

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

November 5, 2010

President Simon called the meeting of the Board of Trustees to order at 9:30 a.m. in the Board Room.

Trustees present: Dianne Byrum, Joel Ferguson, Melanie Foster, Colleen McNamara, Don Nugent, George Perles, and Diann Woodard.

Trustees absent: Faylene Owen.

University officers present: President Simon, Provost Wilcox, Vice President Poston, Secretary Beekman, Vice President and General Counsel Noto, Vice Presidents Gray, Groves, June, and Webster, and Interim Vice President Swain and Senior Advisor and Director Granberry Russell. Faculty liaisons present: Deborah Moriarty, Mary Noel, John Powell, Sandy Schneider, and Mariam Sticklen. Student liaisons present: Justin Epstein and Stefan Fletcher.

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

1. On a motion by Trustee Foster, supported by Trustee Byrum, the **BOARD VOTED to approve** the agenda.
2. On a motion by Trustee Byrum, supported by Trustee Foster, the **BOARD VOTED to approve** the minutes of the Board meeting of April 16, 2010.
3. President's Report

President Simon provided the following report to the Board.

- A. Trustee Faylene Owen and Trustee Emeritus Larry Owen Injured in Automobile Accident

Trustee Owen and her husband, Trustee Emeritus Larry Owen, were critically injured in an automobile accident November 1, 2010. While a full recovery is expected, they both remain in the hospital. As a community, our thoughts are with them during this difficult time.

B. New Math and Science Center

Provost Wilcox said that the Institute for Research on Mathematics and Science Education received positive attention before an assembly of national experts in Washington, D.C. due to its collaborative nature. It is truly a shared activity between the Colleges of Education and Natural Science.

C. Student Success

William T. Langford, a senior English major at MSU, is one of two winners of the 2010 Detroit Jazz Fest Poetry Slam. Poetry Slam is a competitive activity in which participants read or recite their own poetry, which is then judged by a panel. Poetry Slam promotes the performance and creation of poetry while cultivating literary activities and spoken word events to stimulate creativity, awaken minds, foster education, and encourage artistic statements.

Langford, the founder of MSU's Poetry Slam team, recently read one of his poems at the groundbreaking of the addition to Wells Hall, a performance that he will reprise at the President's Brunch on November 6, 2010.

D. MSU among 32 Colleges and Universities Chosen to Participate in Project on *General Education for a Global Century*

The Association of American Colleges and Universities chose 32 colleges and universities—including MSU—through a competitive process to participate in *General Education for a Global Century*, a curriculum and faculty development project to create clear and creative pathways for students to connect their learning toward greater global understanding, so that they can act as responsible and productive global citizens in the interconnected and interdependent world that is the 21st Century.

This project aligns nicely with MSU's goals as outlined in the World Grant Ideal to educate students for jobs of the future as well as the present, and to create graduates who will be learners for life, capable of adapting to changes in the processes and nature of work in a global economy.

E. MSU's Medical and Health-Related Colleges

The College of Nursing has received a \$600,000 gift from the Helene Fuld Health Trust to provide scholarships for nursing students in its second-degree accelerated degree program. It includes \$300,000 for direct aid to students in the next three years and \$300,000 to endow future scholarships.

The College of Human Medicine received a \$1.2 million federal grant from the U.S. Department of Health and Human Services to study the effectiveness of two medical home projects. A medical home is a system of care in which the primary care physician coordinates all inpatient and outpatient medical care and tracks referrals to laboratories, pharmacies and imaging centers. This project strengthens MSU's focus on practicing evidence-based medicine.

MSU and Sparrow Health Systems are teaming to provide first-of-its-kind training for medical examiners. Funded by a grant from the National Institute of Justice, the training will involve two sessions on MSU's campus to assure that medical examiners are trained in the best practices for death investigations, ultimately serving individuals and communities affected by unusual deaths.

F. Biofuel Update

Bruce Dale and other researchers at MSU have found that the U.S. can produce significantly larger volumes of biofuels without incurring indirect land-use change, that is, without decreasing soil fertility, lowering commodities exports, or decreasing the use of land for crops. With two new federal reports indicating a greater need for non-oil based fuel, these research findings increase the viability of producing biofuels without negatively impacting other parts of the environment.

G. Athletics

The MSU women's cross country team claimed its third Big Ten Championship on October 31, making history with the best winning score ever. MSU senior Emily MacLeod took the individual Big Ten Championship crown with her career-best in the 6K, topping her previous fastest time by 21 seconds.

4. There was no public participation on issues germane to the agenda.
5. Personnel Actions

Provost Kim Wilcox presented the following personnel actions:

Richards, Jeffrey, I., AN—Professor, Department of Advertising, Public Relations and Retailing, \$168,500, with Tenure, effective January 1, 2011.

Jeong, Jae Wook, AN—Associate Professor, Department of Obstetrics, Gynecology and Reproductive Biology, \$120,000, with Tenure, effective December 1, 2010.

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

Provost Wilcox said that Professor Richards has served at the University of Texas/Austin since 1988. His research interests primarily focus on advertising law and regulation, combining both legal and behavioral research methods.

Provost Wilcox said that Professor Jeong has been at the Baylor College of Medicine in Houston, Texas since 2002. Dr. Jeong's research interests include steroid hormone regulation of uterine function and dysfunction.

THE BOARD VOTED to approve the recommendation.

President Simon presented the following personnel actions:

Comley, Richard B., AN—Head Coach—Hockey, Intercollegiate Athletics, Subject to Contract, effective July 1, 2013 to June 30, 2014.

Izzo, Thomas, AN—Head Coach—Basketball, Intercollegiate Athletics, Subject to Contract, effective July 1, 2016 to June 30, 2017.

Rakan, Susan M., (Suzy Merchant), AN—Head Coach—Women's Basketball, Intercollegiate Athletics, Subject to Contract, effective July 1, 2014 to June 30, 2015.

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

THE BOARD VOTED to approve the recommendation.

6. Gifts, Grants, and Contracts

Vice President Gray introduced Dr. Norbert Muller, Professor of Mechanical Engineering. Dr. Muller made a presentation to the Board on the wave disc engine. (Appendix A)

7. Finance Committee

Trustee Nugent presented the Trustee Finance Committee Report and recommendations.

A. Adoption of the 2011-12 Appropriation Request Parameters and Capital Outlay

It was recommended that the Board of Trustees adopt the Appropriation Request, including needs for the University General Fund, the Michigan Agricultural Experiment Station, and Michigan State University Extension. (Appendix B)

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

THE BOARD VOTED to approve the recommendation.

B. Authorization to Plan—Auditorium—Alterations to Fairchild Theatre

It was recommended that the Board of Trustees authorize the Administration to plan for the project entitled Auditorium—Alterations to Fairchild Theatre.

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

THE BOARD VOTED to approve the recommendation.

C. Project Approval—Authorization to Proceed—Cherry Lane and Faculty Bricks Apartments Demolition

It was recommended that the Board of Trustees authorize the Administration to proceed with the project entitled Cherry Lane and Faculty Bricks Apartments Demolition, and to approve a budget of \$5,300,000.

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

THE BOARD VOTED to approve the recommendation.

8. Policy Committee

Trustee McNamara presented the Trustee Policy Committee Report and recommendations.

A. Approval of Contract Terms

It was recommended that the Board of Trustees approve the execution of a publishing contract with Dr. Ruben O. Martinez, consistent with earlier public notice given at a Board meeting and with the "Publishing Contract Term Sheet" presented to the Board. (Appendix C)

It was recommended that the Board of Trustees approve the execution of a publishing contract with Dr. Hiram E. Fitzgerald, consistent with earlier public notice given at a Board meeting and with the "Publishing Contract Term Sheet" presented to the Board. (Appendix D)

It was recommended that the Board of Trustees approve the execution of a publishing contract with Dr. Charles L. Ballard, consistent with earlier public notice given at a Board meeting and with the "Publishing Contract Term Sheet" presented to the Board. (Appendix E)

It was recommended that the Board of Trustees approve the execution of a publishing contract with Professor Anita Skeen, consistent with earlier public notice given at a Board meeting and with the "Publishing Contract Term Sheet" presented to the Board. (Appendix F)

It was recommended that the Board of Trustees approve the execution of a publishing contract with Dr. Douglas Noverr, consistent with earlier public notice given at a Board meeting and with the "Publishing Contract Term Sheet" presented to the Board. (Appendix G)

It was recommended that the Board of Trustees approve the execution of a license agreement with *Spartan Crystal Works, LLC*, consistent with earlier public notice given at a Board meeting and with the "License Agreement Term Sheet" presented to the Board. (Appendix H)

Trustee McNamara **moved to approve** the recommendation, with support from Trustee Nugent.

THE BOARD VOTED to approve the recommendation.

B. Notice of Intent to Negotiate Contracts

Trustee McNamara announced the University's intent to negotiate contracts with *VerdeTurbo Technologies, Inc.*, a Nevada corporation based in Carson City, Nevada. Dr. Norbert Muller, an Associate Professor in the Department of Mechanical Engineering, is an officer of *VerdeTurbo Technologies, Inc.*

Trustee McNamara announced the University's intent to negotiate contracts with *Ford & Associates, Inc.*, a Michigan corporation based in Clarkston, Michigan. Dr. Kevin Ford, a Professor in the Department of Psychology, and his family each own or have options to buy an ownership interest of more than 1 percent of the company. Dr. Ford is also an officer of *Ford & Associates, Inc.*

Trustee McNamara announced the University's intent to negotiate contracts with *Northern Technologies International Corporation*, a Delaware corporation based in Circle Pines, Minnesota. Dr. Ramani Narayan, a Professor in the Department of Chemical Engineering and Materials Science and his family each own or have options to buy an ownership interest of more than 1 percent of the company. Dr. Narayan is also an officer of *Northern Technologies International Corporation*.

C. Notice of Intent to Negotiate a Publishing Contract

Trustee McNamara announced the University's intent to negotiate a contract with Dr. Thomas Dietz regarding a publication by the MSU Press. Dr. Dietz is a faculty member in the Department of Sociology.

Trustee McNamara announced the University's intent to negotiate a contract with Professor Matthew Fletcher regarding a publication by the MSU Press. Professor Fletcher is a Law Affiliate Associate Professor at MSU.

D. Law College Board Appointments

Trustee Foster presented the following appointments:

Mr. M. Scott Bowen to the Law College Board for a term of three years commencing January 1, 2011 and ending December 31, 2013.

Ms. Colleen M. McNamara to the Law College Board for a term of three years commencing January 1, 2011 and ending December 31, 2013.

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

Trustee McNamara abstained from voting.

THE BOARD VOTED to approve the recommendation.

9. Audit Committee

Trustee Perles presented the Trustee Audit Committee Report and recommendation.

A. Acceptance of Audited Financial Statements for the Year Ended June 30, 2010

It was recommended that the Board of Trustees accept the audited financial statements for the year ended June 30, 2010.

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

Trustee Perles thanked Dave Brower, Chief Financial Officer and Controller, for his leadership in the preparation of the financial statements. Dave has announced he will retire in 2011. His commitment and dedication to MSU has been exceptional.

Trustee Perles said the University received an unqualified opinion from the auditors, which indicates that MSU followed all accounting rules appropriately and the financial reports are an accurate representation of MSU's financial condition as of June 30, 2010. No significant adjustments were made to Plante Moran's audit approach, which was reviewed by the Audit Committee prior to audit work commencing. No significant adjustments were proposed during the audit, and no material weaknesses in accounting policies or procedures were noted.

THE BOARD VOTED to approve the recommendation.

10. Shaping the Future Report

Provost Wilcox said that Shaping the Future is a deliberate process taking place over several years. Requests have gone to units for developmental Fall planning materials. This allows for discussion on the state of each unit in preparation for more specific budget requests in the Spring. Parallel to this process, there has been an ongoing discussion of curriculum, for there are just as many opportunities to improve the

educational experience for students within existing programs as there are in modifying, changing, or discontinuing programs.

Provost Wilcox said the College of Agriculture and Natural Resources is not only among MSU's oldest colleges, but it is one that is among the most challenged in these changing times. Part of the challenge is a shift in the interest of students from traditional farm-based agriculture to other types of agriculture-related activities. A consulting group will assist in discussions among a wide range of on-campus and off-campus constituents to help determine the future organizational structure of the College.

11. Trustee Comments

Trustee Ferguson said he wished Trustee Owen a speedy recovery and hoped that she would be joining the December Board meeting. He said that he was pleased with the enrollment figures and noted the successful season of the football team.

Trustee Nugent said he hoped to see Trustee Owen at the next meeting.

Trustee Byrum said that the faculty liaison meeting went well and it is a pleasure to be able to meet with the group.

Trustee Foster thanked Vice President Gray for the outstanding research presentations at each Board meeting.

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

A. Unresolved Conflicts from 2009-10 Academic Year

Dr. Thomas Woods, community member, said that he had concerns about the handling of formal complaints filed by former MSU employees that file formal complaints against the University are handled. Dr. Woods stated that everyone should be allowed a fair and just process. Decisions should be reached objectively and without outside influence.

B. Recent Actions by the MSU Sexual Assault Response Team (SART) and Sexual Assault Crisis Intervention (SACI)

Mr. Robert Kerr, MSU staff member, addressed recent allegations involving MSU athletes. While no formal criminal charges have been filed against the athletes, the MSU Sexual Assault Response Team (SART) and the Sexual Assault Crisis Intervention (SACI) groups have been conducting a media campaign trying to obtain

the names of the athletes. Mr. Kerr said that MSU should not be funding a group that works to invade the privacy of people who have not been charged with a crime. He asked the Board to change MSU Police policy so that people who file false police reports are prosecuted.

13. Request to Adjourn

On a motion by Trustee Ferguson, supported by Trustee Foster, **THE BOARD VOTED to adjourn** at 10:35 a.m.

Respectfully submitted,



William R. Beekman
Secretary of the Board of Trustees

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

NOVEMBER 5, 2010

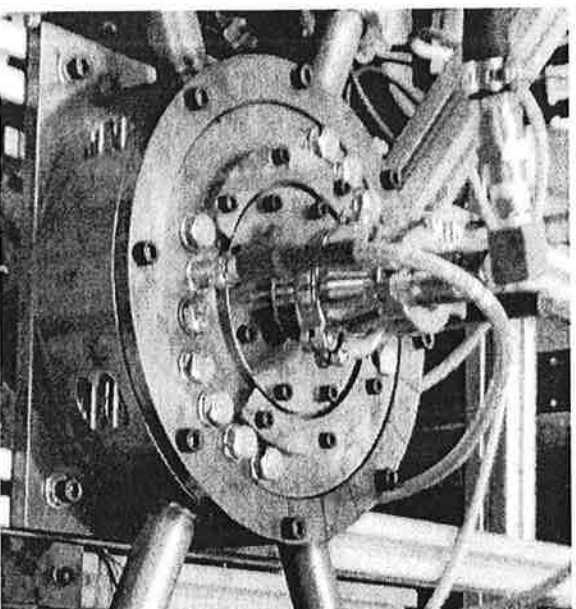
**DR. NORBERT MÜLLER
COLLEGE OF ENGINEERING**

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

Wave Disc Engine

Dr. Norbert Müller

Department of Mechanical Engineering



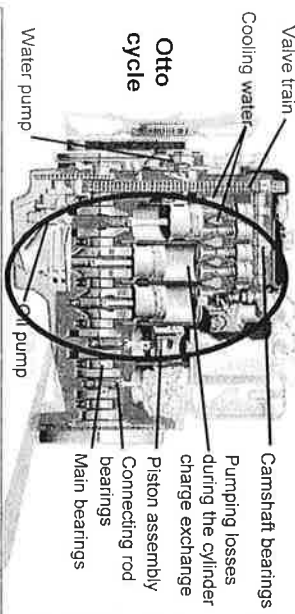
Supported by the U.S. Department of Energy ARPA-E

Wave Disc Engine

500+ miles

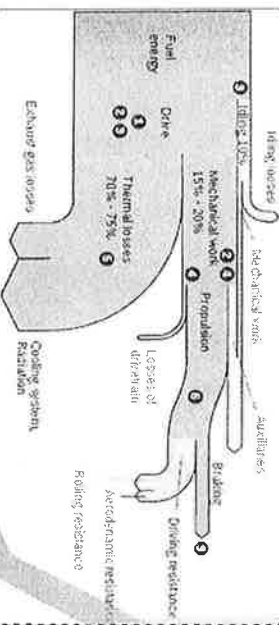
- 3.5 x more efficiency
- CNG & H₂, renewable fuels
- 90% less emissions
- Oil independence

• Confined Combustion => high efficiency



CO2 Reduction and Energy Challenge

Energy Consumption in the Vehicle BOSCH

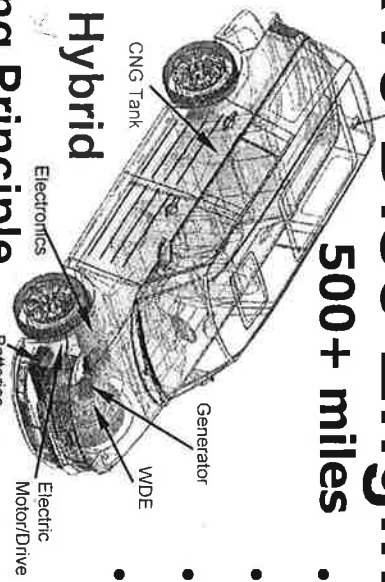


Brayton cycle

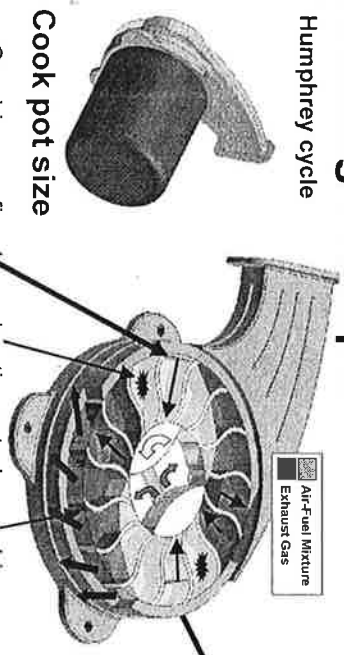


• Turbomachinery => high power density

Serial Hybrid Working Principle



Humphrey cycle



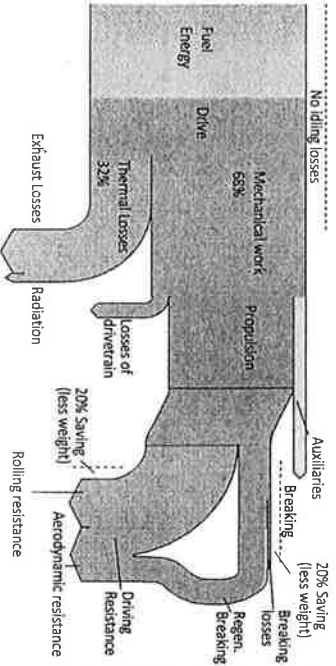
Cook pot size

• Combine confined combustion + turbomachinery + Utilize shock waves to eliminate considerable part of compressor, expander, + shaft

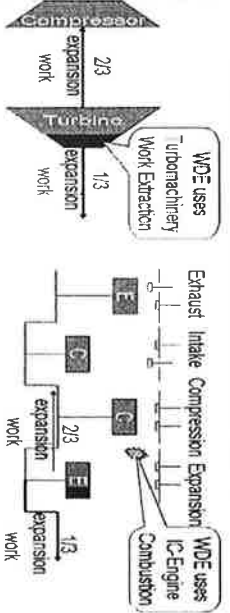
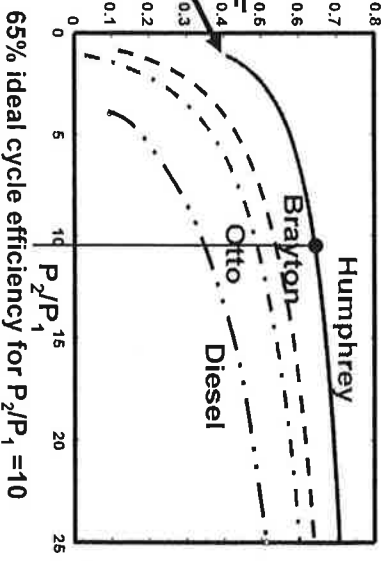


Sonic speed compression and combustion expansion in continuous rotary cycle.

Energy Consumption in the WDG Hybrid



- Physical simplicity
- Compactness
- 30% Cost savings
- 20% Weight savings



- A considerable part of the hardware in the GT and IC-E is devoted to extracting and transmitting the work needed for compression
- In a WDE this is performed via shock wave
- hardware of the WDE reduces to about one 1/4 to 1/3

| | Superiority | GT | IC-E | WDE |
|---|-------------|----------|----------|---------------|
| Power Density | superior | superior | superior | superior |
| Pressure Gain Combustion for high efficiency | superior | superior | superior | superior |
| Single Rotating Part for low maintenance and losses | superior | superior | superior | superior |
| Cost/Manufacturing | superior | superior | superior | most superior |



Bumblebees take advantage of unsteady flow phenomena to minimize their wing size

Michigan State University 2011–12 Appropriation Request

Michigan State University (MSU) ranks in the top 100 universities in the world. It provides the undergraduate and graduate education, research, and outreach needed to compete and innovate in the global knowledge-based economy for the benefit of Michigan. The University is accustomed to identifying targeted outcomes, applicable measures, and critical priorities. A sample of key MSU benchmarks and operating accomplishments is included in Attachment A.

Whether by assisting in the creation of jobs for thousands of people, attracting funding for research that can change and even save lives, or simply enhancing contributions to the coffers of the State of Michigan (State) because its alumni earn high-end salaries, Michigan State University's economic impact of approximately \$4.1 billion is essential to Michigan's current and future growth.

The three University Research Corridor (URC) universities, including Michigan State University, serve as engines for economic recovery in the state, making a \$14.8 billion impact on Michigan's economy in FY09 and a return of \$16 for every dollar the State invests, according to a 2010 study. The URC expended more than \$1.48 billion in Research and Development (R&D) in FY08 and was one of seven innovation clusters in six U.S. states that together accounted for 22 percent of R&D investments made by all U.S. higher education institutions.

MSU provides world-class graduate and undergraduate education and is uniquely positioned to foster emerging bioeconomy and alternative energy research in the agricultural and manufacturing sectors of the economy. MSU is prepared to meet society's expectations for a global university, helping to build the local and national economy with breakthrough discoveries and new knowledge with worldwide impact. Through partnerships with leaders in Michigan and the nation and private sector collaborations, MSU is working to find solutions for the key problems facing society and serve as a critical conduit to sustaining Michigan's new economic model.

Increasingly severe economic circumstances and current fiscal realities demand our continued attention. In the face of significantly reduced funding and increasing expenses, we must focus carefully on our priorities and modify our activities, attitudes, and culture to continue to constrain expenditures.

We are changing the way we work but not the quality of the work we do for our students and others in communities close to home and around the world. This kind of transformational change is complex but necessary to preserve the quality of our academic programs over the long term as we continue to recruit highly talented students and faculty.

MSU requests recurring appropriations support for the general fund, the Michigan Agricultural Experiment Station (MAES), and MSU Extension (MSUE) sufficient to sustain FY10 programming levels and invest in Michigan's economic future.

"Michigan State is approaching the most serious financial crisis in decades in a refreshingly different way – comprehensively, collaboratively, publicly and head-on."

—Daniel Howes, *Detroit News* columnist, "MSU sets example in how to lead"

Principles for shaping the future

The task before MSU is to evaluate everything it does, not from the perspective of what can be cut but from the perspective of what the university must do. We must shape our activities to support our priorities and our existing strategic commitments, which are

- hold constant to our core values and identity;
- base priorities on anticipated societal needs, significant intellectual issues, and academic strengths;
- build upon MSU's experience and reputation as an international university;
- remain competitive on key reputational measures; and
- maintain or attain productivity measures comparable to or better than peers.

MSU funding

In order to arrive at a stable, predictable approach to funding, it is essential to recognize the differential costs associated with world-ranked instruction and research missions. State funding also should consider the total number in the graduate/undergraduate mix of students served and emphasize graduation outcomes.

In the percent change in operating expenditure support for higher education, Michigan ranked third to last among all 50 states for the five-year period ending in 2010, with an actual 2.2 percent decline in overall support. Michigan appropriations lag comparison states such as California, New York, and North Carolina, many by a considerable margin.

MSU requests recurring appropriations support for the general fund, MAES, and MSUE sufficient to sustain FY10 programming levels and invest in Michigan's economic future. More than ever, it is essential that every available dollar work on behalf of the people of Michigan in ways that will bring the greatest value and return, strengthen communities, fuel the economy, and provide all citizens with a better quality of life.

Faculty and academic programs at MSU benefited Michigan by receiving more than \$495 million in external funding during FY10, with about 60 percent of that designated for research. Overall research funding for FY10 increased by more than 19 percent and research funded by federal agencies increased by almost 24 percent from the prior fiscal year.

The National Superconducting Cyclotron Laboratory is the leading rare isotope research facility in the United States and received \$31.9 million during FY10 in continuing support of its research programs. MSU moved to the No. 1 ranking for nuclear physics graduate programs in the nation in FY10, surpassing MIT.

During FY10, MSU was awarded a \$25 million grant from the National Science Foundation to establish one of five BEACON—Bio/computational Evolution in Action CONSortium—centers, bringing together scientists from across the nation to study evolution in action in both natural and virtual settings. It will serve as a resource for academia and industry, performing basic research while helping create new technologies to solve real-world problems ranging from the development of safer, more efficient cars to systems that detect computer intrusions.

MAES scientists will lead a four-year, \$14.4 million research project—funded by the largest grant ever awarded by the U.S. Department of Agriculture’s Specialty Crop Research Initiative—to combine emerging DNA sequence and research findings to improve the quality of apples, peaches, cherries, and strawberries. The project involves scientists from 11 U.S. institutions, including several land-grant universities, and six international partners.

DOE selected MSU to lead a new \$12.5 million Energy Frontier Research Center, one of 46 to be established nationwide. This project is a large, concerted effort to advance the scientific understanding of the thermoelectric energy conversion process, which could lead to more efficient use of energy resources.

The university is also a key player in the development of Michigan’s health care and life science sector. MSU is involved in partnerships with dozens of hospitals to train physicians, while bringing federal graduate medical education funding into those communities. The College of Human Medicine has expanded into Grand Rapids and Traverse City; the College of Osteopathic Medicine is expanding at two locations—Detroit and Macomb County.

The Product Center at MSU helps Michigan entrepreneurs develop and commercialize high-value, consumer-responsive products and businesses in the agriculture, natural resources, and bioeconomy sectors. Since it began in 2004, the Product Center has provided a wide range of venture development services to more than 2,100 clients. It has assisted in the formation of more than 800 ventures for new and existing firms, leading to the realized launch or expansion of 152 businesses across Michigan that generated nearly \$300 million in annual sales, more than \$200 million in investment in Michigan, and the creation/retention of nearly 1,100 jobs.

MSU is accountable to Michigan citizens. It has the highest number of in-state students among Michigan public universities. Michigan is always the first beneficiary of MSU’s graduates as it delivers high-quality academic programs and global networks with Michigan applications.

Financial aid: assuring opportunity

MSU is committed to assuring opportunity to higher education for Michigan students. Nearly 84 percent of undergraduate students and 77 percent of all students come from Michigan’s 83 counties. For FY11, MSU continued to increase financial aid at a rate greater than increases to tuition with approximately \$93.4 million budgeted in financial aid programs, representing a total increase of more than 13 percent.

In FY09, 74 percent of all MSU students received some form of financial aid and 24 percent of undergraduate students received a Pell Grant. The Spartan Advantage program provides grants and work study to MSU’s neediest students, relieving them of the cost of debt to finance their education. Despite rising costs, MSU has maintained its share of Pell Grant recipients while increasing academic quality and is committed to continuing its work with students in the economic tier just above Pell Grant eligibility who otherwise might not qualify for adequate aid.

MSU's six-year graduation rate for the class of 2009 was 77 percent, which is 9 percentage points higher than the rate predicted by *U.S. News & World Report* based on incoming student characteristics. MSU's plus-9 rate is the highest in the state and third in the Big Ten, exemplifying MSU's willingness to take risks when investing in student potential. Moreover, it is a measure of quality that demonstrates how well MSU is using its educational resources to graduate students, even in difficult budgetary times.

Michigan Agricultural Experiment Station and MSU Extension

As Michigan's only land-grant university, MSU has a programmatic presence in every county and community in the state. The yearly economic impact of agribusiness exceeds \$71 billion and is a force for economic stability in Michigan. With agribusiness among the fastest-growing and largest sectors in the state's economy, MSU, in partnership with MAES and MSUE, contributes to Michigan's economy in numerous ways with significant research, educational programs, and a community presence to boost economic development in key sectors: agriculture, new economy, health care, and education. Therefore, it is essential that full recurring support be provided to both MAES and MSUE.

MSUE is focusing on four statewide program areas, each represented by a new institute:

- Greening Michigan: Leveraging Natural and Human Assets for Prosperity
- Enhancing Michigan's First Green Industry: Agriculture and Agribusiness
- Preparing Michigan's Children and Youth for the Future
- Improving the Health and Nutrition of Michigan Residents

MAES is focusing on the following research areas:

- Food and health
- Environmental stewardship and natural resource policy and management
- Enhancing profitability in agriculture and natural resources
- Securing food and fiber systems
- Families and community vitality

In an era of significantly reduced State funding and increasing expenses, MSU is seeking to change how it works while holding true to core values and commitments. This process is aimed at building value and ensuring quality. It seeks to build a new model that will transform the way we work on behalf of our students, stakeholders, and the communities we serve, both locally and globally, to shape a shared future of sustainable prosperity.

Facility for Rare Isotope Beams

MSU continues working with the U.S. Department of Energy (DOE) developing the Facility for Rare Isotope Beams (FRIB) and recently received approval to enter the next stage of the DOE agreement and proceed with the preliminary design at an anticipated cost of \$55 million. The centerpiece of the new user facility will be a superconducting linear accelerator that will increase dramatically the reach of rare isotope research in the United States. The accelerator will produce isotopes that normally exist only in the most extreme environments in the universe and will expand the usefulness of isotopes in a broad range of applications from modeling stars to understanding the workings of nanoscale electronic devices.

FRIB is an important project for American science and the state of Michigan that not only will keep MSU on the cutting edge of nuclear science but will ensure the training of the nuclear scientists of tomorrow while bolstering the economies of mid-Michigan and the entire state. FRIB currently is slated to go online in 2017, serve 1,000 users, and cost more than \$600 million to design and build. It is projected to create hundreds of jobs in mid-Michigan while bringing in more than \$1 billion of economic activity to Michigan in the next 20 years. The project was recently recognized as one of the five most important economic development projects in Michigan. MSU looks forward to continuing its partnership with the State of Michigan to assure the successful completion of this project.

Capital outlay

The requests recognize that capital funding has not been provided by the State for a major MSU capital outlay project in more than a decade. The requests support programs that have strong national reputations, expanding research bases, and high enrollment demand that will sustain the university and its contributions to Michigan. Funding of these requests will provide economic development in the state, now and in the long term.

Renovations and additions

Requests for renovations and/or additions address extensive programmatic and maintenance improvements required by buildings previously funded by the State. Renovations may be needed to the configuration of the space in order to support the work of the programs housed in those facilities, upgrades to building systems, and provisions for barrier-free access. In other cases, due to program requirements, condition, age, and long-term value, entire renovation of a building is warranted.

Requests for major renovations and/or additions include the Plant Sciences/Engineering Bioeconomy, Biological Sciences, and Music facilities.

New construction

New construction is needed to support high-priority programs in the sciences and academic/administrative technology. Facilities are needed to support current and future programmatic initiatives and economic development of Michigan, now and in the long term.

Requests for new construction include an Interdisciplinary Science and Technology Building, Biological Safety Level 3 Containment Laboratories, and a Data Center.

Major systems replacement

Current forecasts anticipate general fund facility and infrastructure needs of approximately \$108 million over the next five years. In view of the extensive facility needs it faces, MSU has had to draw upon an increasing amount of internal university resources to address the most critical facility maintenance and programmatic requirements. The ability to continue the trend of self-funding these capital improvements is not sustainable without impact on other programs.

The university seeks funding for more targeted and specific building systems maintenance and instructional space facility upgrades. Examples of systems in need of repair or replacement include roofing, windows, electrical, mechanical, chiller, refrigeration, steam, fire, security, and barrier-free access. Instructional space upgrades may include furniture, ceiling, lighting, painting, power, data and technology support, and lab benches and fume hoods.

Conclusion: shaping the future

MSU, among the best research universities in the world, is uniquely positioned to contribute to critical challenges facing Michigan and the nation. It is a site for creativity, invention, and discovery, all contributing to a long-standing tradition of innovation and a diverse range of partnerships that align resources to produce the greatest impact for the greatest benefit.

State support remains critical to making this happen. MSU requests recurring appropriations support for the general fund, MAES, and MSUE sufficient to sustain FY10 programming levels and invest in Michigan's economic future.

During times of increasingly strained financial resources, MSU continues to reinvest in the academic core of the university while ensuring that its strategic imperatives are integrated into the broader academic and financial decisions. MSU applies technology for greater effectiveness in instruction and administration, emphasizes cost-saving measures, and manages its physical plant wisely.

MSU will continue to transform its activities in ways that create greater efficiency and effectiveness as it builds a new model to achieve its goals while making sure the transformation does not come at the expenses of its core values—quality, inclusion, and connectivity. It will continue to recruit highly talented students and faculty, concentrate on research and development activities, and work to facilitate public and private sector collaborations and an efficient system to transfer technology from the classroom to industry.

MSU continues to be a leader as a global agenda for American higher education takes shape, building on its extraordinary foundation to look across disciplines and boundaries to help solve problems and prepare students to compete globally in a knowledge-based economy.

Michigan State University is committed to Michigan businesses, students, and families and continues to be a critical conduit to sustaining Michigan's reinvention and economic transformation.

MSU Benchmarks & Operating Accomplishments Attachment A

MSU systematically reviews the outcome of numerous benchmarks and related data. Key institutional metrics are noted below. Additional information may be found in MSU's Data Digest and Trends & Benchmarks documents.

- Operates among the **lowest** total tuition and fees and appropriation per student in the Big Ten (currently next to last)
- Current student faculty ratio: 16-1, approximates the **Big Ten average**
- **1st or 2nd** in the Big Ten for proportion of expenses related to instruction, research, and public service
- **5th** in the Big Ten for total faculty compensation and averages **5th** in the Big Ten for total graduate assistant compensation
- Student Accomplishments:
 - Entering class GPA of 3.6 (up 3.7 percent over ten years)
 - Entering class GRE score of 25.4 (up 6.3 percent over ten years)
 - Persistence between freshmen and sophomore years of 91 percent (up 4 percentage points over ten years)
 - Graduation rate of 77 percent (up 13 percentage points over ten years)
- **Second to last** in the Big Ten for number of students per employee
- **Top 6 percentile** nationally for endowment performance over 10 years
- **Lowest** total unit cost for energy in the Big Ten
- **Most efficient** in the Big Ten for custodial, maintenance, and grounds staffing

The following represent key operating accomplishments that have enabled MSU to constrain costs, and serve students and Michigan's citizens. Detailed materials are available for each of these initiatives, upon request. For more MSU Budget related information: <http://www.budget.msu.edu/>

- Reduced health care costs by 10 percent; imposed a 5 percent cap on annual funded increases
- Discontinued funded post retirement health care for all new employees
- Initiated comprehensive review of campus programs, 41 programs proposed for discontinuation; not all will be discontinued
- Maintained the long-term economic mix of our undergraduate population through financial aid, despite economic circumstances
- Highlighted student and faculty focus in the area of entrepreneurship and the new economy

- Continued emphasis on programs contributing to the State's economy
 - Restructured MSUE and MAES
 - <http://www.maes.msu.edu/>
 - <http://www.msue.msu.edu/>
 - Initiated MSU Technologies, MSU Business Connect, MSU Product Center, and MSU BioEconomy Network
 - <http://www.technologies.msu.edu/>
 - <http://www.businessconnect.msu.edu/>
 - <http://www.aec.msu.edu/product/index.htm>
 - <http://www.vprgs.msu.edu/node/758>
 - Created and sustained Prima Civitas Foundation
 - <http://primacivitas.org/>
 - Prepared to announce MSU Create

PUBLISHING CONTRACT TERM SHEET

- Party:** Dr. Ruben O. Martinez
- Project Description:** Editorial preparation of books tentatively titled *Latinos in the Midwest*.
- Term:** Initial manuscript delivery in December 2009.
- Contractual Terms:** MSU Press standard publishing terms and conditions apply. For each edition published by the MSU Press, Dr. Martinez will receive five (5) free copies, and will receive the right to purchase for personal use, on a non-returnable basis, copies of the work at a 40% discount from the retail rate.
- Services Provided:** By MSU to Dr. Martinez:
Publication of the book.
By Dr. Martinez to MSU:
Editorial preparation of the work.
- Use of University Facilities/Personnel:**
None under contemplated agreement.
- Organization Type:** Dr. Martinez will be acting as an individual scholar.
- Personnel Interest:** This contract will be directly with Dr. Martinez, who will receive the totality of the contemplated consideration.

PUBLISHING CONTRACT TERM SHEET

Party: Dr. Hiram E. Fitzgerald

Project Description: Co-editorship of a work (in two volumes) tentatively titled *Handbook of Engaged Scholarship: Contemporary Landscapes, Future Directions*.

Term: Initial manuscript delivery in September 2010.

Contractual Terms: MSU Press standard publishing terms and conditions apply. For each edition published by the MSU Press, Dr. Fitzgerald will receive five (5) free copies plus the right to purchase for personal use, on a non-returnable basis, copies of the work at a 40% discount from the retail rate. The National Collaborative for the Study of University Engagement (or in the event of the dissolution of that unit, the MSU Office of University Outreach & Engagement) will receive a royalty of 5% of net revenues from the work.

Services Provided: By MSU to Dr. Fitzgerald:
Publication of the book.
By Dr. Fitzgerald to MSU:
Co-editorship of the work.

Use of University Facilities/Personnel:
None under contemplated agreement.

Organization Type: Dr. Fitzgerald will be acting as an individual scholar.

Personnel Interest: This contract will be directly with Dr. Fitzgerald and his co-editors, who will personally receive the non-royalty component of the contemplated consideration. Dr. Fitzgerald is currently MSU Associate Provost for University Outreach & Engagement and oversees the National Collaborative for the Study of University Engagement, which will receive the royalty component of the contemplated consideration.

PUBLISHING CONTRACT TERM SHEET

Party: Dr. Charles L. Ballard

Project Description: Authorship of a book tentatively titled *Michigan's Economic Future: A New Look*.

Term: Initial manuscript delivery in July 2010.

Contractual Terms: MSU Press standard publishing terms and conditions apply. For each edition published by the MSU Press, Dr. Ballard will receive a royalty of 10% of net revenues from the work, and will receive ten (10) free copies plus the right to purchase for personal use, on a non-returnable basis, copies of the work at a 40% discount from the retail rate.

Services Provided: By MSU to Dr. Ballard:
Publication of the book.
By Dr. Ballard to MSU:
Authorship of the work.

Use of University Facilities/Personnel:
None under contemplated agreement.

Organization Type: Dr. Ballard will be acting as an individual scholar.

Personnel Interest: This contract will be directly with Dr. Ballard, who will receive the totality of the contemplated remuneration.

PUBLISHING CONTRACT TERM SHEET

- Party:** Professor Anita Skeen
- Project Description:** Authorship of a book tentatively titled *Never the Whole Story*.
- Term:** Initial manuscript delivery in July 2010.
- Contractual Terms:** MSU Press standard publishing terms and conditions apply. For each edition published by the MSU Press, Professor Skeen will receive a royalty of 5% of net revenues from the work, and will receive ten free copies plus the right to purchase for personal use, on a non-returnable basis, copies of the work at a 40% discount from the retail rate.
- Services Provided:** By MSU to Professor Skeen:
Publication of the book.
By Professor Skeen to MSU:
Authorship of the work.
- Use of University Facilities/Personnel:**
None under contemplated agreement.
- Organization Type:** Professor Skeen will be acting as an individual scholar.
- Personnel Interest:** This contract will be directly with Professor Skeen, who will receive the totality of the contemplated remuneration.

PUBLISHING CONTRACT TERM SHEET

Party: Dr. Douglas Noverr

Project Description: Authorship of a book tentatively titled *MSU, the Rise of the Research University in the New Millennium*.

Term: Initial manuscript delivery by June 30, 2012.

Contractual Terms: MSU Press standard publishing terms and conditions apply. For each edition published by the MSU Press, Dr. Noverr will receive ten (10) free copies plus the right to purchase for personal use, on a non-returnable basis, copies of the work at a 40% discount from the retail rate.

Services Provided: By MSU to Dr. Noverr:
Publication of the book.
By Dr. Noverr to MSU:
Authorship of the work.

Use of University Facilities/Personnel:
None under contemplated agreement.

Organization Type: Dr. Noverr will be acting as an individual scholar.

Personnel Interest: This contract will be directly with Dr. Noverr, who will receive the totality of the contemplated consideration.

LICENSE AGREEMENT TERM SHEET

- Party:** Spartan Crystal Works, LLC
- License:** Exclusive License on the Technology in several fields of single crystal diamond.
- Term:** From the effective date of the license agreement extending to the expiration of the last to expire of the patents.
- Technology:** Invention disclosures and patents related to diamond materials, and other directly related intellectual property arising from a separate sponsored research agreement funded by Spartan Crystal Works; technology licensed through an inter-institutional agreement with Fraunhofer USA.
- 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:**
Single crystal diamond materials produced using a microwave plasma reactor.
- Payment Terms:** Payment of \$25,000 due 30 days after effective date of agreement; a running royalty of in the range of 0.5-6.0% of Net Sales including sublicensing revenues with annual minima and one milestone payment. MSU will also receive a 2.0-8.0% membership interest in Spartan Crystal Works upon signing, convertible to 2.0-8.0% of common stock if and when Spartan Crystal Works becomes a stock-based corporation.
- Services Provided:** By MSU to Spartan Crystal Works: None under contemplated agreement.
By Spartan Crystal Works to MSU: None under contemplated agreement.
- Use of University Facilities/Personnel:**
No use of MSU facilities/personnel by Spartan Crystal Works under the contemplated agreement.
- Organization Type:** Limited Liability Company, Michigan-based small business.

Personnel Interest: Dr. Timothy Grotjohn, a Professor and Chairperson in the Department of Electrical & Computer Engineering, Dr. Donnie Reinhard, a Professor in the Department of Electrical & Computer Engineering, and Dr. Jes Asmussen, a Professor in the Department of Electrical & Computer Engineering, and their families each own or have options to buy an ownership interest of more than 1% of the company. Drs. Grotjohn and Asmussen are also officers of Spartan Crystal Works, LLC.