

MINUTES OF THE MEETING
OF THE
MICHIGAN STATE UNIVERSITY
BOARD OF TRUSTEES

April 17, 2015

President Simon called the meeting of the Board of Trustees to order at 9:35 a.m. in the Board Room.

Trustees present: Brian Breslin, Dianne Byrum, Joel Ferguson, Melanie Foster, Mitch Lyons, Brian Mosallam, George Perles, and Diann Woodard (via telephone).

University officers present: President Simon, Provost and Executive Vice President Youatt, Executive Vice President Udpa, Vice President and Secretary Beekman, Vice President and General Counsel Noto, Vice Presidents Gore, Groves, Haas, Hsu, Maybank, Swain, and Young, and Senior Advisor and Director Granberry Russell. Faculty liaisons present: Martin Crimp, William Davidson II, and Phylis Floyd. Student liaisons present: James Conwell, Dontae Freeman, Adam Grajewski, and Sudha Sankar.

All actions taken were by unanimous vote of the Trustees present, unless otherwise noted.

1. On a motion by Trustee Foster, supported by Trustee Ferguson, the **BOARD VOTED to approve** the agenda.
2. On a motion by Trustee Byrum, supported by Trustee Breslin, the **BOARD VOTED to approve** the minutes of the February 6, 2015 Board of Trustees meeting.
3. Board of Trustees Award Presentations

Trustees Ferguson and Lyons presented the Board of Trustees Award to the following students:

1. Ryan Austin—Major: Environmental Engineering; Member of the Honors College; 4.0 GPA
2. Lauren Ballard—Major: Accounting; 4.0 GPA
3. Emily Biernat—Major: Genomics and Molecular Genetics; 4.0 GPA
4. Rachel Brock—Major: Physiology; Member of the Honors College; 4.0 GPA

5. Kaitlyn Bunyak—Major: Accounting; Member of the Honors College; 4.0 GPA
6. Deanna Christy—Major: Advertising; Second Major: French; Member of the Honors College; 4.0 GPA
7. Victoria Clausen—Major: Psychology; Member of the Honors College; 4.0 GPA
8. Brian Crackel—Major: Interdisciplinary Studies in Social Science: Social Science Education; Member of the Honors College; 4.0 GPA
9. Colleen Drabek—Major: Human Biology; 4.0 GPA
10. Holly Drankhan—Major: Zoology; 4.0 GPA
11. Hassan Fadel—Major: Neuroscience; Member of the Honors College; 4.0 GPA
12. Stacey Forton—Major: Neuroscience; Member of the Honors College; 4.0 GPA
13. Patrick Furlo—Major: Music Education; Member of the Honors College; 4.0 GPA
14. Thomas Heuser—Major: Materials Science and Engineering; Member of the Honors College; 4.0 GPA
15. Mallory Hoffman—Major: Packaging; 4.0 GPA
16. Andrew Johnson—Major: Supply Chain Management; Member of the Honors College; 4.0 GPA
17. Lynne Krutty—Major: Spanish; Member of the Honors College; 4.0 GPA
18. Lauren Link—Major: Professional Writing; Member of the Honors College; 4.0 GPA
19. Megan Maas—Major: Hospitality Business; Member of the Honors College; 4.0 GPA
20. Rebecca Monticello—Major: Human Biology; Member of the Honors College; 4.0 GPA

21. Minh Pham—Major: Computer Science; Member of the Honors College; 4.0 GPA
22. Alanna Powers—Major: Education; Member of the Honors College; 4.0 GPA
23. Zachary Reilly—Major: Human Biology; Member of the Honors College; 4.0 GPA
24. Madeline Ross—Major: Genomics and Molecular Genetics; Member of the Honors College; 4.0 GPA
25. Christine Scales—Major: Professional Writing; Member of the Honors College; 4.0 GPA
26. Stephanie Schmidt—Major: Mathematics; Second Major: Chemistry; Third Major: Environmental Sciences and Management; Member of the Honors College; 4.0 GPA
27. Kyle Sherman—Major: Mechanical Engineering; Member of the Honors College; 4.0 GPA
28. Samantha Sokan—Major: Accounting; Member of the Honors College; 4.0 GPA
29. Paul Stanos—Major: Computer Science; Member of the Honors College; 4.0 GPA
30. John Suddard-Bangsund—Major: Materials Science and Engineering; Second Major: Interdisciplinary Humanities; Member of the Honors College; 4.0 GPA
31. Luan Tran—Major: Computer Science; Member of the Honors College; 4.0 GPA
32. Tyler Vuillemot—Major: General Management; Member of the Honors College; 4.0 GPA
33. Emma Winn—Supply Chain Management; Member of the Honors College; 4.0 GPA
34. David Zoltowski—Major: Electrical Engineering; Member of the Honors College; 4.0 GPA

Provost Youatt acknowledged the Board of Trustees Award recipients who were not able to attend:

35. Katherine Sadler—Major: Marketing; Member of the Honors College; 4.0 GPA
36. David Wegscheid—Major: Mathematics, Advanced; Member of the Honors College; 4.0 GPA

4. President's Report

President Simon provided the following report to the Board.

A. Student Achievements

At this point we typically invite you to leave, because you have more important things to do, but we would like you to stay because we have Professor Cynthia Jackson-Elmoore, who is the Dean of the Honors College who will announce some other MSU students that are being honored with prestigious awards this year.

Beinecke Scholarship Winner; Joshua Schnell from Howell, Michigan, he is a junior in the Honors college studying anthropology in the college of Social Science and religious studies in the College of Arts and Letters.

Carnegie Junior Fellows Winner; Varsha Koduvayur, from Auburn Hills, Michigan, a senior in the Honors College, studying international relations and comparative cultures and politics in James Madison College and Arabic in the College of Arts and Letters.

Paul and Daisy Soros Fellowship Winner for New Americans, Ph.D. students here at MSU, in our largest class of National Science Foundation Graduate Research Fellows, 19, seven of those are student studying here at MSU in the graduate program, one is an MSU grad at another program, and 11 are affiliated with the Honors College, and either have graduated or will be graduating soon.

Goldwater Scholarship Honorable mentions are Christine Isaguirre and Aaron Oom, both of Grand Rapids, Michigan. Goldwater Scholarship Winners are Megan Kechner, from Dividson, Michigan she is a junior studying Neuroscience in Lyman Briggs College, and psychology in the College of Social Science and Rebecca Carlson,

from Rockford, Michigan, and she is a sophomore in the Honors College studying Chemical Engineering in the College of Engineering, and Chinese in the College of Arts and Letters.

Udall Scholar; Shelbie Shelder from Muskegon, Michigan, she is a junior in the Honors College, studying Nutritional Sciences in the College of Agriculture and Natural Resources.

Churchill Scholar; David Zoltowski, a senior in the Honors College studying Electrical Engineering in the College of Engineering.

While they are leaving, I wanted to recognize some other scholars. We were announced as one of the top institutions for Fullbright scholars and students for 2014-15.

The MSU College of Law Moot Court Team won the American Bar Association national championship, finishing first out of 202 teams from 118 law schools.

The MSU debate team finished in the Elite Eight of the National Debate Tournament earlier this month, after earning 1st place honors at the University of Texas tournament.

The student radio station, Impact 89 FM, receive the Michigan Association of Broadcasters 2015 College Station of the Year Award, recognizing its strengths in Digital and Social Media, Public Service and Promotion, and its coverage of news, sports, and current events.

B. Faculty Achievements

There were many faculty achievements as well, and I do refer you to MSUToday for highlights of those. One of those achievements was Associate Professor Meredith Gore, who was awarded with a Jefferson Science Fellowship, a highly prestigious fellowship program shared by the Department of State and USAID. She is one of the youngest Fellows selected to represent the United State Government.

Stephen Hamilton, MSU professor of ecosystem ecology and biogeochemistry is the recipient of the 2015 Environmental Stewardship Award from the Society of Freshwater Science.

Lyman Briggs College associate professor Ryan Sweeder has been named a Michigan Distinguished Professor of the Year by the

Presidents Council, State Universities of Michigan. He is the fifth MSU faculty member to earn the award since its inception in 2007.

Yukata Shoji, assistant professor in the College of Human Medicine, was awarded the Ovarian Cancer Research Fund's 2015 Liz Tilberis Early Career Award. He is one of only seven scientists nationwide to receive the honor.

"The Evolution of Bert," a film about a first generation African American college student, written by Jeff Wray, associate professor of film studies, was selected to screen in the Pan African Film Festival in Los Angeles in February, and was nominated for a first best feature film.

C. Staff Achievements

MSU's "Never Give Up" TV commercial won Best in Show at the Educational Advertising Awards from over 2,000 entries. Overall, MSU's Communications and Brand Strategy won 3 gold awards and 2 merit awards.

The Chittenden Hall renovation project received a Michigan Historical Preservation Network award, presented to outstanding rehabilitation projects that have made and significant contribution to the preservation of Michigan's heritage.

MSU has been named a 2015 Leader in Foodservice Awards winner by FARE—The Business of Food, for leading innovation and best-in-class practices in foodservice.

D. Rankings

MSU has five graduate programs ranked No. 1 in U.S. News & World Report's 2016 edition of Best Graduate Schools. For 21 straight years, the elementary and secondary education programs have been ranked No. 1 in the report, and the nuclear physics program has been ranked No. 1 since 2010.

A recent list by College Factual ranked MSU the No. 6 school nationwide to study in the health professions.

With 32 graduates currently serving as Peace Corps volunteers, MSU ranks No. 23 in this year's Peace Corps' list of top volunteer-producing universities. MSU is the No. 6 all-time producer of Peace Corps volunteers.

E. Athletic Achievements

Senior Leah O'Connor won the national title in the women's mile race at the NCAA Indoor Track Championships, with the second fastest time in NCAA history. (4:27.18) She became the first runner in MSU women's program history to earn both the Big Ten Indoor Track Athlete of the Year and Big Ten Championship awards. She was also a part of the National Champion women's Cross Country Team.

With its overtime Elite Eight win against Louisville, the MSU men's basketball team advanced to a nation-best seventh Final Four in 17 seasons.

Congratulations to the team, and to Coach Izzo and his staff on yet another amazing NCAA tournament run, and another outstanding season.

MSU is the only university in the country this year to have both its football and basketball teams finish their seasons ranked in the top 10, so all around a very, very good year.

4. There was no Public Participation on Issues Germane to the Agenda.

5. Personnel Actions

Provost Youatt presented the following personnel actions:

de los Campos, Gustavo, AY—Associate Professor, Departments of Epidemiology and Biostatistics; Statistics and Probability, \$ 118,000, with Tenure, effective April 13, 2015.

Santiago, Anna M, AY—Professor, School of Social Work, \$ 148,000 with Tenure, effective August 16, 2015.

Moeser, Adam J, AN—Associate Professor, MR Wilson Chair in Large Animal Clinical Sciences, Department of Large Animal Clinical Sciences, \$180,000, with Tenure, effective April 6, 2015.

Trustee Ferguson **moved to approve** the recommendations, with support from Trustee Foster.

THE BOARD VOTED to approve the recommendations.

President Simon presented the following personnel action.

Tarrant, Marilyn, AN—Executive Management Director of Internal Audit, Office of Internal Audit, \$175,000, effective May 26, 2015.

Trustee Breslin **moved to approve** the recommendation, with support from Trustee Lyons.

THE BOARD VOTED to approve the recommendation.

6. Gifts, Grants, and Contracts

Vice President Hsu presented the Gifts, Grants, and Contracts Report for the period of January 6, 2015 through March 16, 2015. The report is a compilation of 541 Gifts, Grants and Contracts plus 82 Consignment/Non-Cash Gifts, with a total value of \$170,917,390.

Trustee Lyons **moved to approve** the recommendation, with support from Trustee Breslin.

THE BOARD VOTED to approve the recommendation.

Vice President Hsu introduced David Zoltowski, a senior undergraduate in the College of Engineering and the Honors College, as well as a 2015 Churchill Scholarship recipient and 2014 Goldwater Scholarship recipient. David made a presentation to the Board on Dynamic Functional Brain Network Tracking and Summarization. (Appendix A)

Vice President Hsu introduced Nadia Ayala, a third-year PhD student in the Department of Pharmacology and Toxicology at Michigan State University in the lab of Dr. Stephanie Watts. Nadia made a presentation to the Board on Norepinephrine transport in perivascular adipose tissue. (Appendix B)

Professor Richard R. Lunt, an Assistant Professor in the Department of Chemical Engineering & Materials Science and the Department of Physics, as well as being a founder of Ubiquitous Energy Inc. Professor Lunt made a presentation to the Board on New Paradigms for Solar Energy and Energy Efficiency. (Appendix C)

7. Finance Committee

Trustee Foster presented the Trustee Finance Committee Report and recommendations.

A. 2014-15 Housing and Dining Rate Recommendations

It was recommended that the Board of Trustees authorize the Administration to implement room and board rates consistent with the projected rate increase presented in January 2013.

Be it resolved, that the Board of Trustees of Michigan State University hereby adopts room and board rates set forth on Attachment A, including the basic residence hall double room and board rate of \$9,474 for first year, transfer, and returning students who select the silver unlimited meal plan for the 2015-16 academic year; and

Be it further resolved, that the Board of Trustees of Michigan State University hereby adopts Spartan Village rates of \$656 per month for a one-bedroom apartment and \$782 per month for a two-bedroom apartment, and adopts a University Village rate of \$719 per month/per person for a four bedroom apartment, effective August 1, 2015. (Appendix A)

Trustee Foster **moved to approve** the recommendations, with support from Trustee Byrum.

THE BOARD VOTED to approve the recommendations.

B. Fund Functioning as an Endowment Dr. Duane E. Ullrey Fund for Further Education for Graduate Students in Animal Science.

It was recommended that the Board of Trustees establish a fund functioning as an endowment entitled Dr. Duane E. Ullrey Fund for Further Education for Graduate Students in Animal Science.

Be it resolved, that the Board of Trustees of Michigan State University hereby establishes a fund functioning as an endowment entitled "Dr. Duane E. Ullrey Find for Further Education for Graduate Students in Animal Science".

Trustee Foster **moved to approve** the recommendations, with support from Trustee Breslin.

THE BOARD VOTED to approve the recommendations.

C. Fund Functioning as an Endowment Olive Mayo Discretionary Fund

It was recommended that the Board of Trustees establish a fund functioning as an endowment to be used for the general furtherance of the University's education purposes.

Be it resolved, that the Board of Trustees of Michigan State University hereby establishes a fund functioning as an endowment entitled Olive Mayo Discretionary Fund”.

Trustee Foster **moved to approve** the recommendations, with support from Trustee Breslin.

THE BOARD VOTED to approve the recommendations.

D. Bond Authorization

It was recommended that the Board of Trustees authorize the issuance and delivery of general revenue bonds and adopt the resolution under tab #4 of the Finance Committee materials in its entirety. (Appendix B)

Trustee Foster **moved to approve** the recommendation, with support from Trustee Ferguson.

THE BOARD VOTED to approve the recommendation.

E. Acceptance of Lukens Property in Manistee County, Michigan

It was recommended that the Board of Trustees accept a charitable gift of approximately 68.01 acres of land from Dr. Abbie R. Lukens.

Be it resolved that the Board of Trustees of Michigan State University hereby authorizes the Administration to accept a charitable gift of approximately 68.01 acres of land located in Manistee County, Michigan from Dr. Abbie R. Lukens through the Michigan State Foundation.

Trustee Foster **moved to approve** the recommendation, with support from Trustee Ferguson.

THE BOARD VOTED to approve the recommendation.

F. College of Law Lease Agreement

It was recommended that the Board of Trustees authorize the Administration to negotiate and execute amendments to its existing lease with the Michigan State University College of Law.

Be it resolved, that the Board of Trustees of Michigan State University hereby authorizes the Executive Vice President for Administrative Services, in consultation with the Vice President for Finance and Treasurer, to negotiate and execute amendments to the Michigan State University College of Law lease, provided that, after the amendment, the total value of the rent payments (including the time value of money) shall be no less than the total debt service for the leased premises.

Trustee Foster **moved to approve** the recommendation, with support from Trustee Byrum.

G. Authorization to Plan—Sheep Barn—Addition 2—Sheep Lambing and Research Facility

It was recommended that the Board of Trustees authorize the Administration to plan for an improvement to the University's sheep research facilities that will enhance its research and teaching capabilities.

Be it resolved that the Board of Trustees of Michigan State University hereby authorizes the Administration to plan for the project entitled "Sheep Barn – Addition 2—Sheep Lambing and Research Facility".

Trustee Foster **moved to approve** the recommendation, with support from Trustee Breslin.

THE BOARD VOTED to approve the recommendation.

H. Authorization to Plan—Crop Science—Field Laboratory—Addition 2--Greenhouse

It was recommended that the Board of Trustees authorize the Administration to plan for an addition to the crop science field laboratory to accommodate expansion of the potato breeding and genetics program.

Be it resolved, that the Board of Trustees of Michigan State University hereby authorizes the Administration to plan for the

project entitled “Crop Science—Field Laboratory—Addition 2—Greenhouse”.

Trustee Foster **moved to approve** the recommendation, with support from Trustee Breslin.

THE BOARD VOTED to approve the recommendation.

I. Authorization to Plan—MSU Police—Special Response Team Operations Center

It was recommended that the Board of Trustees authorize the Administration to plan for the relocation of two MSU Police buildings which will be displaced from their current location at the former State Police Post site.

Be it resolved, that the Board of Trustees of Michigan State University hereby authorized the Administration to plan for the project entitled “MSU Police—Special Response Team Operations Center”.

Trustee Foster **moved to approve** the recommendation, with support from Trustee Breslin.

THE BOARD VOTED to approve the recommendation.

J. Authorization to Plan—MSU Scene Shop—Construct Replacement Building

It was recommended that the Board of Trustees authorize the Administration to plan for the relocation of the MSU Scene Shop, which will be displaced from its current location at the former State Police Post site.

Be it resolved, that the Board of Trustees of Michigan State University hereby authorizes the Administration to plan for the project entitled “MSU Scene Shop—Construct Replacement Building”.

Trustee Foster **moved to approve** the recommendation, with support from Trustee Breslin.

THE BOARD VOTED to approve the recommendation.

K. Project Approval—Authorization to Proceed—Engineering Building—Chiller Replacement and Chilled Water Loop

It was recommended that the Board of Trustees authorize the Administration to proceed with the installation of new chillers at the Engineering Building and its neighboring facilities.

Be it resolved, that the Board of Trustees of Michigan State University hereby authorizes the Administration to proceed with the project entitled “Engineering Building—Chiller Replacement and Chilled Water Loop”, with a project budget of \$20,000,000.

Trustee Foster **moved to approve** the recommendation, with support from Trustee Breslin.

THE BOARD VOTED to approve the recommendation.

L. Project Approval—Authorization to Proceed—Children’s Garden—Restroom and Sewer Line

It was recommended that the Board of Trustees authorize the Administration to proceed with installation of permanent restrooms adjacent to the Children’s Garden.

Be it resolved, that the Board of Trustees of Michigan State University hereby authorizes the Administration to proceed with the project entitled “Children’s Garden—Restroom and Sewer Line”; and

Be it further resolved, that the Board of Trustees of Michigan State University hereby grants a variance to the University zoning ordinance to allow a landscape change within a protected green-space area.

Trustee Foster **moved to approve** the recommendation, with support from Trustee Byrum.

THE BOARD VOTED to approve the recommendation.

M. Project Approval—Authorization to Proceed—Saginaw Valley Research and Extension Center—Agricultural Education Center

It was recommended that the Board of Trustees authorize the Administration to proceed with construction of a new center to support MSU efforts in the Saginaw Valley.

Be it resolved, that the Board of Trustees of Michigan State University hereby authorizes the Administration to proceed with the project entitled "Saginaw Valley Research and Extension Center—Agricultural Education Center", with a project budget of \$1,200,000.

Trustee Foster **moved to approve** the recommendation, with support from Trustee Byrum.

THE BOARD VOTED to approve the recommendation.

N. Bid and Contract Award—Parking—Lot 97 (Engineering Research) Expansion

It was recommended that the Board of Trustees authorize the Administration to award a contract to Carol's Excavating Inc., the low bidder for the Parking-Lot 97 (Engineering Research) Expansion project, and make a small adjustment to the project budget.

Be it resolved, that the Board of Trustees of Michigan State University hereby authorizes the Administration to award a contract in the amount of \$1,159,000 to Carol's Excavating Inc., and that the budget be increased from \$1,400,000 to \$1,470,000 for the project entitled "Parking—Lot 97 (Engineering Research) Expansion".

Trustee Foster **moved to approve** the recommendation, with support from Trustee Breslin.

THE BOARD VOTED to approve the recommendation.

8. Policy Committee

Trustee Byrum presented the Trustee Policy Committee Report and recommendations.

A. Approval of New Academic Department: Computational Mathematics, Science and Engineering

It was recommended to the Board of Trustees establish a new department between the College of Natural Science (lead college) and Engineering in an effort to combine the most important aspects of computational and disciplinary research.

Be it resolved, that the Board of Trustees of Michigan State University hereby establish the Department of Computational Mathematics, Science and Engineering. The effective date for the program/curriculum is Winter, 2016.

Trustee Byrum **moved to approve** the recommendation, with support from Trustee Breslin.

THE BOARD VOTED to approve the recommendation.

B. Amendment of Ordinance 31.00 (Parking—Metered Parking Zones)

It was recommended that the Board of Trustees amend University Ordinance 31.00 to address the use of smart meters and multi-space parking meters.

Be it resolved, that the Board of Trustees of Michigan State University hereby amends University Ordinance 31.00 (Parking—Metered parking zones) as shown in Exhibit A attached hereto.

Trustee Byrum **moved to approve** the recommendation, with support from Trustee Lyons. Trustee Foster was not present for the vote.

THE BOARD VOTED to approve the recommendation.

C. Approval of Contract Terms

It was recommended that the Board of Trustees approve a contract between Michigan State University and *HAO Tech, LLC*, a company in which faculty member Dr. Gouliang Xing holds a financial interest.

Be it resolved, that the Board of Trustees of Michigan State University hereby approved a license agreement with *HAO Tech, LLC*, consistent with earlier public notice given at a Board meeting and with the “License Agreement Term Sheet” now present to the Board for inclusion in its minutes. (Appendix C)

It was recommended that the Board of Trustees approve a lease between Michigan State University and *Jolt Energy Storage Technologies, LLC*, a company in which faculty member Thomas F. Guarr holds a financial interest.

Be it resolved, that the Board of Trustees of Michigan State University, hereby approves a lease with *Jolt Energy Storage Technologies, LLC*, a company in which faculty member Thomas F. Guarr holds a financial interest.

It was recommended that the Board of Trustees approve a contract between Michigan State University and *Jolt Energy Storage Technologies, LLC*, a company in which faculty member Thomas F. Guarr holds a financial interest.

Be it resolved, that the Board of Trustees of Michigan State University, hereby approves a contract with *Jolt Energy Storage Technologies, LLC*, consistent with earlier public notice given at a Board meeting and with the "Agreement Term Sheet" now presented to the Board for inclusion in its minutes. (Appendix D)

It was recommended that the Board of Trustees approve a license between Michigan State University and *Jolt Energy Storage Technologies, LLC*, a company in which faculty member Thomas F. Guarr holds a financial interest.

Be it resolved, that the Board of Trustees of Michigan State University, hereby approves a license agreement with *Jolt Energy Storage Technologies, LLC*, consistent with earlier public notice given at a Board meeting and with the "License Agreement Term Sheet" now presented to the Board for inclusion in its minutes. (Appendix E)

It was recommended that the Board of Trustees approve a contract between Michigan State University and *Metna Co.*, a company in which faculty member Dr. Parviz Soroushian holds a financial interest.

Be it resolved, that the Board of Trustees of Michigan State University, hereby approves a Sponsored Research Agreement with *Metna, Co.*, consistent with earlier public notice given at a Board meeting and with the "Sponsored Research Agreement Term Sheet" now presented to the Board for inclusion in its minutes. (Appendix F)

It was recommended that the Board of Trustees approve a contract between Michigan State University and *QuantumBio, Inc.*, a company in which faculty member Dr. Kennet M. Merz, Jr. holds a financial interest.

Be it resolved, that the Board of Trustees of Michigan State University, hereby approves a Sponsored Research Agreement with *QuantumBio, Inc.*, consistent with earlier public notice given at a Board meeting and with the "Option Agreement Term Sheet" now presented to the Board for inclusion in its minutes. (Appendix G)

It was recommended that the Board of Trustees approve a contract between Michigan State University and *Thermetrics, Inc.*, a company in which faculty member Kirk Dolan and employee Andy Tomaswick hold a financial interest.

Be it resolved, that the Board of Trustees of Michigan State University, hereby approves a license agreement with *Thermetrics, Inc.*, consistent with earlier public notice given at a Board meeting and with the "License Agreement Term Sheet" now presented to the Board for inclusion in its minutes. (Appendix H)

It was recommended that the Board of Trustees approve a contract between Michigan State University and *VL29, Inc.*, a company in which faculty member Bruno Basso has a financial interest.

Be it resolved, that the Board of Trustees of Michigan State University, hereby approves a license agreement with *VL29, Inc.*, consistent with earlier public notice given at a Board meeting and with the "License Agreement Term Sheet" now presented to the Board for inclusion in its minutes. (Appendix I)

Trustee Byrum **moved to approve** the recommendations, with support from Trustee Lyons. Trustee Foster was not present for the vote.

THE BOARD VOTED to approve the recommendation.

E. Notice of Intent to Negotiate Contracts

Pursuant to State Law, Trustee Byrum gave public notice of the University's intent to negotiate contracts with *Supremo*, a Michigan sole proprietorship.

Dr. Jan Eberle, a professor in the Department of Music, and her family own the company.

9. Audit Committee

Trustee Breslin presented the Trustee Audit Committee Report.

Trustee Breslin said that the Audit Committee met with Plante and Moran and received a report on the scope of the annual audit. In addition, the Committee received an overview of the key areas of litigation for the University from the Vice President for Legal Affairs and General Counsel, Bob Noto which was very informative.

The Committee also reviewed risk mitigation, insurance, and liability costs from the Director of Risk Management and Insurance, Matt McCabe.

Finally the Committee discussed the appointment of the new Director of Internal Audit which was voted on today.

10. Diversity Report

Senior Advisor and Director Granberry Russell presented the Diversity and Inclusion at MSU Annual Progress Report for 2013-14.

The full report can be viewed at:
<http://www.inclusion.msu.edu/>

11. Trustee Comments

Trustee Ferguson remarked on an article that noted that MSU was in a golden age of sports, and added that MSU is also in a golden age for all programs. He added that he believes that with President Simon's leadership, and how the university is currently functioning, the best is yet to come.

Trustee Mosallam echoed Trustee Ferguson's statements and also wanted to congratulate the Board of Trustee GPA Award recipients on their accomplishment, as well as congratulating Tom Luccock for his years of service, and welcome Marilyn Tarrant to MSU.

Trustee Foster commented on the value of the Trustee and Student Liaison Group meeting this morning. Trustee Foster also recognized the graduation of Student Liaison Group members Dontae Freeman, James Conwell, and Adam Grajewski and welcomed the new members, Amanda Holy Sing and Sudha Sankar.

Trustee Woodard echoed the comments of the other Trustees, and congratulated the Board of Trustees Scholarship Award recipients on their accomplishments.

Trustee Byrum acknowledge the value of the Faculty Liaison Group, and congratulated the Board of Trustees Scholarship Award recipients on their accomplishments. She also commented on the retirement of Dean Mary Mundt and Tom Luccock, and wished them the best in the future.

Trustee Perles congratulated everyone their accomplishments, especially the Board of Trustees Scholarship Award recipients and all of the students of MSU.

Trustee Breslin congratulated Tom Luccock on his retirement, and thanked him for his years of service. He also concurred with Trustee Ferguson's comments.

12. Public Participation on Issues Not Germane to the Agenda.

A. Mandatory Reporting

Apryl Pooley, an MSU PhD candidate in Neuroscience, at the meeting on behalf of Community Leaders and Transformation, as well as a Graduate Teaching Assistant said that mandatory reporting closes the communication lines between students and their educators in a way that can be harmful to the students. She spoke about the regulation in Title IX in which recommends that only those who have the knowledge and authority to address the concerns of the students be mandatory reporters. Ms. Pooley then added that when graduate students ask to be exempt from mandatory reporting, it is out of care for their students and not as an avoidance of responsibility. She also spoke about the environment of fear that mandatory reporting can create, and stated that it should be mandatory resources, not mandatory reporting, and that MSU should investigate anonymous reporting so that it can be at the forefront of best practices for survivor needs.

Katherine Rydzinski, an MSU student, spoke on the harm that mandatory reporting can harm undergraduate students through belittling them and creating an environment of mistrust between undergraduate and graduate students. Ms. Rydzinski also spoke on the need for giving control back to victims in sensitive situations, such as those of sexual assault.

B. Anti-Harrasment

Amineh Farzannia, an MSU graduate student spoke about the need for anti-harassment language in their contracts. Ms. Farzannia mentioned that international students have contacted the GEU

about instances in which racial degrading remarks were said to international students, international students were treated unfairly, students were not allowed to enroll for the 2015-16 academic year due to not being in good standing, departmental assignments were assigned not on merit but randomly, and Ms. Farzannia has been personally subjected to two years of harassment from the administration and faculty members.

C. Mental Health on Campus

Carolyn Pratt, an MSU graduate student, told the story of Kelly, an MSU student who struggled with depression, and then spoke on need for graduate teaching students to have access to resources that they can connect their students to.

D. GEU/MSU Bargaining

Sylvia Marques, an MSU graduate student spoke about the need for the need to bargain a new contract for the graduate employees of MSU, especially in the area of health care insurance. Ms. Marques spoke about how the lack of coverage for graduate employees could affect the undergraduate experience and graduate student recruitment.

E. State of Higher Ed (supporting GEU)

Alex Bissell, an MSU alumnus, spoke about unfavorable working conditions of graduate employees, and the need for improvement, specifically in the areas of tuition waivers, higher pay, health care insurance, and a harassment free workplace.

F. Use of Patents by MSU

Gregory Spencer, an MSU alumnus spoke about the use of his basketball patents, without his permission, and that he wishes for this issue to be resolved immediately.

13. Request to Adjourn

On a motion by Trustee Ferguson, supported by Trustee Lyons, **THE BOARD VOTED to adjourn at 11:50 a.m.**

Respectfully submitted,



William R. Beekman
Secretary of the Board of Trustees

APPENDIX A

**RESEARCH
PRESENTATION
TO THE MSU BOARD OF TRUSTEES**

APRIL 17, 2015

DAVID ZOLTOWSKI

COLLEGE OF ENGINEERING

Facilitated by the Office of the Vice President for
Research and Graduate Studies

David Zoltowski is a senior undergraduate student in the College of Engineering and the Honors College. He is the recipient of a 2015 Churchill Scholarship and a 2014 Goldwater Scholarship. Additionally, David is a two-time captain of the MSU Varsity Swimming & Diving Team. His research interests include using tools from engineering and computer science to study the brain. After graduating from MSU, David will pursue a Master of Philosophy in Engineering at the University of Cambridge and, afterwards, a Ph.D. in Electrical and Computer Engineering at Carnegie Mellon University.

Dynamic Functional Brain Network Tracking and Summarization

David M. Zoltowski

Department of Electrical and Computer Engineering

*Joint work with Arash Mahyari, Edward M. Bernat, and
Selin Aviyente

MICHIGAN STATE
UNIVERSITY

Outline

- Functional connectivity networks
- Motivation
- Problem formulation
- Approach
- Results and future work

Functional Connectivity Networks (FCNs)

- Statistical interdependencies between different brain regions



- Social network analogy
 - ★ strengths of connections between different people

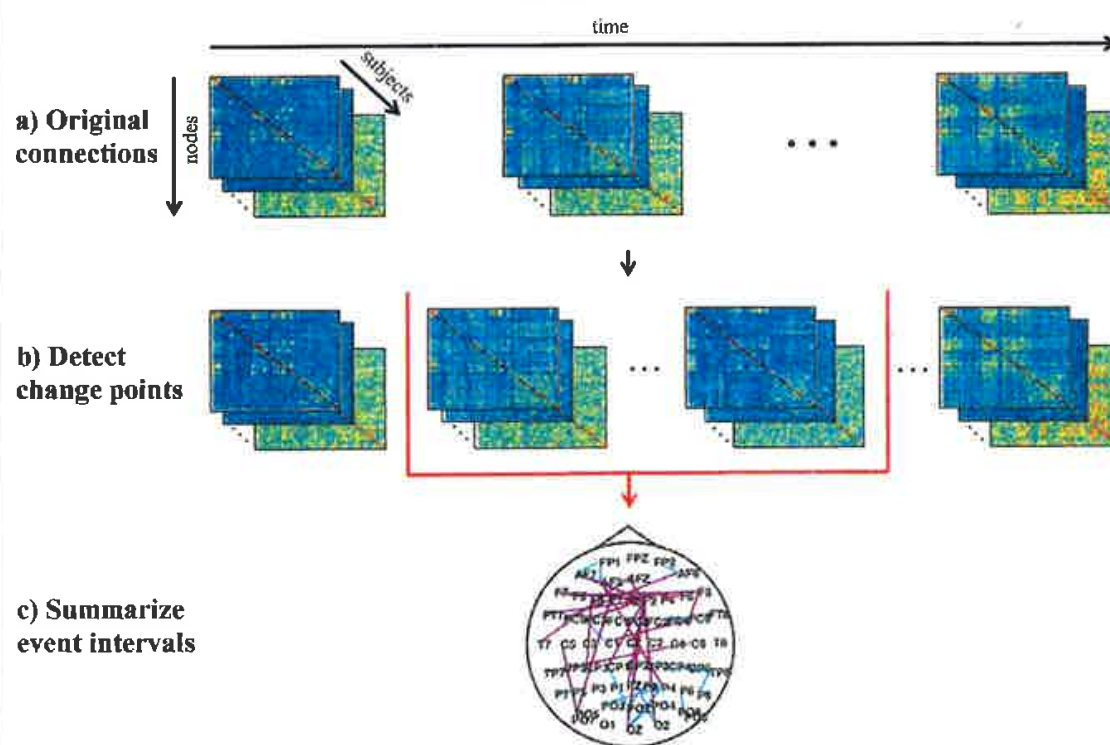
Motivation

- Why functional connectivity networks?
 - ★ FCNs are altered in subjects with neurological disorders [Hutchison et al., 2013]
 - ★ Underconnectivity theory of autism [Just et al., 2012]
- Why study dynamic networks?
 - ★ Functional connectivity fluctuates over time [Chang and Glover, 2010]
 - ★ Dynamic connectivity will enable improved characterization of pathophysiology and improved classification [Calhoun et al., 2014]

Problem Formulation

- EEG data containing the error-related negativity (ERN)
- Social network analogy
 - ★ *electrodes* × *electrodes* × *time* × *subjects*
 - ★ *people* × *people* × *time* × *modalities*
- Goals
 1. Identify events
 2. Describe events

Approach



Results and Future Work

- ERN interval network state



- Consider overlapping network states

Acknowledgements

- Collaborators
 - ★ Selin Aviyente, Ph.D., Department of Electrical and Computer Engineering, Michigan State University
 - ★ Edward M. Bernat, Ph.D., Department of Psychology, University of Maryland
 - ★ Arash Mahyari, Ph.D. student, Department of Electrical and Computer Engineering, Michigan State University
- Funding
 - ★ NSF CCF-1218377, NSF CCF-1422262

Thank You

“We have a chance to improve the lives of not just millions, but billions of people on this planet through the research that’s done in this BRAIN Initiative alone... it’s going to require us as a country to embody and embrace that spirit of discovery that is what made America, America.”

– President Barack
Obama

APPENDIX B

**RESEARCH
PRESENTATION
TO THE MSU BOARD OF TRUSTEES**

APRIL 17, 2015

**NADIA AYALA-LOPEZ
COLLEGE OF OSTEOPATHIC MEDICINE**


Facilitated by the Office of the Vice President for
Research and Graduate Studies



Nadia Ayala-Lopez, MLS (ASCP)^{CM}

Nadia Ayala-Lopez is a third-year PhD student in the Department of Pharmacology and Toxicology at Michigan State University in the lab of Dr. Stephanie Watts. She came to MSU after serving as a Medical Laboratory Scientist in hematology at the University of Washington Harborview Hospital in Seattle, Washington. Her undergraduate degree is in Clinical Laboratory Science from the University of Nevada, Las Vegas, where she conducted research in the field of immunotoxicology.

Norepinephrine transport in perivascular adipose tissue:
The ins and outs



Sitting: **90/69**

After running up four flights of stairs: **153/128**

Standing and talking: **98/74**

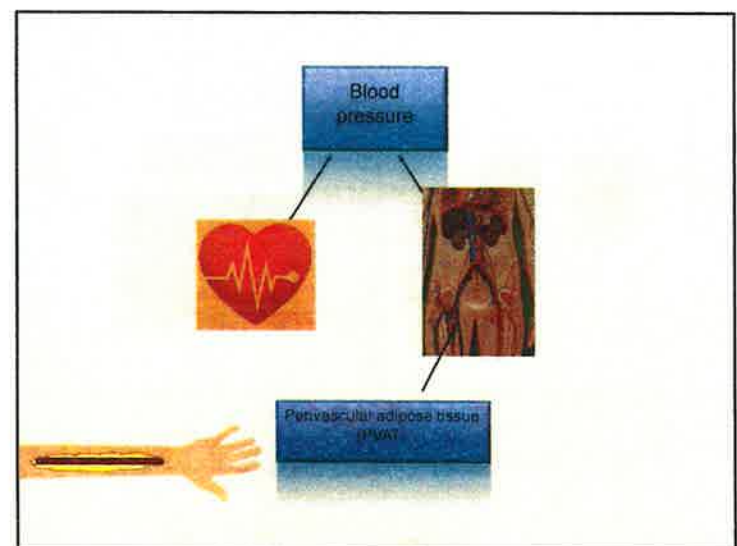
High blood pressure: **>120/80**

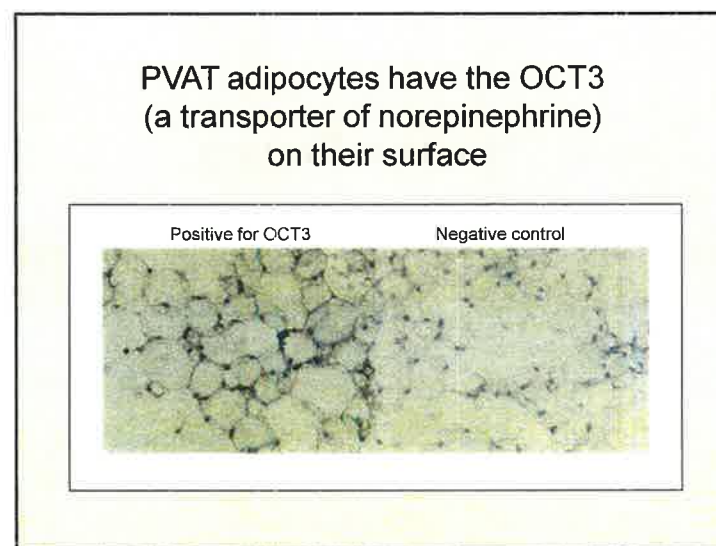
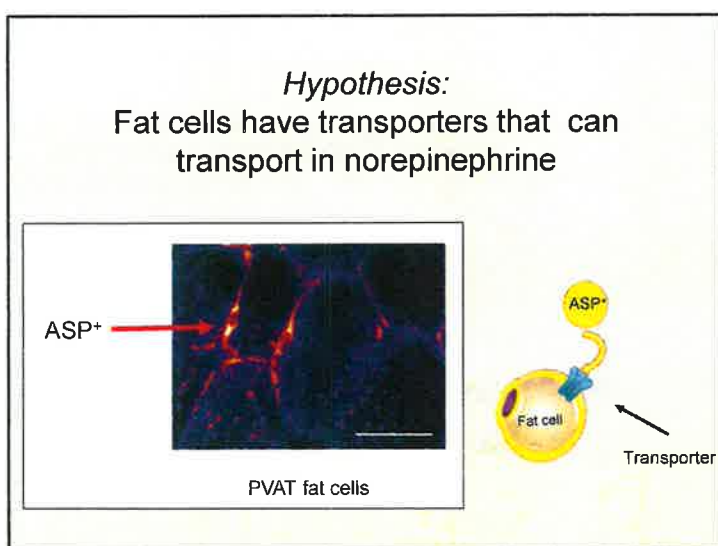
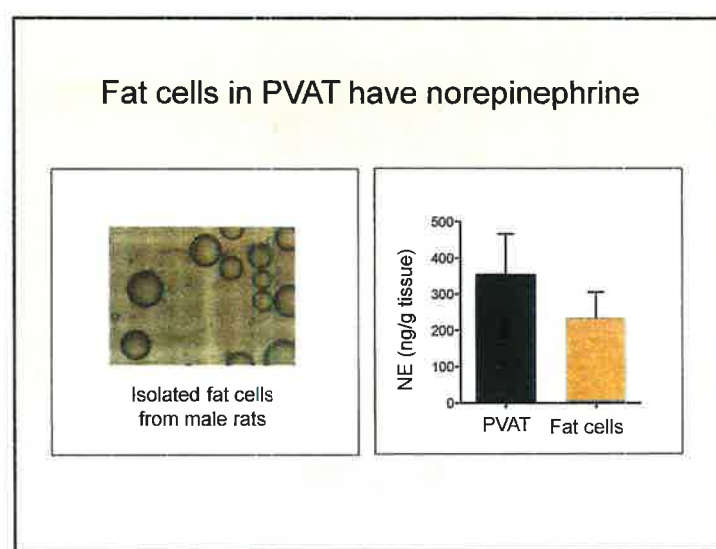
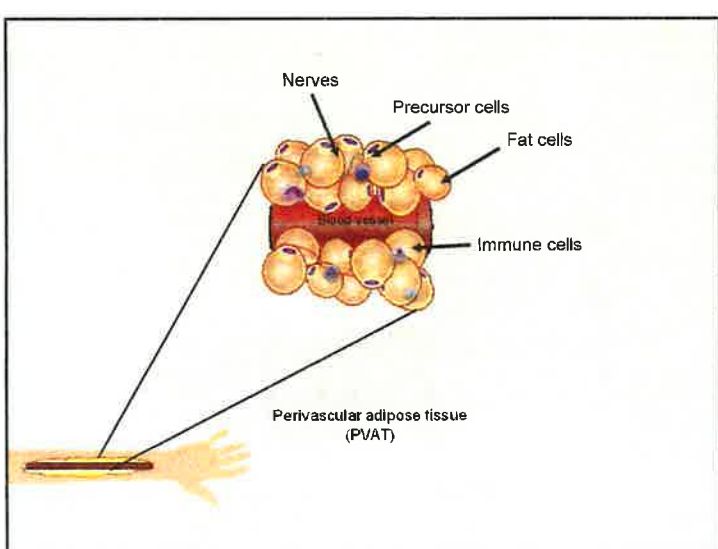
67 MILLION Americans have high blood pressure
1 IN 3

When your blood pressure is high:
You are **4x** more likely to die from a stroke
You are **3x** more likely to die from heart disease

High blood pressure contributes to
~1,000 DEATHS/DAY

Infographic from cdc.gov





Summary

- PVAT may act as a sink for norepinephrine
- Less norepinephrine around means that blood vessels contract less= lower blood pressure

Next questions:

- What happens to this mechanism in obesity? In high blood pressure?

Goal:

- Lowering blood pressure in people with high blood pressure

Acknowledgments



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Lindsey Young
David Ferland
Cristiane Ferreira-Hicks
Humphrey Peterson-Jones
Abby Moore
Maleha Ahmad
Jon Montrose
Cassandra LaMarche

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Dr. Andrea Contreras
Dr. Sue Barman
Dr. William F. Jackson

Dr. Anne Contrance
Dr. Gregory Fink
Dr. James Wilson

BMS program
MSU Grad School
BEST program

Funding
NIH NHLBI P01HL70687
5 T32 GM 92715-4



APPENDIX C

**RESEARCH
PRESENTATION
TO THE MSU BOARD OF TRUSTEES**

APRIL 17, 2015

**RICHARD LUNT
COLLEGE OF ENGINEERING**



Facilitated by the Office of the Vice President for
Research and Graduate Studies

Richard R. Lunt is currently an Assistant Professor at Michigan State University where his group focuses on understanding and exploiting excitonic photophysics and molecular crystal growth to develop unique thin-film optoelectronic devices. He earned his B.ChE. with Honors and Distinction from the University of Delaware in 2004 and his Ph.D. in Chemical Engineering from Princeton University in 2010. He then worked as a post-doctoral researcher at MIT until 2011. His work has been featured in *Nature*, *NY Times*, *Huffington Post*, *CNN*, *CBS*, *Bloomberg* and *NBC News*, among others, and his internationally recognized research has earned him a number of prestigious awards including the NSF CAREER Award, the Camille and Henry Dreyfus Mentor Award in Environmental Chemistry, the DuPont Young Investigator Award, the GPEC Solar Innovation Award, and the Undergraduate Research Mentor of the Year Award at MSU. He is the inventor of 17 patents, the majority of which have been licensed, and recently won the Innovation of Year Award at MSU. He is also a founder of Ubiquitous Energy Inc., which is commercializing a range of seamless light-harvesting technologies that is now worth over \$10M.

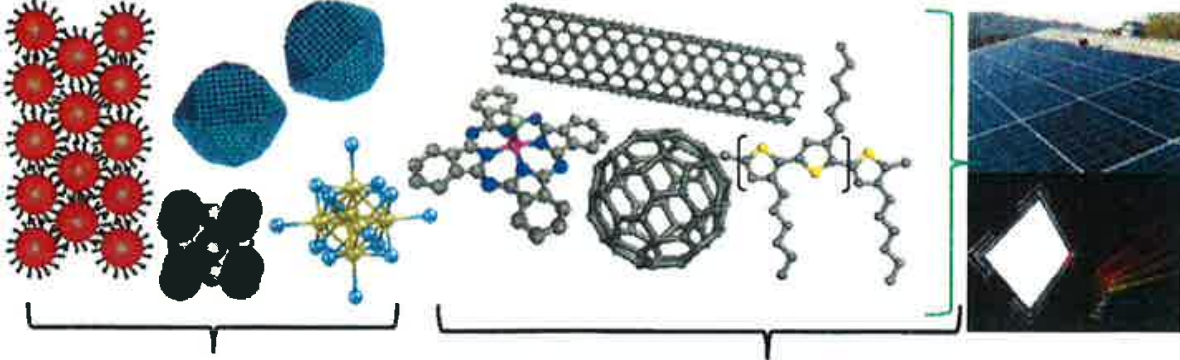
**New Paradigms for Solar Energy
and Energy Efficiency:
Molecular and Organic Excitonics Lab Overview**

Board of Trustees Meeting

Richard R. Lunt III
Assistant Professor
*Department of Chemical Engineering and Material Science,
Department of Physics
Michigan State University*



Nanostructured Materials for Energy

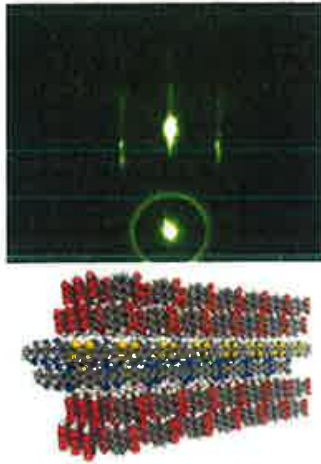


- Tunable Properties
- Low Temperature, Low Cost,
 - Lightweight, Flexible
- Excitons = Unique Applications!

MOE Group – Overview

Primary Thrusts of Our Group:

Molecular Crystal Growth



Light \rightarrow e-

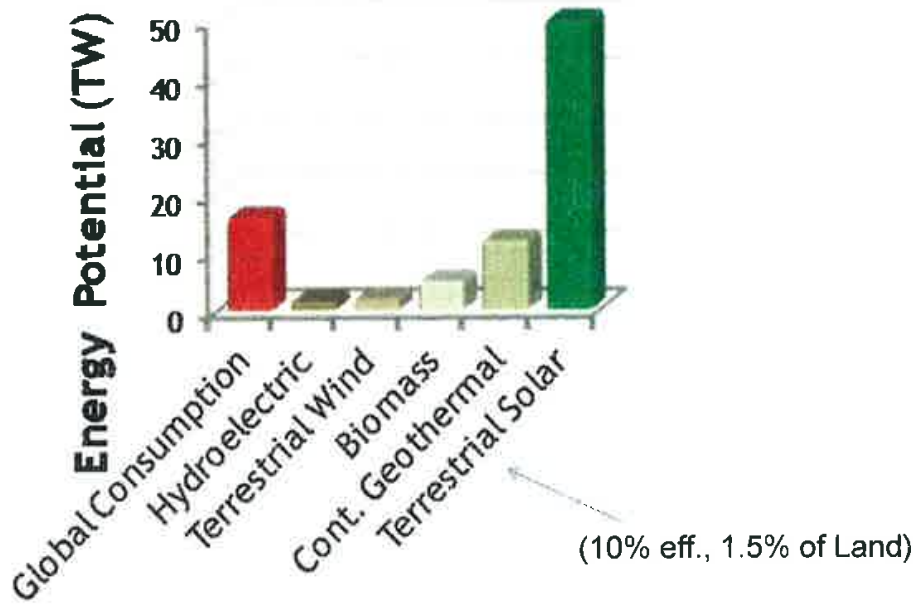


e- \rightarrow Light



Routes to Low-Cost Energy Efficiency!

Potential of Alternative Energy Sources



Adapted from N. Lewis "Powering the Planet" (MRS Bulletin 32, 2007)

Transparent Photovoltaics

Design UV-NIR Selective Harvesting Active Layers

Solar Flux (Photon/nm²-s)

Wavelength (nm)

Photopic Luminosity Abs (Norm.)

Wavelength (nm)

Absorption Coefficient of Silicon

Wavelength (nm)

- Install on Glass already being installed
- Or Retrofit as laminate

Transparent Luminescent Solar Concentrators

Traditional LSC

UV or NIR

VIS

NIR

- Selective Absorption/Glow in Infrared
 - No Patterning
 - Very Low Cost
 - Highly Scalable

Zhao et al., *Adv. Opt. Mat.*, 7, 606, 2014

Acknowledgements

- Graduate Students, Postdocs:

Yimu Zhao, Margaret Young, Padmanaban Kuttippillai,
Pei Chen, Chris Traverse, Joe Hagerty,
Dhanashree Moghe, Jorge Rossero, Lily Wang

- Undergraduate Students:

John Suddard, Juan L. Mena, Brian Wingate
Kevin Chase, Lucas Layher, Stephen Rausch, Tyler Patrick,
Natalia Chamorro



- Funding:



Recent Press

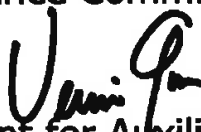


MICHIGAN STATE
UNIVERSITY

APPENDIX D

April 6, 2015

MEMORANDUM

To: Trustee Finance Committee
From: Vennie Gore 
Vice President for Auxiliary Enterprises
Subject: 2015-16 Housing and Dining Rate Recommendations

RECOMMENDATION

The Trustee Finance Committee recommends that the Board of Trustees authorize the Administration to implement room and board rates consistent with the projected rate increase presented in January 2013.

RESOLUTION

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby adopts the room and board rates set forth on Attachment A, including the basic residence hall double room and board rate of \$9,474 for first year, transfer, and returning students who select the silver unlimited meal plan for the 2015-16 academic year; and

BE IT FURTHER RESOLVED, that the Board of Trustees of Michigan State University hereby adopts Spartan Village rates of \$656 per month for a one-bedroom apartment and \$782 per month for a two-bedroom apartment, and adopts a University Village rate of \$719 per month/per person for a four-bedroom apartment, effective August 1, 2015.

BACKGROUND

Attached are materials that show recommended 2015-16 academic year housing and dining rates.

The proposed rates represent a 3.50% increase for the residence halls over the 2014-15 rates. This increase is consistent with the projected rate increase presented to the Board in January 2013. The rate increase results from higher operating expenses and debt service costs for renovations for housing and food service facilities on campus. The increase in housing and dining rates for the 2014-15 academic year was 3.95%.



**Auxiliary
Enterprises**

**Office of the
Vice President**

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East Lansing, MI
48825

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If the new rates are adopted, the residence hall double room rate for undergraduate students will increase \$132 per year and the silver unlimited meal plan for first year, transfer, and returning students will increase \$188.

For University apartments, the monthly rate per person at University Village will increase \$14. The monthly rate per apartment at Spartan Village will increase \$6 for a one-bedroom apartment and \$8 for a two-bedroom apartment.

It is anticipated that even with these rate increases, Michigan State University will continue to be competitively positioned among universities in Michigan and the Big Ten.

cc: Trustee Policy Committee, L. Simon, J. Youatt, S. Udpa, B. Beekman, R. Noto, D. Maybank, M. Haas, D. Byelich, K. Collins, G. Procopio, R. Patterson

ATTACHMENT A
MSU RHS 2015-16 Housing and Dining Rate Recommendations
April 6, 2015

RATE INCREASE RECOMMENDATION:

The proposed residence hall housing and dining rate recommendation for academic year 2015-16 is as follows:

- 3.0% increase for operating expense inflation with a 0.5% increase for facility infrastructure improvements in residence halls.
- 2.0% increase in rent for University Village apartments
- 1.0% increase in rent for Spartan Village apartments

This increase is comparable to the academic year 2014-15 increase of 3.45% for operating expense inflation and a 0.5% facility improvement increase. The additional 0.5% facility improvement increase for these two academic years replaces a 2014 proposal for a freshman renovation fee in addition to room and board fees. The rate increases are also consistent with the forecasted increase presented to the MSU Board of Trustees in January 2013 as part of the RHS ten-year strategic direction.

Rate Analysis	2014/2015 Rate	2015/2016 Rate	Amount Change
Residence Hall Room – double occupancy – rate per academic year	\$3,780	\$3,912	\$132
Residence Hall Meal Plan - Silver Unlimited – rate per academic year	\$5,374	\$5,562	\$188
Spartan Village Apartment - One Bedroom - rate per unit/month	\$650	\$656	\$6
Spartan Village Apartment - Two Bedroom – rate per unit/month	\$774	\$782	\$8
University Village Apartment - Four Bedroom – rate per bedroom/month	\$705	\$719	\$14

Our residential living experience provides exceptional value for our residents. In one all-inclusive cost, we provide direct support for student success, award winning dining available 16 hours a day, seven days a week, high speed internet, cable TV, basic utilities, furnishings, linen and laundry services, fitness centers, reception desk service, campus security, convenient access to academic classrooms, and a residential education model that builds community and Spartans for life.

We understand the importance of keeping housing and dining rates affordable for our students, especially as the pressures of individual contribution to the cost of higher education continue to increase. This proposed rate increase attempts to strike a balance between affordability, enhanced service for our students and the continued renovation of our aging residence halls and apartment buildings.

Daily Cost	
Residence Hall (all-inclusive)	\$42.29
Spartan Village Apartments	\$12.94
Williams Hall	\$19.89
University Village Apartments	\$23.81

CONTRIBUTING TO STUDENT SUCCESS

Neighborhood Engagement Centers:

Housing more than 14,500 students, Michigan State University's Neighborhoods, a collaboration between RHS, the Office of the Provost and Student Affairs and Services, harnesses the power of one of the nation's largest residence hall systems to bring the resources of MSU to first-year students where they live, including tutoring, health services, advising and more. This new model of integrated academic, residential and student services addresses the goal of giving every student admitted to MSU an equal opportunity of graduating. The Neighborhood concept is being recognized as a national leader through the University Innovation Alliance. This neighborhoods initiative has been implemented in all five undergraduate neighborhoods.

Initial data has indicated that MSU's Neighborhoods are making an impact. Specifically, low-income, first-generation and first-year students who received focused outreach through the Neighborhoods were 20 percent less likely to be on academic probation after their first semester and first-year students who used Neighborhood services more frequently had better GPAs. The next goal of the centers will be to develop analytic models to create specific plans for individual success.

University Innovation Alliance:

Eleven large research institutions, including Michigan State University, have come together across state and conference lines to increase the rate at which students from low-income and underrepresented backgrounds graduate from college. The effort is receiving \$5.7 million in funding support from six major funders.

The University Innovation Alliance has a mission of increasing the number of students who stay in college and graduate within six years, regardless of where they are within the socioeconomic spectrum.

MSU's contribution to the alliance will be sharing and scaling its Neighborhood initiative. The alliance will develop and test new initiatives, share data and create a 'playbook' of best practices across its members and beyond, aspiring to invigorate efforts in all colleges and universities to produce a better-educated workforce.

Dining:

Academic year 2015-16 marks the first full year when all of the RHS Dining facility renovations will be complete. Each neighborhood now enjoys a renovated dining facility and all data points to MSU's 'lead with food' philosophy having been very successful, both culturally and financially. Niche.com recently ranked MSU food service number one in the State of Michigan and number 24 nationally from the 1,175 colleges sampled.

The unlimited access dining plan introduced in 2007-08 has been well received by students. The Combo-X-Change retail option added to the unlimited meal plan offers excellent flexibility, choice and to-go alternatives for our students. Culinary Services continues to innovate, adding options to the popular program frequently, most recently fresh sushi. RHS Culinary Services registered dietician works closely with our students with special dietary restrictions or food allergies to provide many suitable options.

Technology:

RHS is currently working with MSU IT Services to expand internet Wi-Fi coverage to all residence hall student rooms and common areas. Wilson, Akers, Butterfield, Case and Landon have already been updated. Holmes, Rather and Snyder-Phillips will be completed in the summer of 2015. The installation schedule has been accelerated to have all buildings completed as soon as funding allows. Cost is estimated at \$5 million for all remaining buildings.

ENHANCING STUDENT HOUSE COUNTS

A 2014 market segmentation study provided us with greater insights into the students who live and dine with us, allowing better design of services and communication of amenities in order to enhance retention to the halls and sale of dining plans. The adoption of Lean Performance methods will enable us to streamline and simplify processes, to the benefit of students and the efficiency of the organization. While the private student housing market continues to grow, RHS has been able to stabilize our residence hall house counts. RHS also continues work with the Office of the Provost to provide additional support for our students through extended living/learning programs.

Residence Halls:

Many recently renovated residence halls such as Brody Neighborhood, Landon, Shaw, Case, Holden and Mayo are experiencing improved student retention.

The Edge, the new dining facility in Akers Hall, should also help to improve student retention in the East Neighborhood. No long-term transitional (tripled) housing issues are anticipated for 2015-16 since all residence halls will be operational. Budgeted house counts total 14,550 for 2015-16. This is a slight reduction of 100 from the actual projected house counts for 2014-15 and the same as the 2014-15 budget.

Apartments:

University Village apartments' 304 beds are budgeted to remain near 100% occupancy for 2015-16. This facility remains very popular during fall and spring semesters by offering a nine-month lease. Occupancy diminishes during the summer, and these units are utilized for MSU summer conference attendees.

Spartan Village apartments are planned to be phased out by August 2017 as they reach the end of their useful service lives. Planning is currently under way to develop future replacement MSU student family housing options. 990 of the 1,028 total units will be available for lease in 2015-16 and are budgeted to be at 88% occupancy. Visiting Scholars and other MSU personnel may also live at Spartan Village as capacity allows.

FACILITY IMPROVEMENTS

In 2008, RHS adopted a long-range strategic plan. The plan was updated in 2013 and begins to address the aging Spartan Village Apartments and building infrastructure projects. RHS has been able to successfully renovate several more residence halls than first envisioned in the 2008 strategic plan due to careful planning, historically low bond interest rates and advantageously competitive construction contract bids. The Brody Neighborhood was completed at \$30 million below the original budget. Significant renovations in Landon and Akers Halls were made possible due to savings from previous projects arriving under budget.

Strategic Plan Renovations include:

	Housing	Dining	Engagement Center/Student Services
RHS Reinvestment			
Apartments			
University Village Apartments	X		
North Neighborhood			
Mary Mayo	X		
Landon	X	X	
Snyder-Phillips	X	X	
MSU Union		X	X
South Neighborhood			
Holden	X	X	X
Case	X	X	
Wilson Hall			X
River Trail Neighborhood			
Owen	X	X	
Shaw	X	X	
McDonel			X
Brody Neighborhood		X	X
Emmons	X		
Bailey	X		
Armstrong	X		
Bryan	X		
Rather	X		
Butterfield	X		
East Neighborhood			
Akers	X	X	
Hubbard			X

FINANCIAL POSITION

2014-15 Projection

Current year revenues are approximately 2.7% (+\$4.3 million) higher than budget primarily due to residence hall house count increases of approximately 100 students over the 14,550 students budgeted in 2014-15. Dining cash sales continued to increase and are projected to exceed budget by \$2 million in 2014-15.

Combined residence hall and apartment net contribution to RHS repairs and reserves is projected to be \$8.3 million, above the budgeted amount of \$6.4 million due to higher residence hall house counts compared to budget.

Residence hall and apartment operating expenses are projected to be 1.6% (\$2.4 million) higher than budget due primarily to increased food costs driven by significant inflation. Personnel Services costs were also \$1.4 million above budget due to the 10.1% September 2014 minimum wage increase to \$8.15 per hour for student employees (previously \$7.40/hour).

2015-16 Proposed Operating Budget

The 2015-16 proposed rate increase and operations budget will allow RHS to remain healthy and financially viable. RHS has three financial objectives to be achieved through net income from operations: 1) to pay down debt service costs, 2) provide just-in-time maintenance funds for repairs and improvements, and 3) maintain an adequate reserve balance to address unforeseen emergencies.

Net contribution to RHS repairs and reserves is projected to be \$7.0 million, approximating the 2014-15 budget of \$6.4 million due to similar residence hall student volume and summer conference activity.

Consolidated 2015-16 residence hall, apartment and summer conference revenues are projected to increase 4.9% (\$7.8 million) above current year budget amounts due to the residence hall room and board rate increase of 3.5%, the University Village 2.0% apartment rate increase, and the Spartan Village 1.0% apartment rate increase. Residence hall house count is budgeted to be the same 14,550 students as budgeted in 2014-15. The Boy Scouts/NOAC conference scheduled for August 2015 will also result in over \$1 million in incremental conference service revenue compared to 2014-15. Net income from this non-recurring conference generates additional funding to increase JIT repair efforts.

Consolidated residence hall and apartment operating expenses are budgeted to increase \$7.2 million (+4.7%) in 2015-16 over budgeted 2014-15 levels. Personnel services expenses are budgeted to increase \$3.8 million over budgeted 2014-15 amounts. Regular team member wages are budgeted to increase 2.5% per union agreements, while minimum wage for student employees will increase 4.3% to \$8.50/hour on January 1, 2016. 2015-16 dining team members will increase due to The Edge at Akers Hall being open for an entire academic year compared to only one semester in the current year.

Food costs are also budgeted to increase \$3.8 million (13.6%) due to inflation and the August 2015 Boy Scout/NOAC conference. Utility expenses allocated to RHS are anticipated to decrease. MSU internal utility rate charges are currently under review to reflect recent abatement formula updates. Please see the attached RHS Preliminary Financial Review for additional budget details.

Facility Improvements

Future repair and maintenance of the residence halls will be funded through cash reserves as opposed to bonded debt. For 2014-15 and again in 2015-16, a dedicated 0.5% of the residence hall room and board rate increase has been established to fund continuing facility infrastructure improvements, renovations, and maintenance issues. These funds will provide for timely and planned renovation of facility exteriors, elevators, roof maintenance, energy-efficient lighting replacements, information technology maintenance and upgrades, life safety improvements, asbestos and lead remediation and landscape repair and maintenance. These and any future incremental portions of the rate increase will provide long-term support to maintain RHS facilities and student services.

Projects scheduled for 2015-16 include approximately \$8 million in renovations and JIT maintenance expenditures provided by 2014-15 operating net income. The first phase of the five-year, \$12 million Hubbard Hall exterior renovation is budgeted for \$800,000 and will begin in 2015.

Debt Service Costs

Residence hall and apartment annual debt service cost will increase from \$16.3 million to \$17.0 million in 2015-16 due to recent bonded renovations at Butterfield, Landon, and Akers Halls.

RHS long-term debt obligations currently total \$278 million. RHS maximum debt capacity is forecasted to be \$285 million and is expected to be reached near the end of 2015 when the final payments are made for Akers Hall.

MSU RHS RESIDENCE HALLS: PRELIMINARY FINANCIAL PREVIEW

REVENUES:	RHS Budget 2014-15	Proposed Budget 2015-16	\$ Increase / (\$ decrease)
Room & Board	\$129,238,000	\$133,624,000	\$4,386,000
Dining Cash Sales	16,142,000	18,139,000	1,997,000
Academic Space Rental	1,260,000	1,363,000	103,000
Conferences – Recurring	3,928,000	3,319,000	(609,000)
Conferences - Nonrecurring ⁽¹⁾	1,177,000 ⁽¹⁾	3,000,000 ⁽¹⁾	1,823,000 ⁽¹⁾
Total Revenues =	151,745,000	159,445,000	7,700,000
EXPENSES:			
Personnel Services	58,174,000	61,799,700	3,625,700
Student Affairs / Res Life	216,000	216,000	0
Food Purchases	28,043,000	31,852,000	3,809,000
Utilities	11,653,000	9,344,500	(2,308,500)
General Expense	5,578,000	5,840,000	262,000
Supplies	6,168,000	6,312,900	144,900
Repairs & Maintenance	5,680,000	5,942,100	262,100
Communications/Bandwidth	2,622,000	2,760,300	138,300
Auxiliary Overhead Fee	2,700,000	2,700,000	0
Uniforms / Linen	1,662,000	1,386,100	(275,900)
Insurance	432,000	445,000	13,000
Equipment	154,000	197,000	43,000
Travel / Miscellaneous	1,140,000	1,201,700	61,700
40 Nat'l Merit Scholarships	275,000	275,000	0
EBS Administration Fee 1%	1,505,000	1,580,900	75,900
Facility Improvements/Renov.	5,533,236	6,192,600	659,364
Debt Service Cost	15,263,000	15,968,900	705,900
Total Expenses =	146,798,236	154,014,700	7,216,464
Contribution to J-I-T Repairs and Reserves =	\$ 4,946,764	\$ 5,430,300	\$ 483,536

NOTES:

(1) In 2015 MSU will host two large international conferences on campus. These conferences are nonrecurring in nature for MSU and is not a part of the normal event calendar. Net proceeds from these conferences will finance RHS facility renovations.

MSU RHS UNIVERSITY APARTMENTS: PRELIMINARY FINANCIAL PREVIEW

REVENUES:	RHS Budget 2014-15	Proposed Budget 2015-16	\$ increase / (\$ decrease)
Apartment Rent	\$8,747,000	\$8,850,000	\$103,000
EXPENSES:			
Personnel Services	2,204,000	2,235,000	31,000
Utilities	867,000	877,000	10,000
General Expense	524,000	535,000	11,000
Student Affairs / Res Life	9,000	9,000	0
Supplies	565,000	398,000	(167,000)
Repairs & Maintenance	965,000	1,051,000	86,000
Communication /Bandwidth	525,000	544,500	19,500
Auxiliary Overhead Fee	300,000	300,000	0
Insurance	64,000	66,000	2,000
Equipment	0	0	0
Linen/ Travel/ Miscellaneous	55,000	142,000	87,000
East Lansing Schools	106,000	0	(106,000)
EBS Administration Fee 1%	87,000	88,500	1,500
Facility Improvements/Renov.	0	0	0
Debt Service Cost	1,050,000	1,050,000	0
Total Expenses =	7,321,000	7,296,000	(25,000)
 Contribution to J-I-T Repairs and Reserves =	 \$1,426,000	 \$1,554,000	 \$128,000

MSU RHS RESIDENCE HALL RATE COMPARISON
Standard Double Room & 20+ Meals/Week Board Plan for 2015-16*

BIG TEN UNIVERSITIES	Actual 2014-15 Rate	Estimated 2015-16 Rate	\$ Increase	% Increase
Northwestern University	\$14,241	\$14,782	\$541	3.80% proposed
Rutgers University	\$11,550	\$11,896	\$346	3.00% proposed
University of Maryland	\$10,633	\$11,111	\$478	4.50% proposed
University of Michigan	\$10,246	\$10,553	\$307	3.00% proposed
University of Illinois	\$10,180	\$10,333	\$153	1.50% proposed
University of Nebraska	\$9,961	\$10,310	\$349	3.50% proposed
Ohio State University	\$9,820	\$10,065	\$245	2.50% proposed
Penn State University	\$9,770	\$10,014	\$244	2.50% approved
Indiana University	\$9,493	\$9,778	\$285	3.00% proposed
University of Iowa	\$9,389	\$9,671	\$282	3.00% proposed
Purdue University	\$9,414	\$9,602	\$188	2.00% proposed
Michigan State University	\$9,154	\$9,474	\$320	3.50% proposed
University of Wisconsin	\$8,546	\$8,802	\$256	3.00% proposed
University of Minnesota	\$8,554	\$8,746	\$192	2.25% proposed
MICHIGAN UNIVERSITIES	2014-15 Rate	2015-16 Rate	\$ Increase	% Increase
University of Michigan	\$10,246	\$10,553	\$307	3.00% proposed
Michigan Tech University	\$9,516	\$9,801	\$285	3.00% estimated
Ferris State University	\$9,208	\$9,484	\$276	3.00% estimated
Michigan State University	\$9,154	\$9,474	\$320	3.50% proposed
Lake Superior State University	\$8,987	\$9,257	\$270	3.00% estimated
Wayne State University	\$8,970	\$9,239	\$269	3.00% estimated
Western Michigan University	\$8,943	\$9,211	\$268	3.00% estimated
Oakland University	\$8,894	\$9,161	\$267	3.00% estimated
Central Michigan University	\$8,780	\$9,043	\$263	3.00% estimated
Northern Michigan University	\$8,742	\$9,004	\$262	3.00% estimated
Saginaw Valley State University	\$8,678	\$8,938	\$260	3.00% estimated
Eastern Michigan University	\$8,584	\$8,842	\$258	3.00% estimated
Grand Valley State University	\$8,420	\$8,673	\$253	3.00% estimated

*MSU BASIC "SILVER" PLAN PROVIDES UNLIMITED ACCESS/MEALS AT ANY OF THE 11 RESIDENCE HALL DINING FACILITIES FROM 7 AM TO 12 MIDNIGHT SEVEN DAYS A WEEK. THIS PLAN ALSO INCLUDES ONE DAILY ACCESS TO A COMBO-X-CHANGE MEAL AT ANY OF THE SPARTY'S, UNION PIZZERIA, UNION DELI, SERRANO'S, "EAT AT STATE" FOOD TRUCK, OR RIVERWALK MARKET RETAIL DINING LOCATIONS ON CAMPUS. MSU'S MEAL PLAN ACCESS AND FLEXIBILITY IS UNMATCHED BY ANY OTHER BIG TEN OR STATE OF MICHIGAN PUBLIC UNIVERSITY.

MSU RHS AVERAGE RESIDENCE HALL HOUSE COUNTS

<u>1975-76</u>	<u>1976-77</u>	<u>1977-78</u>	<u>1978-79</u>	<u>1979-80</u>	<u>1980-81</u>
17,800	17,200	17,700	17,570	17,900	17,680
<u>1981-82</u>	<u>1982-83</u>	<u>1983-84</u>	<u>1984-85</u>	<u>1985-86</u>	<u>1986-87</u>
16,100	15,354	15,551	16,100	16,437	16,800
<u>1987-88</u>	<u>1988-89</u>	<u>1989-90</u>	<u>1990-91</u>	<u>1991-92</u>	<u>1992-93</u>
16,950	17,300	16,500	15,800	15,100	13,900
<u>1993-94</u>	<u>1994-95</u>	<u>1995-96</u>	<u>1996-97</u>	<u>1997-98</u>	<u>1998-99</u>
14,126	13,972	13,964	13,965	14,234	14,181
<u>1999-00</u>	<u>2000-01</u>	<u>2001-02</u>	<u>2002-03</u>	<u>2003-04</u>	<u>2004-05</u>
14,190	14,564	14,494	14,624	14,342	14,485
<u>2005-06</u>	<u>2006-07</u>	<u>2007-08</u>	<u>2008-09</u>	<u>2009-10</u>	<u>2010-11</u>
14,844	14,733	14,611	14,506	14,385	14,010
<u>2011-12</u>	<u>2012-13</u>	<u>2013-14</u>	<u>2014-15</u>		
14,820	14,725	14,710	14,660		

APPENDIX E

**RESOLUTION OF THE BOARD OF TRUSTEES OF MICHIGAN STATE UNIVERSITY
AUTHORIZING THE ISSUANCE AND DELIVERY OF GENERAL REVENUE BONDS
AND PROVIDING FOR OTHER MATTERS RELATING THERETO**

WHEREAS, the Board of Trustees of Michigan State University (the "Board") is a body corporate created by and existing under the Constitution of the State of Michigan of 1963, as amended, with full constitutional authority over and general supervision of Michigan State University (the "University") and control and direction of all expenditures from the University's funds; and

WHEREAS, the Board has previously issued in several outstanding series its General Revenue Bonds (the "Prior Bonds"), its Commercial Paper Notes, Series B (Taxable) and Commercial Paper Notes, Series E (Tax-Exempt) (the "Notes"), and certain other obligations, in each case payable from and secured by a lien on General Revenues (hereinafter defined) (collectively, the "Outstanding Obligations"); and

WHEREAS, the Board has previously entered into certain interest rate swap agreements related to the debt service on certain of the Outstanding Obligations, payable from and secured by a lien on General Revenues (collectively, the "Existing Swap Agreements"); and

WHEREAS, the Board has determined it may be appropriate and in the best interests of the University to refund all or a portion of the Prior Bonds and all or a portion of the Notes as shall be determined by an Authorized Officer (hereinafter defined) (the portion of the Prior Bonds to be refunded, if any, being herein called the "Bonds to be Refunded," and the portion of the Notes to be refunded, if any, being herein called the "Notes to be Refunded"); and

WHEREAS, the Board has determined that financing capital projects of the University with the proceeds of tax-exempt or taxable debt, or both, will enhance the flexibility of the University with respect to its budget and financial resources, and will permit the allocation of the costs of the capital projects to the periods of the useful lives of the projects being acquired; and

WHEREAS, the University's current high credit ratings not only reflect the financial strength of the University and its ability to repay its debt obligations, but will also permit the University to access the public debt markets in the most efficient and economic manner; and

WHEREAS, the Board has therefore determined it is appropriate and in the best interests of the University to finance all or a portion of certain capital expenditures of or for the benefit of the University, as described on Exhibit A attached hereto (collectively, the "Projects"), with the proceeds of the General Revenue debt authorized hereby; and

WHEREAS, in the exercise of its constitutional duties, and in order prudently to control and direct expenditures from the University's funds, the Board has determined it is necessary and desirable to authorize the issuance and delivery of additional General Revenue Bonds (the "Bonds") payable from and secured by a pledge of General Revenues in order to provide funds which, together with other available funds of the University, will be used to fund all or part of the costs of the Projects, to pay all or part of the costs of refunding the Bonds to be Refunded and the Notes to be Refunded, if any, and to pay costs related to the issuance of the Bonds and the refunding; and

WHEREAS, one or more trust agreements (collectively, the "Trust Agreement") or loan agreements (collectively, the "Loan Agreement") must be entered into by and between the Board and a trustee (the "Trustee") or a direct placement lender, in either case to be designated by an Authorized Officer, pursuant to which the Bonds will be issued and secured; and

WHEREAS, it is necessary to authorize the Authorized Officers, or any one of them individually, to negotiate the sale of the Bonds with an underwriter or group of underwriters selected by an Authorized Officer (collectively, the "Underwriter") or with a direct placement lender to be selected by an Authorized Officer (the "Purchaser"), and to enter into one or more bond purchase agreements with the Underwriter or Purchaser (collectively, the "Bond Purchase Agreement") setting forth the terms and conditions upon which the Underwriter or Purchaser will agree to purchase the Bonds and the interest rates thereof and the purchase price therefor, or, in the alternative, to select the Underwriter for all or any portion of any series of the Bonds and to establish the terms for such Bonds through a competitive sale or bidding process pursuant to a Notice of Sale; and

WHEREAS, in order to be able to market the Bonds at the most opportune time, and in accordance with the Board's Capital Projects Debt Policy, it is appropriate for the Board to ratify and confirm its authorization of the President, the Executive Vice President for Administrative Services, the Vice President for Finance and Treasurer and the Director of Investments and Financial Management (each an "Authorized Officer"), or any one of them individually, to negotiate, execute and deliver on behalf of the Board, the Trust Agreement or Loan Agreement, the Bond Purchase Agreement, one or more remarketing agreements with the Underwriter or other parties (collectively, the "Remarketing Agreement"), and other related documents, to publish any Notice of Sale required for the sale of any portion of the Bonds, to establish the specific terms of the Bonds and to accept the offer of the Underwriter or Purchaser to purchase the Bonds, all within the limitations set forth herein; and

WHEREAS, the trust agreements and other documents authorizing the Outstanding Obligations create certain conditions for the issuance of obligations payable from and secured by a pledge of General Revenues on a parity basis with the Outstanding Obligations; and

WHEREAS, an Authorized Officer shall, on or prior to the date of delivery of the Bonds, certify that the conditions for issuing the Bonds, secured on a parity basis by General Revenues with the Outstanding Obligations, have been met; and

WHEREAS, the acquisition, equipping and construction of the Projects, the refunding of the Bonds to be Refunded and the Notes to be Refunded, if any, and the funding of all or a part of the costs thereof with the proceeds of the Bonds, will serve proper and appropriate public purposes; and

WHEREAS, the Board has full power under its constitutional authority and supervision of the University, and control and direction of expenditures from the University's funds, to acquire, equip and construct the Projects, to refund the Bonds to be Refunded and the Notes to be Refunded and to pay all or a part of the costs of the Projects and the costs of the refunding by issuance of the Bonds, and to support payment of the Bonds by a pledge of General Revenues.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF TRUSTEES OF MICHIGAN STATE UNIVERSITY, AS FOLLOWS:

1. The Board hereby approves the definition of the term "Projects" as set forth on Exhibit A attached hereto, and, subject to final approval of the Board in the case of any of the Projects listed in Category I-B or Category II on Exhibit A, for which final approval has not yet been received, authorizes the Authorized Officers, or any one of them individually, to select the portion of the Projects to be financed, in whole or in part, from the proceeds of the Bonds, and to fund, as appropriate, the remaining portion of the costs of the Projects from available funds of the University, consistent with the Board's resolutions authorizing construction of the Projects. The Board further approves the refunding of all or any portion of the outstanding Prior Bonds and all or any portion of the outstanding Notes and authorizes the Authorized Officers, or any one of them individually, to select the portion, if any, of the Prior Bonds to constitute the Bonds to be Refunded and the portion, if any, of the Notes to constitute the Notes to be Refunded, in order to produce interest or other cost savings or a more favorable debt service structure, to reduce or eliminate risks associated with variable rate bonds and related interest rate swaps, to provide for more favorable terms or covenants, or to provide for permanent financing of projects previously financed from short-term debt, and to fund, if deemed appropriate, a portion of the costs of the refunding from available funds of the University and the balance of such costs from the proceeds of the Bonds, and to proceed with the refunding.

In connection with the refunding of all or any portions of any Outstanding Obligations, any Authorized Officer may, in the name and on behalf of the Board, and as its corporate act and deed, modify any Existing Swap Agreements, in whole or in part, and relate any of such Existing Swap Agreements to any portion of the debt service on the Bonds or any Outstanding Obligations, or terminate any Existing Swap Agreements, in whole or in part, and any fees or termination payments required in connection with any such modifications or terminations may be paid from the proceeds of the Bonds, or from available funds of the University, as determined by an Authorized Officer.

2. The Board hereby authorizes the issuance, execution and delivery of the Bonds, in one or more series, to be designated GENERAL REVENUE BONDS, with appropriate series designations, in the aggregate original principal amount established by an Authorized Officer, but not to exceed the principal amount necessary to produce proceeds of Two Hundred Million Dollars (\$200,000,000), plus the amount necessary to accomplish the refunding of the Bonds to be Refunded and the Notes to be Refunded and to pay costs related thereto. The Bonds shall be dated as of the date or dates established by an Authorized Officer, and shall be issued for the purpose of providing funds which, together with other available funds, will be used to pay all or a portion of the costs of the Projects, including, if determined to be appropriate by an Authorized Officer, capitalized interest related to all or a portion of the Projects for a period specified by an Authorized Officer, to pay all or a portion of the costs of refunding the Bonds to be Refunded, if any, and the Notes to be Refunded, if any, to pay the costs of modifying or terminating any Existing Swap Agreements, if deemed appropriate by an Authorized Officer, and to pay costs related to the issuance of the Bonds and the refunding, including the costs of bond insurance premiums, if an Authorized Officer determines such insurance to be appropriate. The Bonds shall be serial bonds or term bonds, which may be subject to redemption requirements, or both, as shall be established by an Authorized Officer, but the first maturity or mandatory redemption date shall be no earlier than July 1, 2015 and the last maturity shall be no later than December

31, 2055. The Bonds may bear interest at stated fixed rates for the respective maturities thereof as shall be established by an Authorized Officer, but the weighted average yield of the Bonds (computed using the stated coupon and the stated original offering price) shall not exceed 5.5% per annum for tax-exempt bonds and 8.0% per annum for taxable bonds, subject, in the case of Bonds sold to a Purchaser, to adjustments for increased costs of the Purchaser, rating changes and defaults and other specified factors, but in no event in excess of the lesser of 25% per annum, the maximum rate permitted by law or the maximum rate, if any, specified in the Trust Agreement or Loan Agreement. Alternatively, all or part of the Bonds may bear interest at a variable rate of interest, determined on the basis of an index or a spread to an index or through market procedures, or both, for all or a portion of their term, and the variable rate of interest shall not exceed the lesser of 25% per annum, the maximum rate permitted by law or the maximum rate, if any, specified in the Trust Agreement or Loan Agreement. The Bonds may be subject to redemption or call for purchase prior to maturity at the times and prices and in the manner as shall be established by an Authorized Officer, but no redemption premium shall exceed 3% of the principal amount being redeemed, unless the redemption price is based on a "make whole" formula, in which case no redemption premium shall exceed 40% of the principal amount being redeemed. Interest on the Bonds shall be payable at such times as shall be specified by an Authorized Officer. The Bonds shall be issued in fully registered form in denominations, shall be payable as to principal and interest in the manner, shall be subject to transfer and exchange, and shall be executed and authenticated, and may be issued in book-entry-only form, all as shall be provided in the Trust Agreement or Loan Agreement. The Bonds shall be sold to the Underwriter or Purchaser for a price to be established by an Authorized Officer (but the Underwriter's or Purchaser's discount, exclusive of original issue discount, shall not exceed 2.00% of the principal amount thereof) plus accrued interest, if any, from the dated date of the Bonds to the date of delivery thereof.

In relation to the debt service on all or any portion of the Bonds, or in relation to the debt service on all or any portion of the Outstanding Obligations, any Authorized Officer may, at any time, on behalf of and as the act of the Board, enter into or modify an interest rate swap, cap, forward starting swap, option, swaption, rate lock or similar agreement or agreements (collectively, the "Swap Agreement") with a counterparty or counterparties to be selected by the Authorized Officer. Such Swap Agreement shall provide for payments between the Board and the counterparty related to interest on all or a portion of the Bonds or any series of Outstanding Obligations, at indexed or market established rates. If the Swap Agreement is entered into at approximately the same time as the issuance of the Bonds and is related to the Bonds, the expected effective interest rates on the Bonds to which the Swap Agreement relates, taking into account the effect of the Swap Agreement, shall be within the limitations set forth herein. Any Swap Agreement may, if determined necessary or appropriate by an Authorized Officer, be subsequently terminated, in whole or in part, which may result in termination payments due by the Board. Any such required payments and other costs of termination may be funded from available funds of the University or the proceeds of the Bonds or other indebtedness of the Board.

Any or all of the Bonds may be made subject to tender for purchase at the option of the holder thereof or to mandatory tender for purchase. The obligation of the Board to purchase any Bonds subject to tender for purchase may be limited to the remarketing proceeds of such Bonds, or may be made payable from General Revenues, from available cash reserves of the University, subject to such limitations as may be specified in the Trust Agreement or Loan Agreement, or

from a letter of credit, line of credit, standby bond purchase agreement or other liquidity device (the "Liquidity Device"), or any combination thereof, all as shall be determined by an Authorized Officer and provided for in the Trust Agreement or Loan Agreement. Any reimbursement obligation for draws under the Liquidity Device shall be a limited and not a general obligation of the Board, payable from, and may be secured by a pledge of, General Revenues. Each Authorized Officer is individually authorized to execute and deliver at any time, for and on behalf of the Board, any amendments to the Trust Agreement or Loan Agreement and any agreements or instruments with a party or parties selected by an Authorized Officer necessary to obtain, maintain, renew or replace, and provide for repayments under, any Liquidity Device deemed by such officer to be required for the purposes of this Resolution.

Any Bonds authorized and issued hereunder may, at any time upon direction of an Authorized Officer, be subsequently converted to another mode or structure authorized hereby, either through procedures established in the Trust Agreement or Loan Agreement pertaining thereto, or through the issuance hereunder of refunding Bonds to refund and replace the outstanding Bonds to be converted. Any such refunding Bonds issued hereunder shall be subject to the terms, conditions and limitations contained in this Resolution. Each Authorized Officer is individually authorized to execute and deliver, for and on behalf of the Board, any documents or instruments, including but not limited to, any amendments to the Trust Agreement or Loan Agreement, necessary or convenient for the purpose of accomplishing the conversion as described in this paragraph.

3. The Bonds, and the obligations of the Board under the Swap Agreement and the Liquidity Device, if any, shall be limited and not general obligations of the Board payable from and, except as provided below in this Section 3, secured by a lien on, the General Revenues (as shall be defined in the Trust Agreement or Loan Agreement in a manner generally consistent with the definition thereof contained in the trust agreements pursuant to which the Prior Bonds were issued). Except as otherwise determined by an Authorized Officer, as provided below in this Section 3, the lien on General Revenues securing the Bonds, the Swap Agreement and the Liquidity Device, if any, shall be on a parity basis with the liens on General Revenues securing the Outstanding Obligations. The Bonds, and the obligations of the Board under the Swap Agreement and the Liquidity Device, if any, may also be payable from and secured by a lien on moneys, securities or other investments from time to time on deposit in certain funds created pursuant to the Trust Agreement or Loan Agreement or agreements entered into in connection with the Swap Agreement or Liquidity Device.

No recourse shall be had for the payment of the principal amount of or interest or premium on the Bonds, or for the payment of any amounts owing under the Swap Agreement or the Liquidity Device, if any, or any claim based thereon, against the State of Michigan, or any member or agent of the Board (including, without limitation, any officer or employee of the University), as individuals, either directly or indirectly, or, except as specifically provided in the Trust Agreement or Loan Agreement or the instruments entered into in connection with the Swap Agreement or the Liquidity Device, if any, against the Board, nor shall the Bonds and interest or premium with respect thereto, or any obligations of the Board in connection with the Swap Agreement or Liquidity Device, if any, become a lien on or be secured by any property, real, personal or mixed, of the State of Michigan or the Board, other than General Revenues and the moneys, securities or other investments from time to time on deposit in certain funds established as pledged pursuant to the Trust Agreement or Loan Agreement or pursuant to agreements entered into in connection with the Swap Agreement or Liquidity Device, if any.

Any pledge of General Revenues, and funds specified in the Trust Agreement or Loan Agreement or in any agreements entered into in connection with the Swap Agreement or the Liquidity Device, if any, shall be valid and binding from the date of the issuance and delivery of the Bonds or such agreements, and all moneys or properties subject thereto which are thereafter received shall immediately be subject to the lien of the pledge without physical delivery or further act. The lien of said pledge shall be valid and binding against all parties (other than the holders of any other bonds, notes or other obligations secured by a parity first lien on General Revenues) having a claim in tort, contract or otherwise against the Board, irrespective of whether such parties have notice of the lien.

Notwithstanding anything herein to the contrary, any obligations of the Board under the Swap Agreement or the Liquidity Device may, if determined appropriate by an Authorized Officer, be payable and secured on a subordinated basis to the Bonds and other General Revenue obligations of the Board, or may be payable from General Revenues but be unsecured.

4. The right is reserved to issue additional bonds, notes or other obligations payable from General Revenues and secured on a parity or subordinated basis with the Bonds and the Outstanding Obligations by a lien on General Revenues, upon compliance with terms and conditions therefor as shall be set forth in the Trust Agreement or Loan Agreement.

5. Each Authorized Officer is hereby individually authorized and directed, in the name and on behalf of the Board, and as its corporate act and deed, to select the Trustee, if any, and to negotiate the terms of and execute and deliver the Trust Agreement or Loan Agreement. The Trust Agreement or Loan Agreement may contain such covenants on behalf of the Board and terms as such Authorized Officer deems appropriate and as shall be approved by the Office of the General Counsel, including, but not limited to, covenants with respect to the establishment of General Revenues at levels expressed as a percentage of debt service on the Bonds or all General Revenue obligations of the Board, and with respect to the issuance of additional bonds, notes or other obligations payable from and secured by General Revenues. In addition, each Authorized Officer is hereby individually authorized, empowered and directed to negotiate, if deemed appropriate by an Authorized Officer in connection with the issuance of the Bonds, for the acquisition of bond insurance and to execute and deliver an insurance commitment or other documents or instruments required in connection with such insurance.

6. Each Authorized Officer is hereby individually authorized and directed, in the name and on behalf of the Board and as its corporate act and deed, to select the Underwriter or Purchaser and to negotiate, execute and deliver the Bond Purchase Agreement with the Underwriter or Purchaser setting forth the terms of the Bonds and the sale thereof, and containing such other covenants and agreements of the Board as may be required by the Underwriter or the Purchaser in connection therewith, in such form as an Authorized Officer may approve upon recommendation of the Office of the General Counsel, all within the limitations set forth herein. In the alternative, if determined appropriate by an Authorized Officer, selection of the Underwriter and setting of the terms for all or any portion of any series of the Bonds may be made through a competitive sale or other bidding process, and each Authorized Officer is individually authorized to accept the winning bid or offer of the Underwriter for the purchase of the Bonds. Each Authorized Officer is hereby further individually authorized and directed, in the name and on behalf of the Board and as its corporate act and deed, to negotiate, execute and deliver the Remarketing Agreement with the Underwriter or other party selected by the Authorized Officer.

7. The President and the Vice President for Finance and Treasurer are each individually authorized, empowered and directed, in the name and on behalf of the Board, and as its corporate act and deed, to execute the Bonds by manual or facsimile signature and, if deemed appropriate, to impress or imprint the University seal thereon, and to deliver the Bonds to the Underwriter or Purchaser in exchange for the purchase price therefor.

8. Each Authorized Officer is hereby individually authorized to solicit ratings on the Bonds from any national rating services that the Authorized Officer deems appropriate and, if necessary, to cause the preparation of a Preliminary Official Statement and an Official Statement with respect to each series of the Bonds, to deem such official statements "final" in accordance with applicable law, and to execute and deliver the Official Statements. In the event that all or a portion of any series of the Bonds is to be sold by means of a competitive sale or bidding process, as provided in this Resolution, each Authorized Officer is individually authorized to prepare and publish or cause to be published, or otherwise distribute, in such manner as an Authorized Officer shall determine, a Notice of Sale for such Bonds. Each Authorized Officer, or the Underwriter or the University's financial advisor, as appropriate, is authorized to circulate and use, in accordance with applicable law, the Notice of Sale, the Preliminary Official Statements and the Official Statements in connection with the offering, marketing and sale of the Bonds.

9. Each Authorized Officer, the Vice President and Secretary of the Board, the Vice President for Legal Affairs and General Counsel and any Associate or Assistant General Counsel, and all other appropriate officers or representatives of the Board or the University and each one of them, are authorized to perform all acts and deeds and to execute and deliver for and on behalf of the Board all instruments and documents required by this Resolution, the Trust Agreement or Loan Agreement, the Remarketing Agreement, the Swap Agreement, the Liquidity Device and the Bond Purchase Agreement, or necessary, expedient and proper in connection with the issuance, sale and delivery of the Bonds, as contemplated hereby, including, if deemed appropriate, one or more escrow deposit agreements with an escrow agent to be selected by an Authorized Officer. Each Authorized Officer is individually authorized to designate and empower the escrow agent to subscribe for United States Treasury Obligations, State and Local Government Series, on behalf of the Board, as may be necessary in connection with any refunding authorized hereby. Any action required under the Trust Agreement or Loan Agreement, the Remarketing Agreement, the Bond Purchase Agreement, the Swap Agreement or the Liquidity Device or any other instrument related to the Bonds, and any action necessary or appropriate in connection with the ongoing administration of the financing program authorized hereby, may be taken by and on behalf of the Board by an Authorized Officer. Any reference to an officer of the Board or the University herein shall include any interim or acting officer appointed by the Board.

10. In accordance with the requirements of Rule 15c2-12 of the United States Securities and Exchange Commission, the Board may be required in connection with the issuance of the Bonds to enter into a continuing disclosure undertaking for the benefit of the holders and beneficial owners of the Bonds. Each Authorized Officer is individually authorized to cause to be prepared and to execute and deliver, on behalf of the Board, a continuing disclosure undertaking.

11. If deemed necessary by the University's bond counsel, each Authorized Officer is individually authorized to arrange for the publication of a notice of and to conduct a public hearing with respect to the issuance of the Bonds, all in accordance with requirements of Section 147(f) of the Internal Revenue Code of 1986, as amended.

12. Any resolutions or parts of resolutions or other proceedings of the Board in conflict herewith are hereby repealed insofar as such conflict exists.

EXHIBIT A
PROJECTS

The Projects, as that term is used in the Resolution to which this Exhibit A is attached, are defined as follows:

Category I

<u>Project Description</u>	<u>Currently Estimated Approximate Cost to be Funded From Bond Proceeds (exclusive of bond issuance expense) (in millions)</u>
A. (Board approved project construction/renovation)	
Grand Rapids - Real Estate and Research Facility Development	\$ 30.8
Facility for Rare Isotope Beams - 25 Mega Watt Electrical Duct Bank	21.3
Cyclotron Building - Office Addition - Phase III	9.4
Facility for Rare Isotope Beams/Campus - Power Plant Connection	7.6
North Campus Infrastructure Improvements - West Circle Drive – 2015	2.8
Akers Hall Dining and Life Safety Renovation	1.4
B. (Board approved project planning and design)	
Special Housing Needs/Spartan Village Redevelopment	\$ 106.0
Breslin Student Events Center - Facility Upgrades	13.6

Category II

All projects heretofore or hereafter approved by the Board with an identified total or partial funding source as the proceeds of bonds or other debt obligations issued by the Board.

Category III

Miscellaneous building, renovation, remodeling, site improvement, equipment, utility, information system and similar capital projects of the University, each with an estimated cost of \$5,000,000 or less, including, but not limited to, roof repairs and replacements; electrical, mechanical, chiller, refrigeration and steam system renovations, repairs, replacements and improvements; heating, cooling and air conditioning system renovations, repairs, replacements and improvements; structural repairs and improvements; utility distribution repairs and improvements; road and sidewalk repairs and improvements; building and building addition construction, renovation, furnishing and equipping; information and computing system acquisitions and improvements (including wiring and cabling); elevator repairs and improvements; miscellaneous landscaping and site work; and miscellaneous equipment acquisitions.

I hereby certify that the attached is a true and complete copy of a resolution adopted by the Board of Trustees of Michigan State University at a meeting held on April 17, 2015, in accordance with applicable law, and that the minutes of the meeting at which the resolution was adopted were kept and will be or have been made available at the Office of the Vice President and Secretary of the Board of Trustees of Michigan State University.

I further certify as follows:

1. Present at the meeting were the following Board members:

Absent from the meeting were the following Board members:

2. The following members of the Board voted for the adoption of the Resolution:

The following members of the Board voted against adoption of the Resolution:

RESOLUTION DECLARED ADOPTED.

Vice President and Secretary
Board of Trustees of Michigan State University

MICHIGAN STATE
U N I V E R S I T Y

APPENDIX F

April 6, 2015

MEMORANDUM

To: Trustee Policy Committee

From: June Youatt
Executive Vice President and Provost

Subject: Amendment of Ordinance 31.00 (Parking – Metered Parking Zones)

RECOMMENDATION

The Trustee Policy Committee recommends that the Board of Trustees amend University Ordinance 31.00 to address the use of smart meters and multi-space parking meters.

RESOLUTION

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby amends University Ordinance 31.00 (Parking – Metered parking zones) as shown in Exhibit A attached hereto.

BACKGROUND

In 2013, the Department of Police and Public Safety replaced the conventional on-street parking meters across campus with solar powered smart meters that accept payment by credit card in addition to coins. The Department is now in the process of installing multi-space parking meters (i.e., parking kiosks) in campus parking ramps and parking lots. The multi-space parking meters will operate using a "Pay by Plate" system which requires users to enter their license plate number at the time of payment. They will accept multiple forms of payment, including credit cards, and give users the option to extend their meter time remotely through the use of their mobile devices. The project will be completed in phases, beginning March 2015 with the Grand River Parking Ramp.

In light of the ongoing upgrades to campus parking meters, the Department of Police and Public Safety desires to amend the University ordinance dealing with metered parking to better address the manner in which the new system functions. The proposed changes include the modification of existing language regarding acceptable forms of payment and the addition of a section regarding multi-space meters.

c: Trustee Finance Committee, L. Simon, B. Beekman, R. Noto, S. Udpa,
J. Dunlap, N. White



**OFFICE OF THE
PROVOST**

Michigan State University
Hannah Administration Building
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East Lansing, Michigan 48824

Phone: 517-355-6550
Fax: 517-355-9601
provost.msu.edu

EXHIBIT A

31.00 PARKING

.10* Metered parking zones:

.101* When parking meters are erected adjacent to a space marked for parking, such space shall be a metered parking zone and no person shall stop a vehicle in any such zone for a period of time longer than designated on said parking meters upon the deposit of ~~a coin of the~~ United States currency of the denomination designated on said meters or the making of another form of accepted payment, except government owned vehicles shall be exempt from the payment of the meter fee.

.102* Every vehicle shall be parked wholly within the metered parking ~~space~~ zone for which the meter shows parking privilege has been granted.

.103* When a multi-space parking meter is erected in a parking ramp or lot, parking spaces located therein shall be metered parking zones and no person shall stop a vehicle in any such zone without making proper payment via United States currency, credit card or other accepted form of payment in an amount sufficient to cover the length of time for which the vehicle will remain parked. Parking time may be extended upon the payment of additional funds, but in no event shall a vehicle remain parked in excess of the time limit indicated on applicable signage.

.104 Government-owned vehicles shall be exempt from the payment of meter fees.

MICHIGAN STATE
UNIVERSITY

APPENDIX G

April 6, 2015

MEMORANDUM

To: Trustee Policy Committee

From: June Youatt
Executive Vice President and Provost

Subject: Approval of Contract Terms: *HAO Tech, LLC*.

RECOMMENDATION

The Trustee Policy Committee recommends that the Board of Trustees approve a contract between Michigan State University and *HAO Tech, LLC*, a company in which faculty member Dr. Gouliang Xing holds a financial interest.

RESOLUTION

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby approves a license agreement with *HAO Tech, LLC*, consistent with earlier public notice given at a Board meeting and with the "License Agreement Term Sheet" now presented to the Board for inclusion in its minutes.

BACKGROUND

In compliance with State law, public notice of the University's intent to negotiate contracts with *HAO Tech, LLC*, a Michigan limited liability company, was given at the Board of Trustees meeting on October 24, 2014. The terms of a license agreement are now being presented for the Board's approval.

Dr. Gouliang Xing, an Associate Professor in the Department of Computer Science and Engineering, and his family own or have options to buy an ownership interest of more than 1% of the company. Dr. Xing is also a member of *HAO Tech, LLC*.

The attached "License Agreement Term Sheet" summarizes the agreement that MSU has negotiated with *HAO Tech, LLC*.

cc: Trustee Finance Committee, L. Simon, S. Udpa, B. Beekman, S. Hsu,
R. Noto, B. Mattes, K. Zayko, C. Berg



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LICENSE AGREEMENT TERM SHEET

Party:	HAO Tech, LLC
License:	Exclusive license on copyright to computer code in the field of breathing monitoring by smart phone app for the consumer market
Term:	Ten years from the effective date of the agreement
Technology:	MSU Invention Disclosure No. TEC2014-0015 "Monitoring and Optimizing Breath and Footsteps During Exercise Using Smartphones" The parties may add or remove technologies under the agreement, including improvements generated under a separate sponsored research agreement, provided that the change does not affect the financial consideration of the parties or the nature or extent of any pecuniary interest of MSU personnel.
Technology's Potential Commercial Utilization:	Breathing monitoring for individual well-being or activity tracking
Payment Terms:	Equity position of 10% in HAO Tech, LLC increased from 5% due to the addition of this technology; payment of a running royalty of 5% on net sales and related advertising income; 15% on all sublicensing revenues
Services Provided:	By MSU to HAO Tech, LLC: None contemplated under agreement By HAO Tech, LLC to MSU: None contemplated under agreement
Use of University Facilities/Personnel:	None
Organization Type:	Michigan limited liability company
Personnel Interest:	Dr. Gouliang Xing, an Associate Professor in the Department of Computer Science and Engineering, and his family own or have options to buy an ownership interest of more than 1% of the company. Dr. Xing is also a member of HAO Tech, LLC.

MICHIGAN STATE
UNIVERSITY

APPENDIX H

April 6, 2015

MEMORANDUM

To: Trustee Policy Committee

From: June Youatt
Executive Vice President and Provost

Subject: Approval of Lease Terms: *Jolt Energy Storage Technologies, LLC*

RECOMMENDATION

The Trustee Policy Committee recommends that the Board of Trustees approve a lease between Michigan State University and *Jolt Energy Storage Technologies, LLC*, a company in which faculty member Thomas F. Guarr holds a financial interest.

RESOLUTION

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby approves a lease with *Jolt Energy Storage Technologies, LLC*, consistent with earlier public notice given at a Board meeting and with the "Lease Term Sheet" now presented to the Board for inclusion in its minutes.

BACKGROUND

In compliance with State law, public notice of the University's intent to negotiate contracts with *Jolt Energy Storage Technologies, LLC*, a Michigan company, was given at the Board of Trustees meeting on February 6, 2015. The terms of a lease agreement are now being presented for the Board's approval.

Dr. Thomas F. Guarr, the Director of R&D at MSU Bioeconomy Institute in Holland, Michigan, and his family own or have options to buy an ownership interest of more than 1% of the company. Dr. Guarr is also an officer of the company.

The attached "Lease Term Sheet" summarizes the agreement that MSU has negotiated with *Jolt Energy Storage Technologies, LLC*.

cc: Trustee Finance Committee, L. Simon, S. Udpa, B. Beekman, S. Hsu, R. Noto, B. Mattes, K. Zayko, C. Berg



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LEASE TERM SHEET

Party:	Jolt Energy Storage Technologies, LLC
Project Description:	Lease of space comprising 488 square feet of assignable laboratory space, plus 218 square feet of assignable office space, both in the 100 wing of the MSU Bioeconomy Institute facility in Holland, MI
Term:	One year
Contractual Terms:	\$13,788 annual rent for the space. Free parking for Jolt Energy Storage Technologies, LLC employees on the Institute's surface lot. Ten percent discount on any mutually agreed chemical production or analytical services provided by the Institute under the then-current rate sheet(s) during the lease term. Use of incidental office services (e.g., photocopying) at the Institute's then-current standard rate sheet during the lease term.
Services Provided:	By MSU to Jolt Energy Storage Technologies, LLC: Incidental services by mutual agreement, as provided in the contractual terms By Jolt Energy Storage Technologies, LLC to MSU: None contemplated under agreement
Use of University Facilities/Personnel:	Incidental use of MSU services/personnel by Jolt Energy Storage Technologies, LLC at rates as set forth in the contractual terms
Organization Type:	Michigan limited liability company
Personnel Interest:	Dr. Thomas F. Guarr, the Director of R&D at MSU Bioeconomy Institute in Holland, Michigan, and his family own or have options to buy an ownership interest of more than 1% of the company. Dr. Guarr is also an officer of Jolt Energy Storage Technologies, LLC.

MICHIGAN STATE
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APPENDIX I

April 6, 2015

MEMORANDUM

To: Trustee Policy Committee

From: June Youatt
Executive Vice President and Provost

Subject: Approval of Contract Terms: *Jolt Energy Storage Technologies, LLC*

RECOMMENDATION

The Trustee Policy Committee recommends that the Board of Trustees approve a contract between Michigan State University and *Jolt Energy Storage Technologies, LLC*, a company in which faculty member Thomas F. Guarr holds a financial interest.

RESOLUTION

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby approves a contract with *Jolt Energy Storage Technologies, LLC*, consistent with earlier public notice given at a Board meeting and with the "Agreement Term Sheet" now presented to the Board for inclusion in its minutes.

BACKGROUND

In compliance with State law, public notice of the University's intent to negotiate contracts with *Jolt Energy Storage Technologies, LLC*, a Michigan company, was given at the Board of Trustees meeting on February 6, 2015. The terms of the contract are now being presented for the Board's approval.

Dr. Thomas F. Guarr, the Director of R&D at MSU Bioeconomy Institute in Holland, Michigan, and his family own or have options to buy an ownership interest of more than 1% of the company. Dr. Guarr is an officer of the company.

The attached "Agreement Term Sheet" summarizes the agreement that MSU has negotiated with *Jolt Energy Storage Technologies, LLC*.

cc: Trustee Finance Committee, L. Simon, S. Udpa, B. Beekman, S. Hsu, R. Noto, B. Mattes, K. Zayko, C. Berg



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AGREEMENT TERM SHEET

Party:	Jolt Energy Storage Technologies, LLC
Project Description:	Use of pilot plant infrastructure and operational staff at the MSU facility in Holland, MI for production of chemical intermediates, process optimization, and related research
Term:	Two years, unless terminated at an earlier date at the discretion of either party
Contractual Terms:	<p>Jolt Energy Storage Technologies LLC is responsible for providing all raw materials, for the shipping of all products, and for disposal of all wastes generated. The company is responsible for complying with all applicable laws and regulations, as well as all MSU policies, and for cooperating fully with the MSU Office of Environmental Health & Safety. The company assumes all risks of failed production runs not resulting from demonstrable MSU error or negligence. No intellectual property rights of either party are modified under this agreement.</p> <p>All payments by Jolt Energy Storage Technologies, LLC to MSU will be governed by the MSU Bioeconomy Institute rate sheet. The current version, dated February 1, 2015, is attached.</p>
Services Provided:	<p>By MSU to Jolt Energy Storage Technologies, LLC: Pilot plant scale-up of chemical syntheses</p> <p>By Jolt Energy Storage Technologies, LLC to MSU: None contemplated under agreement</p>
Use of University Facilities/Personnel:	MSU personnel will execute the pilot plant synthesis runs in the MSU facility in Holland, MI.
Organization Type:	Michigan limited liability company
Personnel Interest:	Dr. Thomas F. Guarr, the Director of R&D at MSU Bioeconomy Institute in Holland, Michigan, and his family own or have options to buy an ownership interest of more than 1% of the company. Dr. Guarr is also an officer of Jolt Energy Storage Technologies, LLC.

MSU Bioeconomy Institute -- Scale-up Plant Rates
 February 1, 2015 -- MSU reserves the right to modify rates at any time.

Infrastructure						
Primary reactor used in single reactor train --> [where a train may include up to 3 reactors: a primary or still, plus a receiver and/or a charging tank]	Vacuum Tray or Rotary Dryer (no additional processing steps)	200 L glass-lined	400 L glass-lined; 120 L High Temperature Still	800 L glass-lined or stainless; or any volume Hastelloy, including low temperature reactor	2000 L glass-lined	4000 L glass-lined
First day in consecutive plant work period	\$593	\$2,685	\$3,304	\$4,130	\$4,956	\$5,782
Each additional consecutive plant work day, including filtering, centrifugation, drying, milling, etc	\$593	\$940	\$1,229	\$1,446	\$1,807	\$2,096
Daily Blending Operation Rate (single vessel, no major auxiliary equipment, no heating or cooling)	---	\$537	\$661	\$826	\$991	\$1,156

Personnel		
	Mon-Friday Prime Shift; hourly rate up to 10 hrs per day	All other time worked:
Plant operator	\$64.00	\$96.00
Shift supervisor or service manager	\$83.00	\$124.50
Analytical or process chemist/engineer, including EHS officer, chief engineer, or operations director)	\$124.00	\$186.00

Other	
	MSU mark-ups of mutually agreed charges for optional supplies and services provided by MSU
Raw materials (if not privately arranged)	26%
Waste disposal (if not privately arranged)	26%
Pilot plant consumables	26%
Consulting engineers	26%
Other expenses, absent separate agreement	26%

MICHIGAN STATE
U N I V E R S I T Y

APPENDIX J

April 6, 2015

MEMORANDUM

To: Trustee Policy Committee

From: June Youatt
Executive Vice President and Provost

Subject: Approval of License Terms: *Jolt Energy Storage Technologies, LLC*

RECOMMENDATION

The Trustee Policy Committee recommends that the Board of Trustees approve a license between Michigan State University and *Jolt Energy Storage Technologies, LLC*, a company in which faculty member Thomas F. Guarr holds a financial interest.



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RESOLUTION

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby approves a license agreement with *Jolt Energy Storage Technologies, LLC*, consistent with earlier public notice given at a Board meeting and with the "License Agreement Term Sheet" now presented to the Board for inclusion in its minutes.

BACKGROUND

In compliance with State law, public notice of the University's intent to negotiate contracts with *Jolt Energy Storage Technologies, LLC*, a Michigan company, was given at the Board of Trustees meeting on February 6, 2015. The terms of a license agreement are now being presented for the Board's approval.

Dr. Thomas F. Guarr, the Director of R&D at MSU Bioeconomy Institute in Holland, Michigan, and his family own or have options to buy an ownership interest of more than 1% of the company. Dr. Guarr is an officer of the company.

The attached "License Agreement Term Sheet" summarizes the agreement that MSU has negotiated with *Jolt Energy Storage Technologies, LLC*.

cc: Trustee Finance Committee, L. Simon, S. Udpa, B. Beekman, S. Hsu, R. Noto, B. Mattes, K. Zayko, C. Berg

LICENSE AGREEMENT TERM SHEET

Party:	Jolt Energy Storage Technologies, LLC
License:	Exclusive license on patents to overcharge protection in lithium batteries
Term:	Expiration or termination of the patents
Technology:	MSU US Patent Application Serial No. 62/026,212 "Rechargeable Lithium-Ion Cell"; MSU Invention Disclosure No. TEC2014-0004 "Stable, High Potential Redox Shuttles for Overcharge Protection in Lithium Batteries"
Technology's Potential Commercial Utilization:	Overcharge protection for lithium batteries
Payment Terms:	Licensing fee of \$30,000; Payment of a running royalty of 3% on net sales; 3% of sublicensee sales
Services Provided:	By MSU to Jolt Energy Storage Technologies, LLC: None contemplated under agreement By Jolt Energy Storage Technologies, LLC to MSU: None contemplated under agreement
Use of University Facilities/Personnel:	None
Organization Type:	Michigan limited liability company
Personnel Interest:	Dr. Thomas Guarr, the Director of R&D at MSU Bioeconomy Institute in Holland, Michigan, and his family own or have options to buy an ownership interest of more than 1% of the company.

MICHIGAN STATE
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APPENDIX K

April 6, 2015

MEMORANDUM

To: Trustee Policy Committee

From: June Youatt
Executive Vice President and Provost

Subject: Approval of Contract Terms: *Metna Co.*

RECOMMENDATION

The Trustee Policy Committee recommends that the Board of Trustees approve a contract between Michigan State University and *Metna Co.*, a company in which faculty member Dr. Parviz Soroushian holds a financial interest.

RESOLUTION

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby approves a Sponsored Research Agreement with *Metna Co.*, consistent with earlier public notice given at a Board meeting and with the "Sponsored Research Agreement Term Sheet" now presented to the Board for inclusion in its minutes.

BACKGROUND

In compliance with State law, public notice of the University's intent to negotiate contracts with *Metna Co.*, a Delaware corporation based in Lansing, Michigan, was given at the Board of Trustees meeting on January 27, 2012. The terms of a sponsored research agreement are now being presented for the Board's approval.

Dr. Parviz Soroushian, a Professor in the Department of Civil and Environmental Engineering, and his family own or have options to buy an ownership interest of more than 1% of the company. Dr. Soroushian is also the President of *Metna Co.*

The attached "Sponsored Research Agreement Term Sheet" summarizes the agreement that MSU has negotiated with *Metna Co.*

cc: Trustee Finance Committee, L. Simon, S. Udpa, B. Beekman, S. Hsu, R. Noto, B. Mattes, K. Zayko, C. Berg



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SPONSORED RESEARCH AGREEMENT TERM SHEET

Party: Metna Co.

Contracts: Subcontract under U.S. Army Corps of Engineers W9132T-15-C-002: Sponsored research agreement subcontract: "(STTR Phase II) Ultra-High Performance Concrete"

Term: From the effective date of the agreement to July 29, 2015

Payment Terms: Fixed price of \$12,173

Services Provided: By MSU to Metna: analyze and report the feasibility of the use of indigenous materials for construction applications
By Metna to MSU: none

Use of University Facilities/Personnel: Dr. Venkatesh Kodur, a Professor in the Department of Civil and Environmental Engineering, will engage in research and provide the services described above.

Organization Type: Delaware corporation based in Lansing

Personnel Interest: Dr. Parviz Soroushian, a Professor in the Department of Civil and Environmental Engineering, and his family own or have options to buy an ownership interest of more than 1% of the company. Dr. Soroushian is also the president of Metna Corporation.

MICHIGAN STATE
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APPENDIX L

April 6, 2015

MEMORANDUM

To: Trustee Policy Committee

From: June Youatt
Executive Vice President and Provost

Subject: Approval of Contract Terms: *QuantumBio, Inc.*

RECOMMENDATION

The Trustee Policy Committee recommends that the Board of Trustees approve a contract between Michigan State University and *QuantumBio, Inc.*, a company in which faculty member Dr. Kenneth M. Merz, Jr. holds a financial interest.

RESOLUTION

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby approves an option agreement with *QuantumBio, Inc.*, consistent with earlier public notice given at a Board meeting and with the "Option Agreement Term Sheet" now presented to the Board for inclusion in its minutes.

BACKGROUND

In compliance with State law, public notice of the University's intent to negotiate contracts with *QuantumBio, Inc.*, a Delaware corporation, was given at the Board of Trustees meeting on April 12, 2013. The terms of an option agreement are now being presented for the Board's approval.

Dr. Kenneth M. Merz, Jr., a Professor in the Departments of Chemistry and Biochemistry & Molecular Biology, and his family own or have options to buy an ownership interest of more than 1% of the company.

The attached "Option Agreement Term Sheet" summarizes the agreement that MSU has negotiated with *QuantumBio, Inc.*

cc: Trustee Finance Committee, L. Simon, S. Udpa, B. Beekman, S. Hsu,
R. Noto, B. Mattes, K. Zayko, C. Berg



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OPTION AGREEMENT TERM SHEET

Party: QuantumBio, Inc.

Option: Exclusive option to negotiate a license to patents and/or copyrights in computer software in the field of protein-ligand binding.

Term: 12 months

Technology: MSU Invention Disclosure No. TEC2015-0043 "Moveable Type Method Applied to Protein-Ligand Binding" (Patent Cooperation Treaty serial no. PCT/US2014/063328)

Technology's Potential Commercial Utilization: Software for modeling protein-ligand binding

Payment Terms: Option fee \$2,000

Services Provided: By MSU to QuantumBio, Inc.: None contemplated under agreement
By QuantumBio, Inc. to MSU: None contemplated under agreement

Use of University Facilities/Personnel: None

Organization Type: Delaware corporation

Personnel Interest: Dr. Kenneth M. Merz, Jr., a Professor in the Departments of Chemistry and Biochemistry & Molecular Biology, and his family own or have options to buy an ownership interest of more than 1% of the company. Dr. Merz is also an officer of the company.

MICHIGAN STATE
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APPENDIX M

April 6, 2015

MEMORANDUM

To: Trustee Policy Committee

From: June Youatt
Executive Vice President and Provost

Subject: Approval of Contract Terms: *Thermetrics, Inc.*

RECOMMENDATION

The Trustee Policy Committee recommends that the Board of Trustees approve a contract between Michigan State University and *Thermetrics, Inc.*, a company in which faculty member Kirk Dolan and employee Andy Tomaswick hold a financial interest.

RESOLUTION

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby approves a license agreement with *Thermetrics, Inc.*, consistent with earlier public notice given at a Board meeting and with the "License Agreement Term Sheet" now presented to the Board for inclusion in its minutes.

BACKGROUND

In compliance with State law, public notice of the University's intent to negotiate contracts with *Thermetrics, Inc.*, a Delaware corporation, was given at the Board of Trustees meeting on December 12, 2014. The terms of a license agreement are now being presented for the Board's approval.

Dr. Kirk Dolan, an Associate Professor in the Department of Food Science and Human Nutrition, and his family own or have options to buy an ownership interest of more than 1% of the company. Mr. Andy Tomaswick, a graduate assistant and an officer of the company, and his family, own or have options to buy an ownership interest of more than 1% of the company.

The attached "License Agreement Term Sheet" summarizes the agreement that MSU has negotiated with *Thermetrics, Inc.*

cc: Trustee Finance Committee, L. Simon, S. Udpa, B. Beekman, S. Hsu,
R. Noto, B. Mattes, K. Zayko, C. Berg



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LICENSE AGREEMENT TERM SHEET

Party:	Thermetrics, Inc.
License:	Exclusive license on patents and copyrights to computer software in the field of food safety and food quality monitoring
Term:	The later of (1) expiration or termination of the patents, or (2) 20 years from the Effective Date
Technology:	MSU US Patent Application Serial No. 14/054,388 (MSU Invention Disclosure No. TEC2010-0023); MSU Invention Disclosure No. TEC2013-0119 "Inverse Problem Software for Food Safety and Food Quality Modeling"; MSU Invention Disclosure No. TEC2010-0023 "Rapid Nonisothermal Testing Instrument to Measure Thermal Properties of Conduction-Heated Solids"
Technology's Potential Commercial Utilization:	Determining efficiency and optimizing thermal treatment of food products
Payment Terms:	Equity position of 10% in Thermetrics, Inc.; payment of a running royalty of 6.5% on net sales of products practicing patent rights; 3% on net sales of products that do not practice patent rights and are based on the copyrights or the materials
Services Provided:	By MSU to Thermetrics, Inc.: None contemplated under agreement By Thermetrics, Inc. to MSU: None contemplated under agreement
Use of University Facilities/Personnel:	None
Organization Type:	Delaware corporation
Personnel Interest:	Dr. Kirk Dolan, an Associate Professor in the Department of Food Science and Human Nutrition, and his family own or have options to buy an ownership interest of more than 1% of the company. Mr. Andy Tomaswick, a graduate student and an officer of the company, and his family own or have options to buy an ownership interest of more than 1% of the company.

MICHIGAN STATE
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APPENDIX N

April 6, 2015

MEMORANDUM

To: Trustee Policy Committee

From: June Youatt
Executive Vice President and Provost

Subject: Approval of Contract Terms: *VL 29, Inc.*

RECOMMENDATION

The Trustee Policy Committee recommends that the Board of Trustees approve a contract between Michigan State University and *VL 29, Inc.*, a company in which faculty member Bruno Basso has a financial interest.

RESOLUTION

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby approves a license agreement with *VL29, Inc.*, consistent with earlier public notice given at a Board meeting and with the "License Agreement Term Sheet" now presented to the Board for inclusion in its minutes.

BACKGROUND

In compliance with State law, public notice of the University's intent to negotiate contracts with *VL 29, Inc.*, a Delaware corporation, was given at the Board of Trustees meeting on October 24, 2014. The terms of the license agreement are now being presented for the Board's approval.

Dr. Bruno Basso, an Associate Professor in the Department of Geological Sciences, and his family own or have options to buy an ownership interest of more than 1% of the company.

The attached "License Agreement Term Sheet" summarizes the agreement that MSU has negotiated with *VL 29, Inc.*

cc: Trustee Finance Committee, L. Simon, S. Udpa, B. Beekman, S. Hsu,
R. Noto, B. Mattes, K. Zayko, C. Berg



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LICENSE AGREEMENT TERM SHEET

Party:	VL 29, Inc.
License:	Exclusive license on patents and copyrights to computer software in the field of optimization of agricultural planting and fertilizing. Trademark and domain name rights in "SALUS" and "GeoYields".
Term:	The later of (1) expiration or termination of the patents, or (2) 20 years from the Effective Date. Perpetual term for right to use copyright thereafter.
Technology:	MSU US Patent Application Serial No. 62/087,924 (TEC2014-011) "GeoYields"; MSU Invention Disclosure No. TEC2011-0009 "SALUS"; MSU Invention Disclosure No. TEC2015-0084 "Methods and Systems for Cropland Evaluation and Crop Growth Management"
Technology's Potential Commercial Utilization:	Agricultural tool for farmers for optimization of planting and fertilizing crops
Payment Terms:	Equity position of 4% in VL 29, Inc.; payment of a running royalty of 5% on net sales; 20% on consideration paid by sublicensees
Services Provided:	By MSU to VL 29, Inc.: None contemplated under agreement By VL 29, Inc. to MSU: None contemplated under agreement
Use of University Facilities/Personnel:	None
Organization Type:	Delaware corporation
Personnel Interest:	Dr. Bruno Basso, an Associate Professor in the Department of Geological Sciences, and his family own or have options to buy an ownership interest of more than 1% of the company. Dr. Basso is also an officer of the company.