as performance-based compensation, and are deductible without regard to the limitations imposed by Section 162(m). However, our Compensation Committee believes that our executive compensation program should be flexible, maximize our ability to recruit, retain and reward high-performing executives and promote varying corporate goals. As such, nothing in this proposal precludes the Committee from granting awards that do not qualify for tax deductibility under Section 162(m).

Awards Available under the 2012 Equity Incentive Plan

All employees and consultants of Axcelis and its subsidiaries, and all directors of Axcelis, are eligible to participate in the 2012 EIP. Participants are selected by the Compensation Committee of our Board of Directors in its discretion. The benefits or amounts that will be received in the future under the 2012 EIP by named executive officers, executive officers as a group, and all current non-employee directors or employees who are not executive officers as a group are not determinable because grants are subject to the discretion of the Compensation Committee. Our current grant practices are described in "*Board of Directors—Compensation of Directors*" and "*Executive Compensation—2016 Compensation Discussion and Analysis*."

The table below shows the number of RSUs and stock options awarded under the 2012 EIP through 2016. No other types of awards have been granted.

2012 Equity Incentive Plan Grants from inception through December 31, 2016		
Name and Title or Group	Number of RSUs Granted through 2016	Number of Options Granted through 2016
Mary G. Puma, CEO and President	136,909	275,000
Kevin J. Brewer, EVP and Chief Financial Officer	40,000	206,250
William Bintz, EVP, Product Development	36,722	212,500
John E. Aldeborgh, EVP, Global Customer Operations	27,273	237,500
Lynnette C. Fallon, EVP, HR/Legal and General Counsel	25,455	131,250
All Current Executive Officers as a Group (1)	302,763	1,271,898
All Current Non-Employee Directors as a Group	149,346	110,000
All Employees, excluding Executive Officers, as a Group	324,851	2,712,841

(1) All current executive officers includes two executive officers who are not named executive officers.

The closing price of our common stock on December 30, 2016, as reported by Nasdaq, was \$14.55.

Current Equity Compensation Plan Information

We maintain three equity compensation plans, the 2000 Stock Plan (which was terminated as to new grants on May 1, 2012), the 2012 EIP and the Employee Stock Purchase Plan. The number of shares issuable upon exercise of outstanding options and unvested RSUs granted to employees and non-employee directors, as well as the number of shares remaining available for

future issuance, under our equity compensation plans as of December 31, 2016 are summarized in the following table:

Plan category	(A) Number of shares to be issued upon exercise of outstanding options, warrants and rights (1)	(B) Weighted-average exercise price of outstanding options, warrants and rights (2)	(C) Number of shares remaining available for future issuance under equity compensation plans (excluding shares reflected in column (A)) (3)
Equity compensation plans approved by stockholders	5,499,462	\$ 6.56	1,016,658
Equity compensation plans not approved by stockholders	0	NA	NA
Total	5,499,462		1,016,658
Weighted average exercise price of outstanding options at December 31, 2016	\$ 7.29		
Weighted average remaining term of outstanding options at December 31, 2016	3.94 years		

- (1) Represents, as of December 31, 2016: (A) 1,767,224 shares issuable on exercise of outstanding options under the 2000 Stock Plan, plus (B) 3,183,764 shares issuable on exercise of outstanding options under the 2012 EIP, plus (C) 548,764 shares issuable on vesting of outstanding RSUs under the 2012 EIP (some of which will be withheld in respect of tax withholding obligations).
- (2) For the purposes of this table, the weighted-average exercise price of outstanding options, warrants and rights includes RSUs as if they had a \$0 exercise price. The weighted-average exercise price of outstanding options alone at December 31, 2016 was \$7.29.
- (3) Represents the total shares available for issuance under our 2012 EIP and our Employee Stock Purchase Plan, as of December 31, 2015, as follows:
- (A) 677,590 shares were available for future issuance under the 2012 EIP. Such amount represents the total number of shares reserved for issuance under the 2012 EIP (3,762,500 plus shares subject to options or restricted stock units granted under the 2000 Stock Plan that expired unexercised or were forfeited between May 2, 2012 and December 31, 2016), less the shares issuable on options and restricted stock units (counted at 1.5 shares each) outstanding under the 2012 EIP included in column (A) and the shares issued prior to such date on exercise of options and vesting of restricted stock units granted under the 2012 Equity Incentive Plan. This plan is generally used for grants to employees and directors and was approved by our stockholders at our 2012 annual meeting. No shares are available for future issuance under the 2000 Stock Plan, which terminated on May 1, 2012.
- (B) 339,068 shares were available under our Employee Stock Purchase Plan, which represents the total number of shares reserved for issuance under the plan (1,875,000) less the shares issued through December 31, 2016.

PROPOSAL 4: ADVISORY VOTE REGARDING EXECUTIVE COMPENSATION

This proposal, commonly known as "Say-on-Pay," asks the stockholders to approve the compensation of the Company's named executive officers as described under "Executive Compensation" below in this proxy statement (referred to herein as "NEOs").

The Company's overall compensation goal is to drive stockholder value by (i) retaining executive talent by offering base pay that is commensurate with pay at other companies of a similar size in the same or similar industries, as adjusted for individual factors, and (ii) driving achievement of long-term and annual strategic goals with pay tied to performance. Details of the 2016 compensation provided to the NEOs may be found in the "*Executive Compensation—2016 Compensation Discussion and Analysis*" and the accompanying tables in this proxy statement. Key features of NEO compensation in 2016 were:

- **2016 Target Pay was a Balanced Mix of Base and Short- and Long-Term Incentive Pay with a Strong Emphasis on Performance-Based Awards.**

- In 2016, the NEOs received target base, annual incentive and equity grant compensation that aligned well with elements of peer executive compensation targets. Treating all equity grants as performance based since their value depends on the Company's performance, 73% of the total target compensation of the Company's chief executive officer (Mary G. Puma) was performance based, and 59% (on average) of the other NEOs' 2016 total target compensation was performance based.

- Looking only at short term performance compensation, in addition to the annual cash incentive, 25% of each NEO's 2016 restricted stock units were subject to vesting based on five 2016 performance goals. The decision to switch from options to RSUs for executive equity grants, and to implement performance vesting on a portion of the grants, was driven by market benchmarking provided by Pearl Meyer in November 2015. This benchmarking showed that all of the Company's compensation peers were granting full-value shares either alone or in conjunction option grants, and none were granting only options. In addition, the market benchmarking showed peers using performance-based equity in addition to time-vesting restricted stock or RSUs.

- The 2016 annual cash incentive target compensation and the 2016 performance vesting RSUs (valued at the grant date) represent 39% of Ms. Puma's total target compensation and 33% (on average) of the other NEOs' 2016 total target compensation.

- **2016 Realized Short Term Performance Based Compensation was Below Target.**

- The 2016 short term performance compensation realized by the NEOs was below the target pay established for the year. There was no payout under the 2016 Axcelis Management Incentive Plan, based on the Company's revenue and operating profit performance against targets. For the performance vesting RSUs granted in 2016, three of the five 2016 operational goals were achieved, so 60% of the 2016 performance RSUs vested, and the remainder have forfeited.

- As a result, valuing the vested performance RSUs at the closing price on December 31, 2016, Ms. Puma earned 28% of her target short term performance based compensation and the other NEOs earned an average of 24% of their short term target incentive compensation. See "*Executive Compensation—2016 Compensation Discussion and Analysis—Executive Summary of Axcelis 2016 Executive Compensation.*"

The vote solicited by this proposal, which is required by Section 14A of the Securities Exchange Act of 1934, is advisory and its outcome will not be binding on the Board nor require the Board to take any action. Moreover, the outcome of the vote will not be construed as overruling any decision of the Board or creating or implying any additional fiduciary duty of the Board. However, the Board intends to take into account the outcome of this vote when considering future compensation arrangements for the Company's named executive officers. We expect to hold such a vote at the annual meeting each year.

The proposal will be considered approved at the annual meeting if more votes are cast in favor than against. Abstentions and broker non-votes will not count as votes cast for or against this proposal.

The Board of Directors recommends a vote FOR approval of the 2016 compensation of the Company's named executive officers.

PROPOSAL 5: ADVISORY VOTE REGARDING THE FREQUENCY OF STOCKHOLDER VOTES TO APPROVE EXECUTIVE COMPENSATION

The Board also seeks the views of the stockholders on how often the Company should ask the stockholders to vote on the compensation of the Company's named executive officers: each year, every two years or every three years. The Company is required by Section 14A of the Securities Exchange Act of 1934 to include a Say on Pay vote, like Proposal 4, in proxy statements for its annual meetings at least once every three years, and also to seek periodic advisory votes on how often there should be a Say on Pay vote.

The Board believes that the Say on Pay vote should be held annually. In 2011, the stockholders of the Company ratified that decision, and Section 14A requires us to confirm that decision every six years. The Board evaluates, adjusts and approves executive compensation each year. Permitting the stockholders to express their opinion as close in time to the relevant compensation decisions will be most useful to the Board. You should indicate your preference on the proxy card.

Because the vote solicited by this proposal is advisory, its outcome will not be binding on the Board nor require the Board to take any action. Moreover, the outcome of the vote will not be construed as overruling any decision of the Board or creating or implying any additional fiduciary duty of the Board or restricting or limiting the ability of the Company's stockholders to make proposals for inclusion in proxy materials related to executive compensation. However, the Board expects to take into account the outcome of this vote when considering how frequently to seek a Say on Pay vote of stockholders in the future.

Only votes cast at the annual meeting will be taken into account. Abstentions and broker non-votes will not count as votes cast with respect to this proposal.

The Board of Directors recommends a vote in favor of the Company's including a Say on Pay proposal in the proxy statement for its annual meeting **ANNUALLY**.

EXECUTIVE COMPENSATION

2016 Compensation Discussion and Analysis

This 2016 Compensation Discussion and Analysis is intended to provide a context for the disclosures contained in this proxy statement with respect to the compensation paid to the Company's principal executive officer (Mary G. Puma), principal financial officer (Kevin J. Brewer), and the three most highly compensated other executive officers serving at December 31, 2016, who are included in the *Summary Compensation Table* below. These executive officers are referred to herein as "named executive officers" or "NEOs." Specifically, this Compensation Discussion and Analysis will explain the objectives and material elements of the compensation of the NEOs during 2016.

Executive Summary of Axcelis 2016 Executive Compensation

2016 Business Environment.

Axcelis designs, manufactures and services ion implantation and other processing equipment used in the fabrication of semiconductor chips. Our Purion platform family of ion implanters are, we believe, the most innovative implanters available on the market today. We sell to leading semiconductor chip manufacturers worldwide. In addition to equipment, we provide extensive aftermarket lifecycle products and services, including used tools, spare parts, equipment upgrades, maintenance services and customer training.

2016 was a challenging year for the Company. Our 2016 revenues of \$267.7 million were below our 2015 revenues due to lower purchasing from key memory customers, particularly in DRAM. Despite this, Axcelis made progress towards our long-term strategic goal of regaining a position of market share leadership in the ion implant semiconductor equipment market. In 2016 we continued to invest a significant portion of our resources in research and development programs related to our Purion ion implantation platform. During the year, our customer base for Purion ion implanters expanded significantly, and we successfully introduced several new extensions to our core Purion systems, such as the hot silicon carbide Purion M, the Purion EXE and Purion VXE. We placed Purion ion implanters with seven new customers, as well as within seven new fabs owned by existing customers. In addition, we continued to improve our gross margin performance in 2016. The Company's gross margins for 2016 were 37.3%, up from 33.7% in 2015. We also worked hard to ensure that manufacturing and operating expense levels remain well aligned to business conditions. We believe that the most fundamental interest of our stockholders is in consistent, profitable, financial performance.

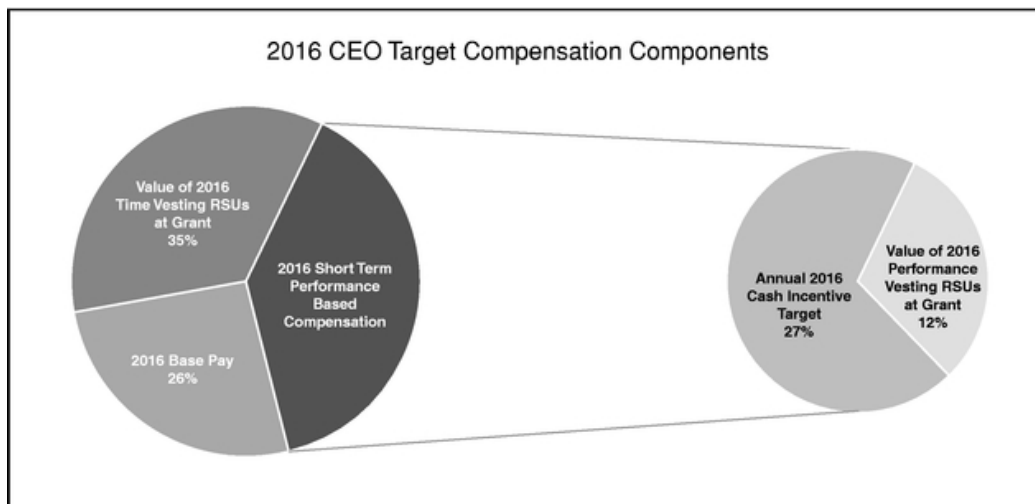
2016 Say-on-Pay Vote

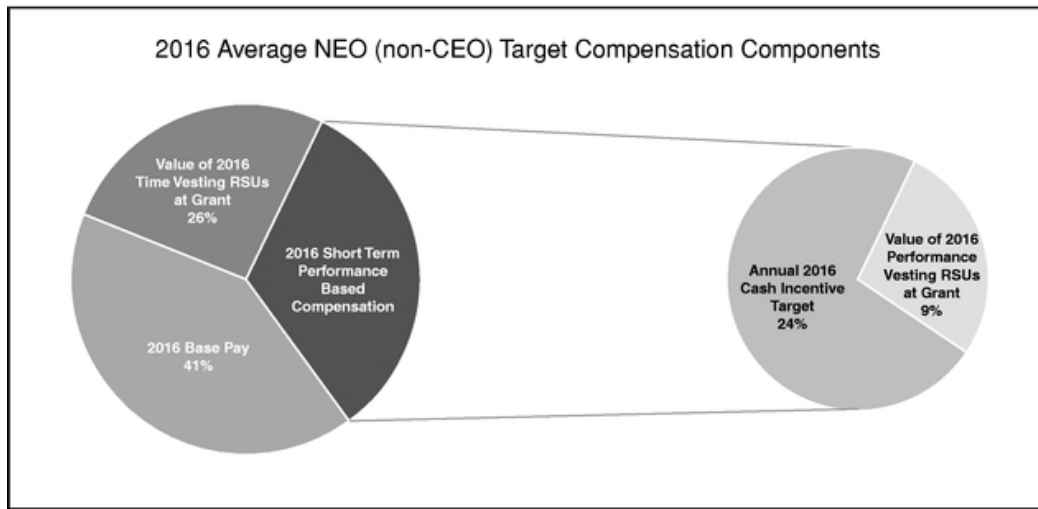
At our 2016 annual meeting, approximately 97% of votes cast were in favor in the advisory vote on 2015 executive compensation (commonly referred to as "Say-on-Pay"). This was consistent with the percentage approval in the Say-on-Pay vote regarding the Company's 2014 executive compensation.

The Compensation Committee of our Board of Directors considered that the results of the 2016 Say-on-Pay vote validated our general approach to executive compensation. Accordingly, our 2016 cash compensation structure was the same as in 2015, with executive officers receiving base pay and an annual cash incentive tied to financial metrics. In a change from prior years, the 2016 equity grants were in the form of restricted stock units, of which 25% of the grant was subject to vesting based on the achievement of five 2016 operational performance goals. This structure and the compensation levels were reviewed in November 2016 by Pearl Meyer, which firm reported that our executive pay is at or below that of our peers and aligned with our performance.

2016 Executive Target Compensation Balanced Service and Performance Based Components.

- In 2016, the NEOs' target base, annual incentive and equity grant compensation components aligned well with elements of peer executive compensation targets.
- Base pay represented 26% of the total target compensation of the Company's chief executive officer (Mary G. Puma) and 41% (on average) of the other NEOs' 2016 total target compensation.
- Short term performance based compensation, comprised of the 2016 annual cash incentive target compensation and the 2016 performance vesting RSUs (valued at the grant date), represented 39% of Ms. Puma's total target compensation and 33% (on average) of the other NEOs' 2016 total target compensation.
- The remaining 35% of Ms. Puma's compensation, and 26% of the other NEOs, was comprised of time-vesting RSUs, the value of which is tied to the value of the Company.

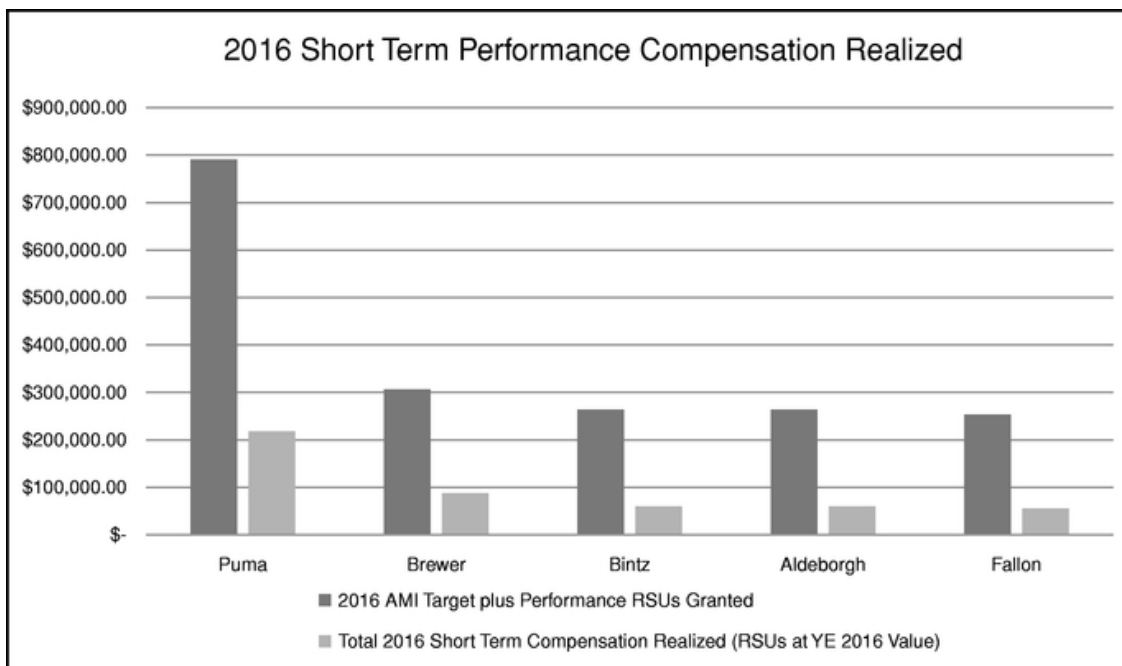




2016 Realized Short Term Performance Based Compensation was Below Target.

The 2016 short term performance compensation realized by the NEOs was below the target pay established for the year. There was no payout under the 2016 Axcelis Management Incentive Plan, based on the Company's revenue and operating profit performance against targets. For the performance vesting RSUs granted in 2016, three of the five 2016 operational goals were achieved, so 60% of the 2016 performance RSUs vested, and the remainder have forfeited. As a result, valuing the vested performance RSUs at the closing price on December 31, 2016, as shown in the chart below, Ms. Puma earned 28% of her target short term performance based compensation and the other NEOs earned an average of 24% of their target short term performance based compensation. See "*Executive Compensation—2016 Compensation Discussion and Analysis—Executive Summary of Axcelis 2016 Executive Compensation.*"

The chart below shows each executive's realized short term performance based compensation, in comparison to his or her target short term performance based compensation:



Compensation Philosophy and Governance Practices

The Company's overall compensation goal is to drive stockholder value by implementing an executive compensation program designed to:

- (1) motivate and retain executive talent by offering total target compensation with a proportion of at-risk compensation that is commensurate with the 50th percentile of total target and at-risk compensation at other companies of a similar size in the same or similar industries, as adjusted for individual factors; and
- (2) drive achievement of annual and long-term strategic objectives by rewarding executives through incentive pay tied to approved financial and operational goals and equity grants that deliver value with stock price appreciation, aligning pay with performance.

The Company also seeks to support our compensation philosophy with strong governance practices, which include:

- An annual Say-on-Pay vote and related stockholder outreach;
- Annual benchmarking of executive compensation against a peer group;

- An equity award plan that seeks to align to best practices (including with respect to cost and voting power dilution, fungible share counting for whole share awards and prohibitions on repricing and cash repurchases);
- Equity grant practices below industry burn rates and acceptable voting power dilution;
- Executive stock ownership guidelines;
- Double trigger change of control benefits for executives, and the elimination of excise tax indemnification and gross ups in future change of control agreements;
- An executive compensation clawback policy that empowers the Board to recover incentive compensation under terms set forth in the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010; and
- No perquisites or guaranteed bonuses.

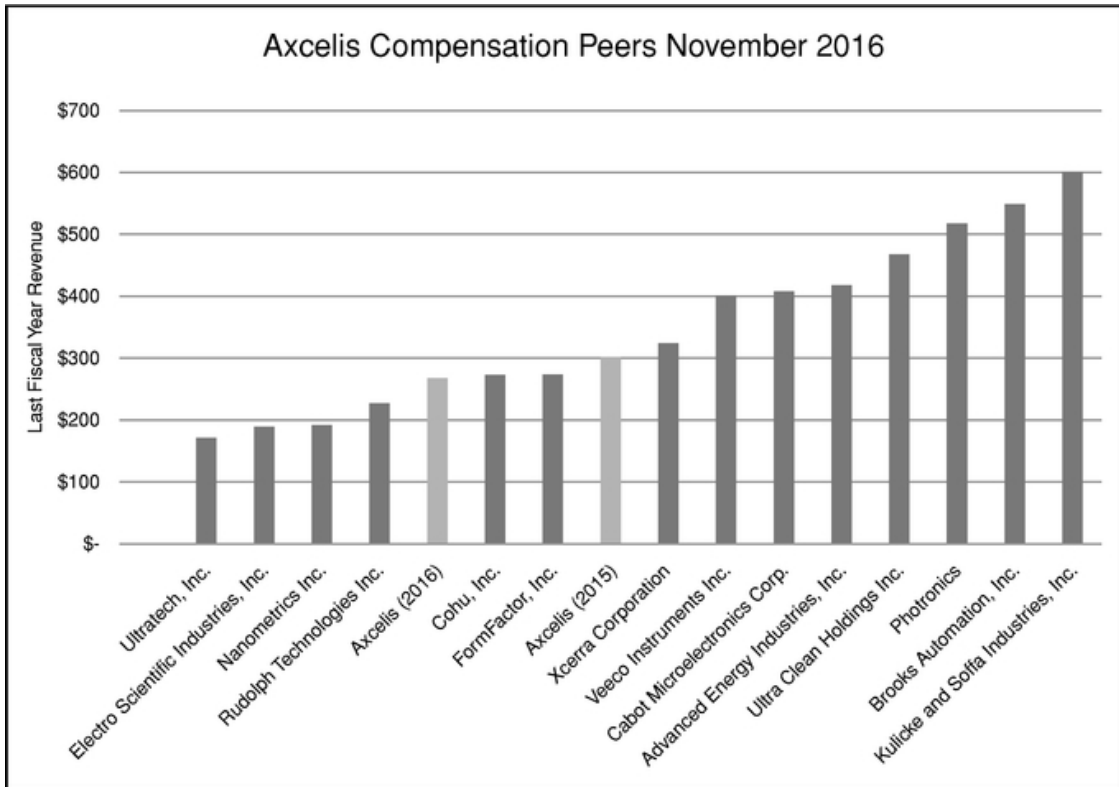
Review of Executive Compensation in 2016

All executive compensation is determined by the Compensation Committee of the Board of Directors. For a discussion of the Committee's processes in general, see "*Corporate Governance—Compensation Committee*" in this proxy statement. Executive compensation for incumbent executives is reviewed annually.

The Compensation Committee engaged an outside compensation consultant, Pearl Meyer, to provide a report for discussion at the November 2016 meeting on both cash and equity compensation for each of the executive officer positions at Axcelis in comparison to market data. The Committee assessed Pearl Meyer's independence in light of the SEC rules and Nasdaq listing standards and determined that no conflict of interest or independence concerns exist.

Pearl Meyer, working with management and the Committee, developed an updated peer group of companies that was used for comparison purposes (the "2016 Peer Group"). The Committee reviewed the Company's 2015 peer group, and three 2015 peers (Applied Micro Circuits Corp., Cascade Microtech and Mattson Technology) were removed due to size and/or business cessation and two new companies were added (Electro Scientific Industries Inc. and Kulicke & Soffa Industries, Inc.), each of which met the industry and revenue qualifications. The peer companies were selected based on their participation in the semiconductor equipment industry, with revenues ranging from 57% to 200% of Axcelis' 2015 revenue, and similarities in sales growth, total stockholder return, and number of employees. The chart below names the

selected 14 peers ranked by revenue for the most recently completed fiscal year as of November 2016, in comparison to Axcelis (shown both with 2015 and 2016 Axcelis revenues):



Axcelis, using our 2015 revenue, is near the median of the 2016 Peer Group in terms of revenue. Compensation information from these 2016 Peer Group companies was obtained from proxy statements and other filings available prior to November 2016. Pearl Meyer also used data from a proprietary global technology survey, reflecting companies of approximately the same size as Axcelis. While this peer group represents a broad revenue range with some peers at higher revenues, Axcelis competes for talent against all other companies in the semiconductor industries, many of which have higher revenues. We also believe our revenues will continue to increase in the coming years.

In their report to the Compensation Committee, Pearl Meyer advised that Axcelis' 2016 CEO target total compensation was at 77% of the market median, and positioned at the 30th percentile. For the other executives, Pearl Meyer reported that target total compensation ranged from 70% to 98% of median, positioned between the 20th and 45th percentile. Pearl Meyer also reviewed the structure of the Company's annual incentive plan, the 2016 Axcelis Management Incentive Plan, discussed below. Pearl Meyer reported that the plan design and metrics of the Axcelis annual incentive plans were within market practice in the 2016 Peer Group.

Pearl Meyer reported that Axcelis' executive equity compensation, using Black Scholes grant date fair value, lagged the market, but was competitive under an opportunity perspective,

which looks at grants as a percentage of shares outstanding. Pearl Meyer noted that Axcelis' 2016 equity grant burn rate was modest relative to market from both a traditional and ISS methodology (where restricted stock units are counted as 2x the shares granted).

No changes to 2016 NEO compensation were made as a result of the Pearl Meyer Executive Compensation report, but certain recommendations may be implemented in 2017.

Material Elements of Named Executive Officer Compensation

The table below lists the key elements of NEO compensation, why Axcelis has chosen to pay each compensation element, and how Axcelis determines the amount of each element:

Compensation Element	Principal Rationale for Inclusion	How Amount is Determined
Base salaries	To attract and retain qualified executives in a competitive industry.	We seek to provide each element of compensation at a level that is at or near the 50 th percentile of the market data for each form of compensation for the benchmarked position.
Annual Cash Incentive	To drive achievement of annual strategic objectives through at-risk pay tied to financial and operational goals, resulting in appropriate pay-for-performance.	
Equity Awards	To drive achievement of long-term stockholder value through equity grants that deliver value with stock price appreciation, resulting in appropriate pay-for-performance.	

The following discussion explains how, in 2016, each compensation element and the Company's decisions regarding that element fit into the Company's overall compensation objectives and affected decisions regarding other elements.

Base Salary

The Company pays a base salary to each of its NEOs. Base pay for NEOs is set on commencement of employment with the Company and reviewed by the Compensation Committee annually thereafter to adjust as needed to align with market benchmarking. In the event that base pay is a factor in calculating annual incentive cash compensation or equity grants, when fixing or adjusting base pay, the Compensation Committee will consider the impact of a change on these other compensation components. No increases to NEO base pay were approved in 2016.

Annual Cash Incentive—2016 Axcelis Management Incentive Plan

In February 2016, the Compensation Committee adopted the Company's annual cash incentive plan, the 2016 Axcelis Management Incentive Plan (the "2016 AMI"). Approximately 130 management-level employees participated in the 2016 AMI, each of whom was assigned a target payout, expressed as a percent of base pay. The Committee set the 2016 AMI target for Ms. Puma at 100% of her base pay, and for each of the other NEOs at 60% of their respective 2016 base pay.

Pearl Meyer, in their November 2015 executive compensation review, concluded that the metrics used in the Company's 2015 annual cash incentive plan were supported by market practice. Based on this, and the relevance of revenue and operating profit to the Company's long term goals, the Committee used the same metrics for the 2016 AMI. Revenue growth is a critical metric for the Company, as we seek to grow market share. Operating profit is viewed as preferable to net income, since it eliminates factors outside of the control of management. The table below shows the metrics established for the 2016 AMI, setting 0%, 100% and 200% level scores for 2016 revenue and operating profit.

Metric	Weight	Minimum Level (0% Score)	Target Level (100% Score)	Maximum Level (200% Score)
2016 Revenue	50%	278M \$	325.5M \$	380M
2016 Operating Profit (after AMI payout)	50%	23.4M \$	27.3M \$	32.0M

The levels of revenue and operating profit in the 2016 AMI were chosen so that the revenues and operating profit expected in the 2016 profit plan would result in a meaningful score, with the minimum and maximum levels set at a reasonable range around the expected performance.

The 2016 AMI plan design contemplated that actual 2016 financial performance would be compared to these metrics, and a weighted score developed, interpolating for the score between the metric levels. The total at-target (a 100% score) payout of the 2016 AMI would have equaled approximately \$5.2 million. The 2016 AMI score is capped at a 200% payout. The Compensation Committee has the authority to adjust the funding for extraordinary items and other qualitative aspects of the Company's 2016 performance (using benchmarks and budgets) to ensure that the score reflects actual performance and not extraordinary events and is otherwise appropriate. As designed, actual payouts would equal the individual participant's target payout, multiplied by the AMI score and then multiplied by an individual performance score determined by the individual's manager, or the Compensation Committee, in the case of the NEOs. Individual performance scores could range from 0% to 150%, provided such individual adjustments could not increase the aggregate payout amount for all participants, without Compensation Committee approval.

The Company's actual revenues and operating profit in 2016 fell below the minimum levels established by the Committee for the 2016 AMI. As a result, in February 2017, the Compensation Committee determined that the final 2016 AMI score was zero, so there was no payout under the plan.

Long-Term Equity Incentive Compensation

Equity Compensation Philosophy. Equity compensation for NEOs, which at the Company has taken the form of stock options and restricted stock units, is designed to align the interests of executives with those of our stockholders and to retain executives through the use of multi-year vesting periods. Equity grants are also intended to align pay with performance in that the value ultimately realized through equity grants is directly linked to stock price appreciation and stockholder value accretion. Option grants have no value without stock price appreciation, and RSUs have value at grant that can increase with stock price appreciation. Thus, equity grants

should constructively influence management's motivation to enhance the value of the Company's stock. In 2016, on the advice of Pearl Meyer, the Committee included some restricted stock units with vesting provisions based on the achievement of critical operational objectives.

Long-term ownership of equity awards is further encouraged through the Company's executive stock ownership guidelines, which establish a minimum number of shares that the executive must own and align executive officers and long-term stockholder interests. Ms. Puma is required to own shares having a value equal to three times her base pay. The other NEOs are required to own shares having a value equal to 1.5 times base pay or, if less, 16,250 shares. Until an NEO meets the requisite stock ownership level prescribed by the stock ownership guidelines, the NEO is encouraged to retain 50% of the net shares received through the exercise of stock options or in connection with the vesting of RSUs. These guidelines are intended to ensure that the executives' interests in the value of the Company's stock include interests in stock as well as equity-based incentive awards, and as such are more fully aligned with the interests of Company stockholders generally. NEOs are also subject to the Company's policies prohibiting hedging and pledging our common stock, which are discussed above under "*Corporate Governance*."

Equity Compensation Processes. Equity grants to executives are made upon hire and, typically, thereafter on an annual basis. Annual equity grants to executive officers have been made in most years in order to ensure a meaningful retentive effect by maintaining the percentage of the executive's equity position that is unvested and to continue to award compensation that is directly tied to Company performance. The Compensation Committee determines the form of equity grants made to the NEOs. The 2012 Equity Incentive Plan allows the Compensation Committee to award several different forms of equity rights, including restricted stock, RSUs, incentive stock options and non-qualified stock options. Past equity grants to NEOs have taken the form of non-qualified stock options and RSUs.

From 2008 through 2015, our Compensation Committee selected stock options as the main form of equity grant because our low share price allowed for significant potential return on growth in our stock price. Stock options also provide a significant incentive because the optionholder receives no or minimal reward if the stock price does not improve over the level on the date of grant. During that period, we also used RSUs in lieu of cash incentives to conserve cash as well as in other appropriate circumstances. RSUs allow us to issue fewer shares than stock options to deliver comparable value, which reduces overhang and potential stockholder dilution. RSUs also have a significant retention effect because their ultimate value depends on the future stock price performance of the company, providing motivation through variable "at risk" compensation and direct alignment with stockholders. In their review of our executive compensation in November 2015, Pearl Meyer observed that all of our compensation peers were using either RSUs, or a combination of RSUs and stock options, as their equity awards.

It is the Committee's general practice to approve equity awards with a future effective date, usually on the 15th (or the next succeeding trading day) of a month following the approval. The Company believes that this time period between the approval and effectiveness of an equity grant means that the Committee is unable to know or estimate the trading price of the Company's common stock on the effective date of grant. As a result, the Committee has not, to date, thought it necessary to adopt a policy of timing the approval or effectiveness of equity awards to specific dates following the release of financial results or other material information.

In February 2016 when the Committee established the 2016 Axcelis Management Incentive Plan, it also set the value for the 2016 annual equity grants to the NEOs, which were made in May 2016 following the 2016 annual meeting.

2016 Annual Equity Grants. In February 2016, the Compensation Committee determined that restricted stock units would be used as the form of equity compensation for the annual program. This decision was based on Pearl Meyer's market data showing that all of the Company's compensation peers were using RSUs or a mix of RSUs and options. Given the options previously granted to the NEOs, it was determined that a mix of RSUs and options could be achieved by adding RSUs to the NEOs' equity positions.

The Compensation Committee fixed values for the 2016 restricted stock unit grant to each NEO at levels near the median benchmark for the position provided by Pearl Meyer in November 2015. The number of units for each RSU grant was determined by dividing an approved grant value by the average closing price of the Company's common stock as reported by Nasdaq over a 30-day period ending two days prior to the grant date. The 2016 RSU grants to NEOs are set forth in the *Grants of Plan Based Awards in Fiscal 2016* table below.

The Committee determined that 75% of the 2016 RSUs will vest at the rate of 25% on each of the first four anniversaries of the date of grant until fully vested in May 2020 (assuming continuation of employment). The remaining 25% of the 2016 RSUs granted to the NEOs were subject to vesting in February 2017 based on the achievement of five performance objectives established for the 2016 calendar year by the Committee. These five performance objectives related to market penetration of the Purion H ion implanter at specific customers, development objectives for the Purion H ion implanter, Purion M market penetration and industry marketing collaborations. Disclosure of the details for these performance objectives would violate customer confidentiality agreements and provide sensitive information to the Company's competitors. In February 2017, the Compensation Committee determined that the Company met three of the five performance objectives, and accordingly, 60% of the 2016 performance RSUs vested, with the remaining 40% forfeiting.

Employment and Change of Control Agreements

The Company has had an Employment Agreement with Ms. Puma since November 2007 that provides for a one-year term of employment at a minimum annual base salary of \$500,000 and an annual target incentive compensation opportunity of 100% of base salary and severance upon a qualifying termination of employment. See "*Payments on Termination or Change of Control—Employment Agreement with Ms. Puma*" below. No action was taken by the Compensation Committee in 2016 relating to this Employment Agreement.

In March 2015, the Compensation Committee approved the execution of separation pay agreements with each of the NEOs other than Ms. Puma. These Executive Separation Pay Agreements provide that in the event of a termination without cause, the executive will continue to receive base pay for 12 months. If the NEO elects to continue health coverage under COBRA, the Company will waive 12 months of COBRA premiums. In addition, the Company will provide transition support having a value of \$15,000.

Each of the NEOs has a double-trigger Change of Control Agreement with the Company, described below under "*Payments on Termination or Change of Control.*" If the Change of Control Agreement applies, the NEO will receive the greater of the change of control payout or the payout under the Executive Separation Pay Agreement (or in the case of Ms. Puma, under her Employment Agreement).

As noted above under "*Corporate Governance—Governance Policies,*" consistent with our commitment to strong corporate governance and responsiveness to our stockholders, in 2014 the Board of Directors adopted a new governance policy against tax gross-up arrangements, which provides that no future change of control agreement with any future executive officer of the Company shall include a gross-up in respect of any excise or other tax due in respect of severance compensation, including pursuant to Sections 280G and 4999 of the Internal Revenue Code.

In November 2016, the Compensation Committee approved a new form of Change of Control Agreement which was determined to be market aligned. The new form of Change of Control Agreement, which is also a double trigger agreement, provides for lower separation pay, and does not include a grossed up indemnification for excise or other tax due in respect of severance compensation, including pursuant to Sections 280G and 4999 of the Internal Revenue Code. The Company entered into this form of Change of Control Agreement with a new executive officer (not an NEO) in November 2016. Also, in August 2016, the Committee determined to notify the NEOs that their agreements would not be renewed after the next renewal date. As a result of this action, all NEO Change of Control Agreements with a grossed up tax indemnification provisions will terminate by February 13, 2020.

Other Compensation Components

In May 2016, the Compensation Committee determined to eliminate the Executive Officer Tax and Financial Planning benefit which provided for a reimbursement, on request of the executive, of up to \$5,500 of an executive's annual tax and financial planning expenses. This program was the only executive perquisite at Axcelis. Amounts paid to NEOs under this program in previous years are included in the "All other compensation" column in the Summary Compensation Table. Mr. Brewer was the only NEO to participate in this program in 2015 and 2014.

Executives may elect to make contributions to a retirement account in the Company's IRC Section 401(k) plan on the same basis as Company employees generally. The Company made a matching contribution to the 401(k) plan at the rate of 50% of the employee's 2016 contributions, up to \$1,200.

The Company does not maintain for the NEOs either a defined benefit pension plan or any non-qualified deferred compensation plans.

NEOs may also participate in the Company's medical and dental insurance offerings on the same basis as full time Company employees generally by electing to make payroll deductions designed to cover approximately 25% or 30% of the cost of those programs (the Company covers the remaining cost). The Company provides life, accidental death and dismemberment and

disability insurance for all employees, and the opportunity to increase coverage levels via payroll deductions.

Finally, the Company maintains the Employee Stock Purchase Plan, a voluntary IRC Section 423 plan in which employees may purchase Axcelis shares through salary deductions.

Executive Compensation Clawback Policy

In 2014, the Board of Directors adopted an Executive Compensation Clawback Policy which authorizes the Board to seek recovery of incentive cash and equity compensation as contemplated by Section 954 of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010. In addition, the Company's policy authorizes a clawback of incentive compensation in the event of any violation of an agreement with the Company or of any policy of the Company (which would include violations of the Company's Ethics policy or any applicable law) and also in the event of a voluntary departure to work for a competitor.

Risk Assessment of Compensation Policies and Practices

In 2016, the Company determined, in its reasonable business judgment, that its compensation policies and practices for its employees, including the NEOs, do not give rise to risks that are reasonably likely to have a material adverse effect on the Company. In reaching this determination, management engaged in (i) a review of the Company's compensation programs, policies and practices, (ii) identification of risks, if any, related to the programs, policies and practices, (iii) consideration of the materiality of a potentially risk-related reward to the total compensation provided to the individual, and (iv) identification of those aspects of the program and its oversight that provide risk control. Although all compensation programs were considered, management's review focused on the programs with variability of payout and in which there is a potential for the participant to directly affect payout.

Based on this review, management determined that the compensation policies and practices for Axcelis' employees do not create risks that are reasonably likely to have a material adverse effect on the Company, principally because:

- (1) The structure of our executive compensation program includes a balanced mix of cash and equity compensation; and
- (2) Our incentive compensation programs are subject to appropriate risk controls in their design and oversight:
 - The Company's internal controls and risk management practices restrict risk-taking that is not consistent with risks inherent in the Company's strategic plan, as approved by the Board;
 - Payment of small bonuses for extraordinary effort or for achieving individual or team goals are subject to approval by direct managers, and representatives of human resources and finance departments, and, for higher amounts, a representative of senior management;

- Payment of sales commission plans are subject to calculation and approval by the finance department and are tied to actual receipt of payments from the customer; and
- Payouts under the Company's annual cash incentive plans are in the discretion of the Compensation Committee, which considers both qualitative and quantitative assessments of performance.

Tax Implications

Section 162(m) of the Internal Revenue Code generally disallows a federal tax deduction to public companies for compensation in any tax year to specified executive officers to the extent that the compensation to such executive officer exceeds \$1 million, subject to exceptions for compensation that is "qualified performance-based compensation" under Section 162(m) of the Internal Revenue Code.

Certain of our compensation and benefit plans are designed to permit us to grant awards that may qualify as "qualified performance-based compensation;" however, it is possible that awards intended to qualify for the tax deduction may not so qualify if all requirements of the "qualified performance-based compensation" exemption are not met.

Furthermore, although the Compensation Committee may take action intended to limit the impact of Section 162(m) of the Internal Revenue Code, the Compensation Committee also believes that the tax deduction is only one of several relevant considerations in setting compensation, and that the tax deduction limitation should not be permitted to compromise the Compensation Committee's ability to structure its compensation to provide benefits to the Company that outweigh the potential benefit of the tax deduction. While the Company has not been limited in its tax deductions in respect of compensation by reason of Section 162(m) of the Internal Revenue Code in the last decade, achieving the desired flexibility in the design and delivery of compensation may result in compensation that in certain cases is not deductible for federal income tax purposes in the future.

2016 Compensation Committee Report

The Compensation Committee has reviewed and discussed the foregoing Compensation Discussion and Analysis with management and, based on this review and discussion, the Compensation Committee recommended to the Board of Directors that the Compensation Discussion and Analysis be included in this proxy statement.

By the Compensation Committee,

R. John Fletcher, Chairman
Arthur L. George, Jr.
John T. Kurtzweil
Patrick H. Nettles

2016 Summary Compensation Table

Name and Principal Position	Year	Salary (\$)(1)	Bonus (\$)(2)	Stock awards (\$)(3)	Option awards (\$)(3)	Non-equity incentive plan compensation (\$)(4)	All other compensation (\$)(5)	Total (\$)
Mary G. Puma, Chief Executive Officer and President	2016	\$ 550,000	\$ -	\$ 964,000	\$ -	\$ -	\$ 1,644	\$ 1,515,644
	2015	\$ 550,000	\$ -	\$ -	\$ 426,000	\$ 394,350	\$ 1,000	\$ 1,371,350
	2014	\$ 492,885	\$ -	\$ -	\$ 288,984	\$ -	\$ -	\$ 781,868
Kevin J. Brewer, Executive Vice President and Chief Financial Officer	2016	\$ 350,000	\$ -	\$ 385,600	\$ -	\$ -	\$ 1,200	\$ 736,800
	2015	\$ 350,000	\$ -	\$ -	\$ 319,500	\$ 150,570	\$ 1,518	\$ 821,588
	2014	\$ 326,731	\$ 25,000	\$ -	\$ 216,738	\$ -	\$ 841	\$ 569,310
William Bintz, Executive Vice President, Product Development	2016	\$ 330,000	\$ -	\$ 262,909	\$ -	\$ -	\$ 1,441	\$ 594,350
	2015	\$ 330,000	\$ -	\$ -	\$ 284,000	\$ 141,966	\$ 2,000	\$ 757,966
	2014	\$ 309,423	\$ -	\$ -	\$ 192,656	\$ -	\$ -	\$ 502,079
John E. Aldeborgh, Executive Vice President, Global Customer Operations	2016	\$ 330,000	\$ -	\$ 262,909	\$ -	\$ -	\$ -	\$ 592,909
	2015	\$ 330,000	\$ -	\$ -	\$ 284,000	\$ 141,966	\$ -	\$ 755,966
	2014	\$ 306,346	\$ -	\$ -	\$ 192,656	\$ -	\$ -	\$ 499,002
Lynnette C. Fallon, Executive Vice President, HR/Legal and General Counsel	2016	\$ 320,000	\$ -	\$ 245,382	\$ -	\$ -	\$ 1,533	\$ 566,915
	2015	\$ 320,000	\$ -	\$ -	\$ 213,000	\$ 137,664	\$ 1,000	\$ 671,664
	2014	\$ 301,538	\$ -	\$ -	\$ 144,492	\$ -	\$ -	\$ 446,030

- (1) Base salary is set by the Compensation Committee, based on market benchmarking. The 2014 base salary for each of the NEOs other than Ms. Puma reflects their participation in three weeks of unpaid shutdowns in 2014, and in Ms. Puma's case, a 10% voluntary pay reduction. Other than Ms. Puma, the named executive officers (NEOs) do not have employment agreements addressing base salary. Ms. Puma's employment agreement is described under the heading "Payments on Termination or Change in Control" in this proxy statement.
- (2) Mr. Brewer was paid a \$25,000 lump-sum bonus amount in January 2014 in consideration of his service as interim Chief Financial Officer beginning in mid-2013. This was a fixed payment the Company had agreed to make after the end of 2013.
- (3) Represents the grant date fair value of the stock and option awards received by the NEO in the year indicated, determined in accordance with FASB ASC Topic 718, using the assumptions described in the Stock Award Plans and Stock-Based Compensation Note to the Company's Financial Statements included in the Form 10-K filed with the Securities and Exchange Commission for the respective year.
- (4) Non-equity incentive plan compensation in 2015 represents amounts that were paid under the 2015 Axcelis Management Incentive Plan, as described in the "Compensation Discussion and Analysis" in the Proxy Statement for our 2016 Annual Meeting. No non-equity incentive plan compensation was paid in respect of the 2016 Axcelis Management Incentive Plan, as described in the "Compensation Discussion and Analysis" appearing in this Proxy Statement.
- (5) The amounts in this column represent (A) the amount to be paid in cash as a matching contribution to Axcelis' 401(k) plan in respect of contributions made by the NEO during the year, (B) amounts reimbursed under the

Company's Executive Tax and Financial Planning Reimbursement Program (which was discontinued in 2016), and (C) the value of service awards received in the year.

Grants of Plan Based Awards in Fiscal 2016

Name	Grant Date	Date of Compensation Committee Approval(1)	All Other Stock Awards: Number of Shares of Stock or Units(#)	Grant Date Fair Value of Stock and Option Awards(3)
Mary G. Puma	5/16/2016	2/11/2016	100,000 \$	964,000
Kevin J. Brewer	5/16/2016	2/11/2016	40,000 \$	385,600
William Bintz	5/16/2016	2/11/2016	27,273 \$	262,909
John E. Aldeborgh	5/16/2016	2/11/2016	27,273 \$	262,909
Lynnette C. Fallon	5/16/2016	2/11/2016	25,455 \$	245,382

- (1) As discussed above in "2016 Compensation Discussion and Analysis—Long-Term Equity Incentive Compensation—Equity Compensation Processes," it is the Compensation Committee's general practice to approve equity awards with a future effective date, usually on the 15th of the first or second month following the approval. In 2016, the annual equity grants were approved in February with a grant date of May 16, 2016.
- (2) The NEOs were granted RSUs under the Company's 2012 EIP effective May 16, 2016. 75% of the RSUs granted to each executive vest as to 25% of such shares on the each of the first four anniversaries of the date of grant, until fully vested on the fourth anniversary of the date of grant. 25% of the RSUs granted to each executive vested or forfeited on February 15, 2017 based on the achievement of performance goals for the calendar year 2016. Other than future services to the Company, no consideration was paid or will be due in order to acquire these RSUs. The 2016 RSUs will be forfeited if the NEO's employment terminates prior to vesting, as described in the table entitled "Outstanding Equity Awards at Fiscal 2016 Year End." See "Long-Term Equity Incentive Compensation—2016 Equity Grants" in "2016 Compensation Discussion and Analysis" above.
- (3) Represents the grant date fair value of the equity awards received by the NEO in 2016, determined in accordance with FASB ASC Topic 718, using the assumptions described in the Stock Award Plans and Stock-Based Compensation Note to the Company's Financial Statements included in the Form 10-K filed with the Securities and Exchange Commission for 2016.

Outstanding Equity Awards at Fiscal 2016 Year End

Name	Option Awards					Stock Awards	
	Number of Securities Underlying Unexercised Options (#) Exercisable	Number of Securities Underlying Unexercised Options (#) Unexercisable	Option Exercise Price (\$)	Option Expiration Date	Number of Shares or Units of Stock that Have Not Vested (#)	Market Value of Shares or Units of Stock that Have Not Vested (\$)(5)	
Mary G. Puma	62,500	0	\$ 2.80	11/17/2018			
	62,500	0	\$ 4.64	11/16/2019			
	62,500	0	\$ 6.40	7/15/2020			
	62,500	0	\$ 6.40	7/15/2021			
	62,500	0	\$ 3.72	7/16/2019			
	62,500	0	\$ 7.96	7/15/2020			
(1)	37,500	37,500	\$ 7.20	7/15/2021			
(2)	23,438	51,563	\$ 12.04	7/15/2022			
(3)					100,000	\$ 1,455,000	
Kevin J. Brewer	31,250	0	\$ 4.64	11/16/2019			
	37,500	0	\$ 6.40	7/15/2020			
	37,500	0	\$ 6.40	7/15/2021			
	37,500	0	\$ 3.72	7/16/2019			
	56,250	0	\$ 7.96	7/15/2020			
(1)	28,125	28,125	\$ 7.20	7/15/2021			
(2)	17,580	38,670	\$ 12.04	7/15/2022			
(3)					40,000	\$ 582,000	
William Bintz	1,250	0	\$ 25.26	5/15/2017			
	18,000	0	\$ 4.64	11/16/2019			
	37,500	0	\$ 6.40	7/15/2020			
	37,500	0	\$ 6.40	7/15/2021			
	75,000	0	\$ 7.96	7/15/2020			
(1)	25,000	25,000	\$ 7.20	7/15/2021			
(2)	15,625	34,375	\$ 12.04	7/15/2022			
(3)					27,273	\$ 396,818	
John E. Aldeborgh							
(4)	37,500	12,500	\$ 1.28	1/15/2020			
	87,500	0	\$ 7.96	7/15/2020			
(1)	25,000	25,000	\$ 7.20	7/15/2021			
(2)	15,625	34,375	\$ 12.04	7/15/2022			
(3)					27,273	\$ 396,818	
Lynnette C. Fallon	31,250	0	\$ 4.64	11/16/2019			
	31,250	0	\$ 6.40	7/15/2020			
	37,500	0	\$ 6.40	7/15/2021			
	37,500	0	\$ 3.72	7/16/2019			
	18,750	0	\$ 7.96	7/15/2020			
(1)	18,750	18,750	\$ 7.20	7/15/2021			
(2)	11,719	25,781	\$ 12.04	7/15/2022			
(3)					25,455	\$ 370,364	

(1) Assuming continued employment, the unexercisable 2014 options will become exercisable as to 50% of the unexercisable shares on each of July 15, 2017 and 2018.

- (2) Assuming continued employment, the unexercisable 2015 options will become exercisable in equal quarterly installments on each January 15, April 15, July 15 and October 15 until fully vested on July 15, 2019.
- (3) The NEOs were granted RSUs under the Company's 2012 EIP effective May 16, 2016. 75% of the RSUs granted to each executive vest as to 25% of the shares on each of the first four anniversaries of the date of grant, until fully vested on the fourth anniversary of the date of grant. 25% of the RSUs granted to each executive were designed to vest or forfeit on February 15, 2017 based on the achievement of performance goals for the calendar year 2016. Of these performance vesting RSUs, 60% vested on February 15, 2017 and the remaining 40% forfeited.
- (4) These unexercisable options became exercisable on January 15, 2017.
- (5) The market value of the unvested RSUs held by the executives at December 31, 2016 was determined by multiplying the unvested RSUs by the closing price on December 30, 2016 of \$14.55

Option Exercises and Stock Vested During Fiscal 2016

None of the NEOs acquired shares on vesting of stock awards in 2016, and one executive exercised stock options.

Name	Number of Shares Acquired on Exercise (#)	Option Awards Value Realized on Exercise \$(1)
Mary G. Puma	-	-
Kevin J. Brewer	-	-
William Bintz	25,750	\$207,597
John E. Aldeborgh	-	-
Lynnette C. Fallon	-	-

- (1) Represents the difference between the closing market price of the underlying shares on the date of exercise and the exercise price of the option, multiplied by the number of options exercised. The actual amount received by the NEO on the sale of any of the shares acquired on exercise will depend on the market values of the Company's common stock at the time the NEO disposes of such shares.

Payments on Termination or Change of Control

Employment Agreement with Ms. Puma. The Company has had an Employment Agreement with Ms. Puma since November 2007 that provides for a one-year term of employment at a minimum annual base salary of \$500,000 and an annual target incentive compensation opportunity of 100% of base salary. Ms. Puma's rate of pay in 2016 was \$550,000, which was implemented on Compensation Committee approval in January 2013. Ms. Puma's base salary and incentive opportunities may be subject to future adjustment by the Board, but not below the minimum levels in her Employment Agreement, unless mutually agreed.

The term of Ms. Puma's agreement automatically renews on a year-to-year basis unless one party notifies the other that the agreement will not be extended. Such notice must be sent within a 60 day window period beginning 180 days prior to the next anniversary of the effective date. The agreement also provides that Ms. Puma will participate in the Company's equity compensation plans, the 401(k) savings plan and the welfare benefit plans that we sponsor.

In the event Ms. Puma's employment is terminated prior to the end of the term of the Employment Agreement for reasons other than cause, death, disability or in the event of voluntary resignation without "good reason" (as defined in the Employment Agreement), she is entitled to full acceleration of vesting of options and other equity rights and a cash separation payment. The cash separation payment will equal 24 months of her annual base salary and two times an annual bonus amount determined in accordance with the agreement. For this purpose, Ms. Puma's annual bonus compensation will be her current annual base salary multiplied by the greater of (a) the percentage of her annual base salary that she actually received as a bonus for the prior fiscal year or (b) 25% of her annual base salary. Under the Employment Agreement Ms. Puma is also entitled to up to 18 months of Company-paid COBRA premiums. The following table sets forth the separation pay that would have been due to Ms. Puma under her Employment Agreement if a qualifying termination occurred on December 31, 2016:

Lump sum cash payment (1)	Value of accelerated vesting on equity awards (2)	18 months of COBRA premiums for health coverage (3)	Total
\$1,888,700	\$ 2,528,162	\$ 40,519	\$ 4,457,381

- (1) This amount represents 24 months of Ms. Puma's annual base salary at the highest rate in effect in the year preceding December 31, 2016 plus 24 months of a monthly bonus amount as specified in the agreement. The monthly rate of annual base salary (\$45,833) and monthly bonus amount (\$32,863) were calculated using her 2016 annual base salary of \$550,000 and Ms. Puma's payout under the 2015 Axcelis Management Incentive Plan at 71.7% of her base pay. The lump sum cash payment above would be due within 30 days of termination.
- (2) This amount reflects a valuation of the acceleration of Ms. Puma's outstanding equity awards using the methodology prescribed under IRC Section 280G, which provides for an excise tax on certain change of control payments. This valuation is based on the closing price of our common stock on the last trading day of 2016 (\$14.55). The actual amount received by Ms. Puma on her equity awards will depend on the market values at the time of such transactions.
- (3) Ms. Puma's employment agreement provides that the Company will pay for up to 18 months of COBRA premiums. This amount represents 18 months of COBRA premiums in effect during 2017 for Ms. Puma's coverage elections. Actual COBRA rates will change on January 1, 2018.

Executive Officer Separation Pay Agreements. In March 2015, the Compensation Committee approved the execution of separation pay agreements with each of the NEOs other than Ms. Puma. These Executive Separation Pay Agreements provide that in the event of a termination without cause, the executive will continue to receive base pay for 12 months. If the NEO elects to continue health coverage under COBRA, the Company will waive 12 months of COBRA premiums. In addition, the Company will provide transition support having a value of \$15,000.

The NEO must provide a release of claims in order to receive the separation pay. The NEO will not be eligible to receive the severance payments and benefits described in the agreement in the event that (i) the executive's employment is terminated by the Company for cause or due to executive's death or disability, or (ii) the executive resigns from employment, regardless of the reason(s) for such resignation. These agreements expire on March 5, 2020. The following table

sets forth the separation pay that would have been due to these NEOs under their respective Executive Separation Pay Agreements if a qualifying termination occurred on December 31, 2016:

	Cash Separation Pay (1)	Value of transition assistance (2)	12 months of COBRA premiums for health coverage (3)	Total
Kevin J. Brewer	\$ 350,000	\$ 15,000	\$ 20,018	\$ 385,018
William Bintz	\$ 330,000	\$ 15,000	\$ 27,488	\$ 372,488
John E. Aldeborgh	\$ 330,000	\$ 15,000	\$ 27,488	\$ 372,488
Lynnette C. Fallon	\$ 320,000	\$ 15,000	\$ 27,488	\$ 362,488

- (1) This amount represents 12 months of the NEO's annual base salary in effect on December 31, 2016. This amount would be paid in 26 bi-weekly installments
- (2) In the event separation pay is due, the Company will provide transition assistance to the NEO having a value of \$15,000. The Company will work with the executive to provide assistance that meets the needs of the executive, and will offer support in accordance with the Company's practices for executive terminations generally.
- (3) The Executive Separation Pay Agreements provide that the Company will pay for up to 12 months of COBRA premiums. This amount represents 12 months of COBRA premiums in effect during 2017 for the executive's coverage elections.

Change of Control Agreements. The Company has entered into a Change of Control Agreement with each of our NEOs to provide that severance compensation will be paid in a lump sum within 30 days of a covered termination following a change in control, as defined in the agreement. These Change of Control Agreements provide that the NEOs are entitled to severance compensation in the event there is both (1) a change in control and (2) a termination of employment within three years of that change in control for reasons other than cause, death, disability or voluntary resignation without good reason. Under the Change of Control Agreements, "good reason" is generally defined as a material diminution in the executive's authority, a material reduction in base pay or a material change in geographic location of the executive's job. A "change of control" is defined in the agreement and covers a number of events, including a merger or acquisition involving the Company in which the persons holding the Company's shares immediately prior to the transaction hold less than 75% of the shares outstanding after the transaction.

Severance compensation consists of a cash payment equal to three times the executive's annual base salary and average annual bonus as of the date of termination. For this purpose, an executive's average annual bonus is his or her current cash bonus opportunity multiplied by the average of the individual performance scores given to the executive in the last three years, assuming a target payout based on company metrics. In addition, all unvested RSUs and options held by the executive will vest in full.

The Change of Control Agreements provide for a non-competition covenant pursuant to which the executive may not to be engaged by, or own, any business competing with any of the businesses conducted by the Company for a period of 12 months following any termination of employment (whether or not following a change of control). The Change of Control Agreements also provide for a non-solicitation covenant whereby the executives may not solicit employees of

the Company to leave employment with the Company or solicit or induce customers of the Company to cease doing business with the Company, during the 12 months following any termination of employment (whether or not following a change of control).

Each of our current Change of Control Agreements with our NEOs provides for a gross-up of any excise tax due under Section 4999 of the Internal Revenue Code and any income tax due on such gross-up payment, as shown in the chart below. The excise taxes due under Section 4999 of the Internal Revenue Code are unpredictable and can have widely divergent and unexpected effects based on an executive's personal compensation history. Therefore, to provide a predictable and equal level of benefit to each of the NEOs without regard to the effect of the excise tax, at the time that we entered into Change of Control Agreements with the NEOs, we determined that it was appropriate to pay the cost of this excise tax plus an amount needed to pay income taxes due on such additional payment. Such provisions were consistent with market practice at the time that we entered into the Change of Control Agreements with our NEOs.

The amounts due to each NEO under the Change of Control Agreements in the event that a change of control and termination occurred on December 31, 2016 are set forth in the table below:

Estimated Payments under the Change of Control Agreements if due at December 31, 2016				
Name	Lump sum cash payment (1)	Value of accelerated vesting on equity awards (2)	Excise tax due under IRC 280G, plus gross-up amount (3)	Total
Mary G. Puma	\$ 3,932,500	\$ 2,528,162	\$ 2,478,014	\$ 8,938,676
Kevin J. Brewer	\$ 1,911,000	\$ 1,386,864	\$ 1,129,724	\$ 4,427,588
William Bintz	\$ 1,801,800	\$ 1,112,279	\$ 903,541	\$ 3,817,620
John E. Aldeborgh	\$ 1,782,000	\$ 1,278,279	\$ 1,040,045	\$ 4,100,324
Lynnette C. Fallon	\$ 1,776,000	\$ 906,951	\$ 979,960	\$ 3,662,911

- (1) This amount, which is due within 30 days of termination, represents separation pay equal to (A) three times the NEO's current annual base salary plus an average bonus amount based on past performance assessments, and (B) the amount earned but unpaid, if any, under the 2016 Axcelis Management Incentive Plan. See "Annual Cash Incentive" in "2016 Compensation Discussion and Analysis."
- (2) These amounts reflect a valuation of the acceleration of all of the NEO's outstanding equity awards using the methodology prescribed under IRC Section 280G, which provides for an excise tax on certain change of control payments. This valuation is based on the closing price of our common stock on the last trading day of 2016 (\$14.55). The actual amount received by the NEO on exercise of options will depend on the market values at the time of the change of control.
- (3) The Change of Control Agreement with each NEO provides for a gross-up of excise taxes incurred under IRC Section 4999 of the Code, which amount is grossed up to cover income taxes due on such reimbursement. The amounts shown in this column represent amounts due to taxing authorities and will not be retained by the executive.

These Change of Control Agreements have a rolling three-year term. A termination notice was sent to each of the NEOs in March 2017, which will cause these agreements to expire on the

third anniversary date following the notice of termination. Accordingly, the Change of Control Agreements with Ms. Puma, Mr. Brewer, Mr. Bintz and Ms. Fallon will terminate in November 2019. Mr. Aldeborgh's agreement will terminate in February 2020.

As noted above under "*Corporate Governance—Governance Policies*," consistent with our commitment to strong corporate governance and responsiveness to our stockholders, in 2014 the Board of Directors adopted a new governance policy against tax gross-up arrangements, which provides that no future change of control agreement with any future executive officer of the Company, shall include a gross-up in respect of any excise or other tax due in respect of severance compensation, including pursuant to Sections 280G and 4999 of the Internal Revenue Code. In November 2016, the Compensation Committee approved a new form of Change of Control Agreement which was determined to be market aligned. The new form of Change of Control Agreement, which is also a double trigger agreement, provides for lower separation pay, and does not include grossed up indemnification for excise or other tax due in respect of severance compensation, including pursuant to Sections 280G and 4999 of the Internal Revenue Code. The Company entered into this form of Change of Control Agreement with a new executive officer (not an NEO) in November 2016. The Company expects to enter into this form of Change of Control Agreement with each of the NEOs, which will take effect on the expiration of the NEOs' current Change of Control Agreements.

AXCELIS TECHNOLOGIES, INC.

2012 EQUITY INCENTIVE PLAN

As approved by the Stockholders on May 2, 2012, May 14, 2013, May 13, 2014, May 13, 2015, and May 4, 2016; as adjusted for the reverse stock split on June 30, 2016; as amended by the Board of Directors on February 15, 2017 (Stockholder approval not required); and as further proposed to be amended by the Board of Directors on February 15, 2017, subject to approval by the Stockholders on May 16, 2017

1. *Purpose.*

The purpose of the Axcelis Technologies, Inc. 2012 Equity Incentive Plan (the "Plan") is to attract and retain persons who are expected to make important contributions to the Company and its Affiliates, to provide an incentive for them to achieve the Company's goals, and to enable them to participate in the growth of the Company by granting Awards with respect to the Company's Common Stock. Certain capitalized terms used herein are defined in Section 7 below.

2. *Administration.*

The Plan shall be administered by the Committee; provided, that the Board may in any instance perform any of the functions of the Committee hereunder. The Committee shall have authority to adopt, alter and repeal such administrative rules, guidelines and practices governing the operation of the Plan as it shall from time to time consider advisable, and to interpret the provisions hereof in its discretion. The Committee's determinations hereunder shall be final and binding. The Committee may, subject to applicable law, delegate to one or more Executive Officers of the Company the power to make Awards to Participants who are not Reporting Persons or Covered Employees and all determinations hereunder with respect thereto, provided that the Committee shall fix the maximum number of shares that may be subject to such Awards.

3. *Eligibility.*

All directors and all employees and consultants of the Company or any Affiliate capable of contributing to the successful performance of the Company, other than any person who has irrevocably elected not to be eligible, are eligible to be Participants in the Plan.

4. *Stock Available for Awards.*

(a) *Amount.* Subject to adjustment under subsection 4(b), up to an aggregate of 4,762,500 shares of Common Stock may be issued pursuant to Awards, including Incentive Stock Options, under the Plan. For the purposes of counting shares hereunder:

- i. The number of shares issued as, or upon settlement of, any Award other than an Option or Stock Appreciation Right shall be multiplied by 1.5;
- ii. Outstanding shares tendered by the Participant to pay for the exercise of an Option or Stock Appreciation Right, shares repurchased in the open market by the Company, and shares that are withheld by the Company to satisfy the exercise or tax withholding obligation upon exercise or vesting of an Award may not be netted out against shares of Common Stock issued pursuant to Awards hereunder;

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iii. Shares subject to any Award granted under this Plan that are not issued because the Award expires, is terminated unexercised or is forfeited, in whole or in part, may be subject to new Awards without being deemed to exceed such maximum amount;

iv. Shares that are not issued under an award that is outstanding under the 2000 Stock Plan as of May 2, 2012 because such award expires, is terminated unexercised or is forfeited may be subject to new Awards under this Plan (other than Incentive Stock Options), without being deemed to exceed such maximum amount; and

v. Shares issued under this Plan as a result of the assumption or substitution of outstanding grants from an acquired company shall not be deemed to exceed such maximum amount.

Shares issued under the Plan may consist of authorized but unissued shares or treasury shares

(b) *Adjustments.* Upon any equity restructuring, whether a stock dividend, recapitalization, split-up or combination of shares, or otherwise, the number of shares in respect of which Awards may be made under the Plan, the number of shares subject to outstanding Awards, the exercise, purchase or conversion price with respect to any Award, and the limit on individual grants in subsection 5(c) shall be proportionately adjusted, provided that the number of shares subject to any Award shall always be a whole number. In the event the Committee determines that any other reorganization, recapitalization, merger, spin-off or other corporate transaction affects the Common Stock such that an adjustment is required in order to preserve the benefits intended to be provided by the Plan, the Committee shall equitably adjust any or all of the number and kind of shares in respect of which Awards may be made under the Plan, the number and kind of shares subject to outstanding Awards, the exercise, purchase or conversion price with respect to any Award, and the limit on individual grants in subsection 5(c), provided that the number of shares subject to any Award shall always be a whole number. If considered appropriate, the Committee may make provision for a cash payment with respect to all or part of an outstanding Award instead of or in addition to any such adjustment. Any adjustment made pursuant to this subsection shall be subject, in the case of Incentive Stock Options, to any limitation required under the Code.

5. *Awards under the Plan.*

(a) *Types of Awards.* The Committee may grant Options, Stock Appreciation Rights, Restricted Stock, Restricted Stock Units, Stock Equivalents, and Awards of shares of Common Stock that are not subject to restrictions or forfeiture. The effectiveness of any such grant may be conditioned on the passage of time, the achievement of any Performance Goals, or the happening of any other event.

(b) *Terms and Conditions of Awards.*

(i) *Participants; Terms.* The Committee shall select the Participants to receive Awards and determine the terms and conditions of each Award. Without limiting the foregoing but subject to the other provisions of the Plan and applicable law, the Committee shall determine (A) the number of shares of Common Stock subject to each Award or the manner in which such number shall be determined, (B) the price, if any, a Participant shall pay to receive or exercise an Award or the manner in which such price shall be determined, (C) the time or times when an Award may vest or be exercised, settled, or transferred, (D) any Performance Goals, restrictions or other conditions to vesting, exercise, settlement, or transferability of an Award, (E) whether an Award may be settled in the form of cash, Common Stock

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or other securities of the Company, Awards or other property, and the manner of calculating the amount or value thereof, (F) the duration of any Restricted Period or any other circumstances in which an Award may be forfeited to the Company, (G) the effect on an Award of the disability, death, retirement or other termination of employment or other service of a Participant, and (H) the extent to which, and the period during which, the Participant or the Participant's legal representative, guardian or Designated Beneficiary may receive payment of an Award or exercise rights thereunder. Except as otherwise provided hereby or in a particular Award, any determination or action with respect to an Award may be made or taken by the Committee at the time of grant or at any time thereafter.

(ii) *Options and Stock Appreciation Rights.* Incentive Stock Options may only be granted to persons eligible to receive such Options under the Code. The exercise price for any Option or Stock Appreciation Right shall not be less than 100% of the Fair Market Value of the Common Stock on the Date of Grant; provided that Options granted in substitution for options granted by a former employer to persons who become eligible to receive Awards hereunder as a result of a transaction described in Section 424(a) of the Code may, consistent with such Section, have a lower exercise price. No Option or Stock Appreciation Right shall have a term longer than seven (7) years. No Incentive Stock Option may be granted more than ten years after the Effective Date. The Committee shall determine the manner of calculating the excess in value of the shares of Common Stock over the exercise price of a Stock Appreciation Right.

(iii) *Restricted Stock and Restricted Stock Units.* Shares of Restricted Stock and shares subject to Restricted Stock Units may not be sold, assigned, transferred, pledged or otherwise encumbered, except as permitted by the Committee, during the applicable Restricted Period. Restricted Stock Units may be settled in shares of Common Stock or cash as determined by the Committee.

(iv) *Minimum Vesting Requirements.* Notwithstanding Sections 5(b)(i) or Section 6(e), with respect to Awards to Executive Officers:

(A) vesting, settlement, or lapse of forfeiture restrictions that is solely based on continued employment, service or the passage of time shall occur (A) with respect to no more than one-third of the shares subject to such Award per year and (B) over not less than four years from the date of grant with respect to the full number of shares subject to such Award; and

(B) vesting, settlement, or lapse of forfeiture restrictions that is based on the achievement of Performance Goals shall occur based on a Performance Period of at least one year;

provided that the foregoing limitations shall not (1) apply to vesting, settlement, or lapse of forfeiture restrictions in connection with the termination of employment or other service of a Participant by the Company or due to the Participant's disability, death or retirement nor (2) preclude the Committee from (x) exercising its discretion to accelerate the vesting of any Award upon a Transaction as contemplated by Section 5(b)(viii), (y) establishing a shorter vesting schedule for consultants or newly-hired employees, or (z) establishing a shorter schedule for vesting, settlement, or lapse of forfeiture restrictions on Awards that are granted in exchange for or in lieu of the right to receive the payment of an equivalent amount of salary, bonus or other compensation.

(v) *Payment of Exercise Price.* The Committee shall determine the form of consideration and manner of payment of the exercise price, if any, of any Award. Without limiting the foregoing, the Committee may,

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subject to applicable law, permit such payment to be made in whole or in part in cash or by surrender of shares of Common Stock (which may be shares retained from the respective Award or any other Award) valued at their Fair Market Value on the date of surrender, or such other lawful consideration, including a payment commitment of a financial or brokerage institution, as the Committee may determine. The Company may accept, in lieu of actual delivery of stock certificates, an attestation by the Participant in form acceptable to the Committee that he or she owns of record the shares to be tendered free and clear of claims and other encumbrances.

(vi) *Dividends.* In the discretion of the Committee, any Award may provide that dividends or dividend equivalents on shares of Common Stock underlying the Award may be credited to the Participant prior to the issuance of such shares of Common Stock upon vesting, or upon vesting and exercise, if applicable. However, such dividends or dividend equivalents may be paid to the Participant (in cash, in shares of Common Stock, or in the form of Awards under the Plan, as specified by the Committee) with or without interest as determined by the Committee only if, when and to the extent such Award vests and shares of Common Stock are issued upon vesting or upon vesting and exercise, if applicable. The value of dividends or other distributions credited with respect to shares of Common Stock underlying an Award that are not issued prior to the expiration of the Award shall be forfeited.

(vii) *Termination and Forfeiture.* The terms of any Award may include such continuing provisions for termination of the Award and/or forfeiture or recapture of any shares, cash or other property previously issued pursuant thereto relating to competition or other activity or circumstances detrimental to the Company as the Committee may determine to be in the Company's best interests. Without limiting the foregoing, the terms of any Award shall be subject to, and shall be deemed automatically amended to incorporate, any "clawback," "recapture," or similar policy adopted by the Company and in effect before or after the grant of such Award.

(viii) *Certain Extraordinary Transactions.* The Committee may in its discretion provide, at the time of grant or at any time thereafter, that in the case of any recapitalization, stock acquisition, merger, consolidation or other form of corporate transaction in which a company other than the Company is the surviving, continuing, successor or purchasing entity (a "Transaction"), the surviving, continuing, successor or purchasing entity or a parent or subsidiary of such entity may, without the consent of the Participant, assume the Company's rights and obligations under any Award or portion thereof outstanding immediately before the Transaction or substitute for any such outstanding Award or portion thereof a substantially equivalent award with respect to such entity's own stock or other property or cash, in either case with equitable adjustments in the number and type of shares or other assets subject to the Awards and the exercise, purchase or conversion price with respect to any Award, in light of the consideration received by the Company's stockholders in the Transaction. Any such Award that is not so assumed or substituted for shall terminate upon the consummation of such Transaction on such terms, if any, as the Committee shall provide. Notwithstanding the foregoing, if the stockholders of the Company receive consideration that is all or predominantly cash in exchange for their shares of common Stock in a Transaction, then, in order to preserve the Participants' rights under outstanding Awards, the Committee shall, without the need for consent of any Participant, either (A) cause any unexercisable or unvested portion of an Award outstanding immediately before the Transaction to become fully exercisable and vested prior to such Transaction (but effective only on consummation of the Transaction), and any Options and Stock Appreciation Rights that have not been exercised as of the consummation of the Transaction shall thereupon terminate or (B) provide for payment to the

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Participant of cash, stock of another entity party to the Transaction, or other property with a Fair Market Value equal to the amount, if any, that would have been received upon the vesting, exercise, settlement, or transferability of the Award had any unexercisable or unvested portion of the Award become fully exercisable and vested and the Award been exercised or paid in connection with the Transaction, reduced (but not below zero) by the exercise or purchase price per share, if any, under such Award, whereupon the Award shall terminate. If any portion of such consideration may be received by Company's stockholders in the Transaction on a contingent or delayed basis, the Committee may, in its sole discretion, determine such Fair Market Value per share as of the time of the Transaction on the basis of the Committee's good faith estimate of the present value of the probable amount of future payment of such consideration.

In the event of a recapitalization, stock acquisition, merger, consolidation or other form of corporate transaction in which the Company is the surviving, continuing, successor or purchasing entity, the Committee may make equitable adjustments to outstanding Awards pursuant to Section 4(b).

(ix) *Documentation.* Each Award under the Plan shall be evidenced by documentation in the form prescribed from time to time by the Committee and delivered to or executed and delivered by the Participant specifying the terms and conditions of the Award and containing such other terms and conditions not inconsistent with the provisions hereof as the Committee considers necessary or advisable to achieve the purposes of the Plan or to comply with applicable law and accounting principles. Any such documentation may be maintained solely in electronic format.

(x) *In General.* Any Award may be made alone, in addition to, or in relation to any other Award. The terms of Awards of each type need not be identical, and the Committee need not treat Participants uniformly. No Award shall be transferable except upon such terms and conditions and to such extent as the Committee determines, provided that no Award shall be transferable for value and Incentive Stock Options may be transferable only to the extent permitted by the Code. No Award to any Participant subject to United States income taxation shall provide for the deferral of compensation that does not comply with Section 409A of the Code. The achievement or satisfaction of any Performance Goals, restrictions or other conditions to vesting, exercise, settlement, or transferability of an Award shall be determined by the Committee.

(c) *Limit on Individual Grants.* The maximum number of shares of Common Stock subject to Options, Stock Appreciation Rights and other Awards intended to satisfy the requirements for “performance-based compensation” within the meaning of Section 162(m) of the Code that may be granted to a Participant in any fiscal year may not exceed 312,500 shares, subject to adjustment under subsection 4(b). In the case of any performance-based Awards settled in cash, no more than \$1,000,000 may be paid to any Participant with respect to any one year of a Performance Period.

6. *General Provisions.*

(a) *Tax Withholding.* A Participant shall pay to the Company, or make provision satisfactory to the Committee for payment of, any taxes required by law to be withheld in respect of Awards under the Plan no later than the date of the event creating the tax liability. The Company and its Affiliates may, to the extent permitted by law, deduct any such tax obligations from any payment of any kind due to the Participant under the Plan or otherwise. In the Committee’s discretion, the minimum tax obligations required by law to be withheld in respect of Awards may be paid in whole or in part in shares of

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Common Stock, including shares retained from the Award creating the tax obligation, valued at their Fair Market Value on the date of retention or delivery.

(b) *Legal Compliance.* The Company shall not be required to issue any shares of Common Stock or take any other action pursuant to the Plan unless the Company is satisfied that all requirements of law, or of any stock exchange on which the Common Stock is then listed, in connection therewith have been or will be complied with, and the Committee may impose any restrictions on the rights of Participants hereunder as it shall deem necessary or advisable to comply with any such requirements.

(c) *Foreign Nationals.* Awards may be made to Participants who are foreign nationals or employed outside the United States on such terms and conditions different from those specified herein as the Committee considers necessary or advisable to achieve the purposes of the Plan or to comply with applicable laws.

(d) *Awards Not Includable for Benefit Purposes.* Awards and other payments received by a Participant pursuant to the provisions of the Plan shall not be included in the determination of benefits under any pension, group insurance or other benefit plan applicable to the Participant which is maintained by the Company or any of its Affiliates, except as may be provided under the terms of such plans or determined by the Board.

(e) *Amendment, Exchange and Repurchase of Awards.*

(i) Subject to clauses (ii) and (iii) below, the Committee may amend, modify or terminate any outstanding Award, including without limitation changing the dates of vesting, exercise or settlement, causing the Award to be assumed by another entity, and substituting therefor another Award of the same or a different type, provided that the Participant’s consent to such action shall be required unless the terms of this Plan or the Award permit such action, the Committee determines that such action is required by law or stock exchange rule, or the Committee determines that the action, taking into account any related action, would not materially and adversely affect the Participant.

(ii) Notwithstanding the attainment of Performance Goals in the case of any Award intended to satisfy the requirements for “performance-based compensation” within the meaning of Section 162(m) of the Code, the Committee may reduce (but not increase) the amount payable at a given level of performance to take into account additional factors that the Committee may deem relevant.

(iii) The foregoing notwithstanding, without further approval of the stockholders of the Company, (A) the Committee shall not authorize the amendment of any outstanding Option or Stock Appreciation Right to reduce the exercise price, (B) no Option or Stock Appreciation Right shall be canceled and replaced with an Award exercisable for Common Stock at a lower exercise price and (C) no Award shall be canceled in exchange for a cash payment from the Company to the Award owner, except under the limited circumstances described above in Section 5(b)(viii) relating to Transactions.

7. *Certain Definitions.* As used in this Plan:

“Affiliate” means any business entity in which the Company owns directly or indirectly 50% or more of the total voting power or has a significant financial interest as determined by the Committee.

“Award” means any award of shares of Common Stock or right with respect to shares described in Section 5(a).

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“Board” means the Board of Directors of the Company.

“Code” means the Internal Revenue Code of 1986, as amended from time to time, or any successor law.

“Committee” means one or more committees appointed by the Board to administer the Plan or a specified portion thereof. Each such committee shall be comprised of not less than two members of the Board who shall meet such criteria as the Board may specify from time to time.

“Common Stock” means the Common Stock, \$0.001 par value, of the Company.

“Company” means Axcelis Technologies, Inc., a Delaware corporation.

“Covered Employee” means a “covered employee” within the meaning of Section 162(m) of the Code.

“Date of Grant” means the date on which all requirements under applicable law and the Company’s certificate of incorporation and bylaws for the effective grant of an Award have been satisfied.

“Designated Beneficiary” means the beneficiary designated by a Participant, in a manner determined by the Committee, to receive amounts due or exercise rights of the Participant in the event of the Participant’s death. In the absence of an effective designation by a Participant, “Designated Beneficiary” means the Participant’s legal representative.

“Effective Date,” from time to time, means the most recent date that the Plan was adopted or, if earlier, that it was approved by the stockholders (including approval of the Plan as amended), as such terms are used in the regulations under Section 422 of the Code.

“Exchange Act” means the Securities Exchange Act of 1934, as amended from time to time, or any successor law.

“Executive Officer” has the meaning given in Rule 3b-7 under the Exchange Act, or any successor provision.

“Fair Market Value” with respect to the Common Stock or other property means the fair market value thereof determined by such methods as shall be established by the Committee from time to time. Unless otherwise determined by the Committee in good faith, the per share Fair Market Value of the Common Stock as of any date shall mean (a) if the Common Stock is then listed or admitted to trading on a national securities exchange, (i) the last reported sale price on such date on the principal national securities exchange on which the Common Stock is then listed or admitted to trading, (ii) if no such reported sale took place on such date, the average of the closing bid and asked prices on such exchange on such date, or (iii) if neither (i) nor (ii) applies, the last reported sale price on the next preceding date on which trading took place, or (b) if the Common Stock is then traded in the over-the-counter market, the average of the closing bid and asked prices on such date, as reported by The Wall Street Journal or other appropriate publication selected by the Committee, for the over-the-counter market.

“Incentive Stock Option” means an Option complying with the requirements of Section 422 of the Code or any successor provision and any regulations thereunder.

“Option” means a right to purchase shares of Common Stock and may be an Incentive Stock Option if specified by the Committee.

“Participant” means a person selected by the Committee to receive an Award under the Plan.

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“Performance Goals” means, in the case of Awards intended to satisfy the requirements for “performance-based compensation” within the meaning of Section 162(m) of the Code, one or more objective performance goals established by the Committee, based on one or more of the following criteria: revenue; revenue growth; sales; expenses; margins; net income; earnings or earnings per share; cash flow; stock price; shareholder return; return on investment; return on invested capital, assets, or equity; profit before or after tax; operating profit; operating margin; return on research and development investment; market capitalization; quality improvements; market share; cycle time reductions; customer satisfaction measures; strategic positioning or marketing programs; market penetration or expansion; business / information systems improvements; expense management; infrastructure support programs; human resource programs; customer programs; technology development programs; goals relating to acquisitions or divestitures, or any combination of the foregoing, including without limitation goals based on any of such measures relative to peer groups or market indices, and may be particular to a Participant or may be based, in whole or in part, on the performance of the division, department, line of business, subsidiary, or other business unit, whether or not legally constituted, in which the Participant works or on the performance of the Company generally.

“Performance Period” means any period of service of at least one year designated by the Committee as applicable to an Award intended to satisfy the requirements for “performance-based compensation.”

“Reporting Person” means a person subject to Section 16 of the Exchange Act.

“Restricted Period” means any period during which an Award or any part thereof may be forfeited to the Company.

“Restricted Stock” means shares of Common Stock that are subject to forfeiture to the Company.

“Restricted Stock Unit” means the right, subject to forfeiture, to receive the value of a share of Common Stock in the future, payable in the form of cash, Common Stock or other securities of the Company, Awards or other property, and is an unfunded and unsecured obligation of the Company.

“Stock Appreciation Right” means the right to receive any excess in value of shares of Common Stock over the exercise price of such right.

“Stock Equivalent” means the right to receive payment from the Company based in whole or in part on the value of the Common Stock, payable in the form of cash, Common Stock or other securities of the Company, Awards or other property, and may include without limitation phantom stock, performance units, and Stock Appreciation Rights.

“Termination of employment or other service of a Participant” means the voluntary or involuntary termination of a Participant’s employment with the Company or an Affiliate for any reason, including death, disability, retirement or as the result of the divestiture of the Participant’s employer or any similar transaction in which the Participant’s employer ceases to be the Company or one of its Affiliates. Whether entering military or other government service shall constitute “termination of employment or other service,” or whether a “termination of employment or other service” shall occur as a result of disability, shall be determined in each case by the Committee in its sole discretion before or after the grant of the respective Award. In the case of a member of the Board or consultant who is not an employee of the Company or an Affiliate, “termination of employment or other service” shall mean the

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voluntary or involuntary termination of Board service or the consulting relationship, as the case may be, for any reason.

“Transferable for value” means a transfer on terms that would prevent the Company from relying on Securities and Exchange Commission Form S-8 (or any successor form) with respect to the issuance of the Common Stock underlying the respective Award.

8. Miscellaneous.

(a) *No Rights with Respect to Service.* No person shall have any claim or right hereunder to be granted an Award. Neither the adoption, maintenance, or operation of the Plan nor any Award hereunder shall confer upon any person any right with respect to the continuance of his or her employment by or other service with the Company or any Affiliate nor shall they interfere with the rights of the Company or any Affiliate to terminate or otherwise change the terms of such service at any time, including, without limitation, the right to promote, demote or otherwise re-assign any person from one position to another within the Company or any Affiliate. Unless the Committee otherwise provides in any case, the service of a Participant with an Affiliate shall be deemed to terminate for purposes of the Plan when such Affiliate ceases to be an Affiliate of the Company.

(b) *No Rights as Stockholder.* Subject to the provisions of the applicable Award, no Participant or Designated Beneficiary shall have any rights as a stockholder with respect to any shares of Common Stock to be issued under the Plan until he or she becomes the holder thereof. A Participant to whom Common Stock is awarded will be considered the holder of such Common Stock at the time of the Award, except as otherwise provided in the applicable Award.

(c) *Amendment of Plan.* The Board may amend, suspend or terminate the Plan or any portion thereof at any time, subject to such stockholder approval as the Board determines to be necessary or advisable to comply with any tax or regulatory requirement.

2017 Annual Meeting Admission Ticket

2017 Annual Meeting of
Axcelis Technologies, Inc. Stockholders

Tuesday, May 16, 2017, 12:30 pm
To be held at the offices of
Locke Lord LLP
111 Huntington Avenue
Boston, MA 02199-7613

Upon arrival, please present this admission ticket
and photo identification at the registration desk.

A map showing the offices of Locke Lord LLP at 111 Huntington Avenue, Boston, MA can be found at www.lockelord.com under the Firm/Offices. Stockholders should present themselves at the office's main reception on the 9th floor.

▼ IF YOU HAVE NOT VOTED VIA THE INTERNET OR TELEPHONE, FOLD ALONG THE PERFORATION, DETACH AND RETURN THE BOTTOM PORTION IN THE ENCLOSED ENVELOPE. ▼



Proxy — Axcelis Technologies, Inc.

Notice of 2017 Annual Meeting of Stockholders

To be held at the offices of Locke Lord LLP
111 Huntington Avenue, Boston, MA 02199-7613

Proxy Solicited by Board of Directors for Annual Meeting — Tuesday, May 16, 2017

Mary G. Puma, Kevin J. Brewer, Lynnette C. Fallon, or any of them, each with the power of substitution, are hereby authorized to represent and vote the shares of the undersigned, with all the powers which the undersigned would possess if personally present, at the Annual Meeting of Stockholders of Axcelis Technologies, Inc. to be held on May 16, 2017 or at any postponement or adjournment thereof.

Shares represented by this proxy will be voted by the Proxies as directed by the stockholder. If no such directions are indicated, the Proxies will have authority to vote FOR all nominees, FOR Proposals 2, 3 and 4 and 1 Year for Proposal 5.

In their discretion, the Proxies are authorized to vote upon such other business as may properly come before the meeting.

(Items to be voted appear on reverse side.)