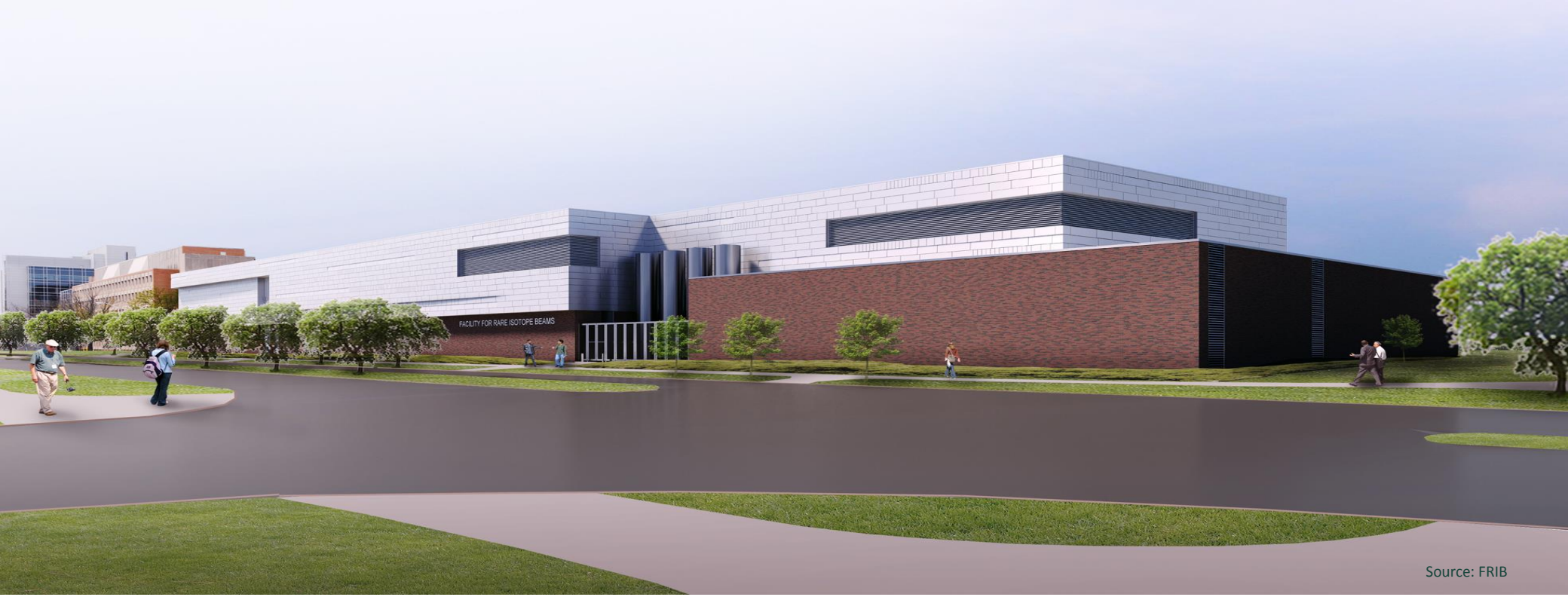

Source: FRIB

Accelerating Capital

Growing the Greater Lansing Region & Investment Through Rare Isotopes

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CLIENT & FUNDING SUPPORT

LANSING ECONOMIC AREA PARTNERSHIP

MSU EXTENSION

US DEPARTMENT OF ENERGY OFFICE OF SCIENCE

MSU CENTER FOR COMMUNITY AND ECONOMIC DEVELOPMENT

MSU SCHOOL OF PLANNING, DESIGN, AND CONSTRUCTION

AGENDA

- ❑ Methodology
- ❑ What is FRIB?
- ❑ History of Nuclear Research at Michigan State University (MSU)
- ❑ Greater Lansing Today and Anchor Institutions
- ❑ Technology Transfer and Regional Impact
- ❑ Case Study Facilities
  - Economic Development
  - Community Well-Being
- ❑ Findings & Recommendations

Source: MSU Today

PROJECT OVERVIEW

Source: MSU Today

Source: MSU Today

Source: MSU Today

PROJECT GOAL

Goal:

An assessment of economic/entrepreneurial/community impacts and opportunities created by similar cases and compared to the Facility for Rare Isotope Beams (FRIB) at MSU. Also, collecting data and reporting on existing particle accelerator facilities to recommend potential strategies and best practices to incorporate.

Source: MSU Facts

METHODOLOGY

- Analyzed socioeconomic characteristics and anchor institutions of the Greater Lansing Region
- Conducted a comprehensive literature review on the impact of knowledge and high-technology transfer
- Evaluated case studies with similarity in either size or scope to the FRIB at MSU
- Created recommendations based on our findings

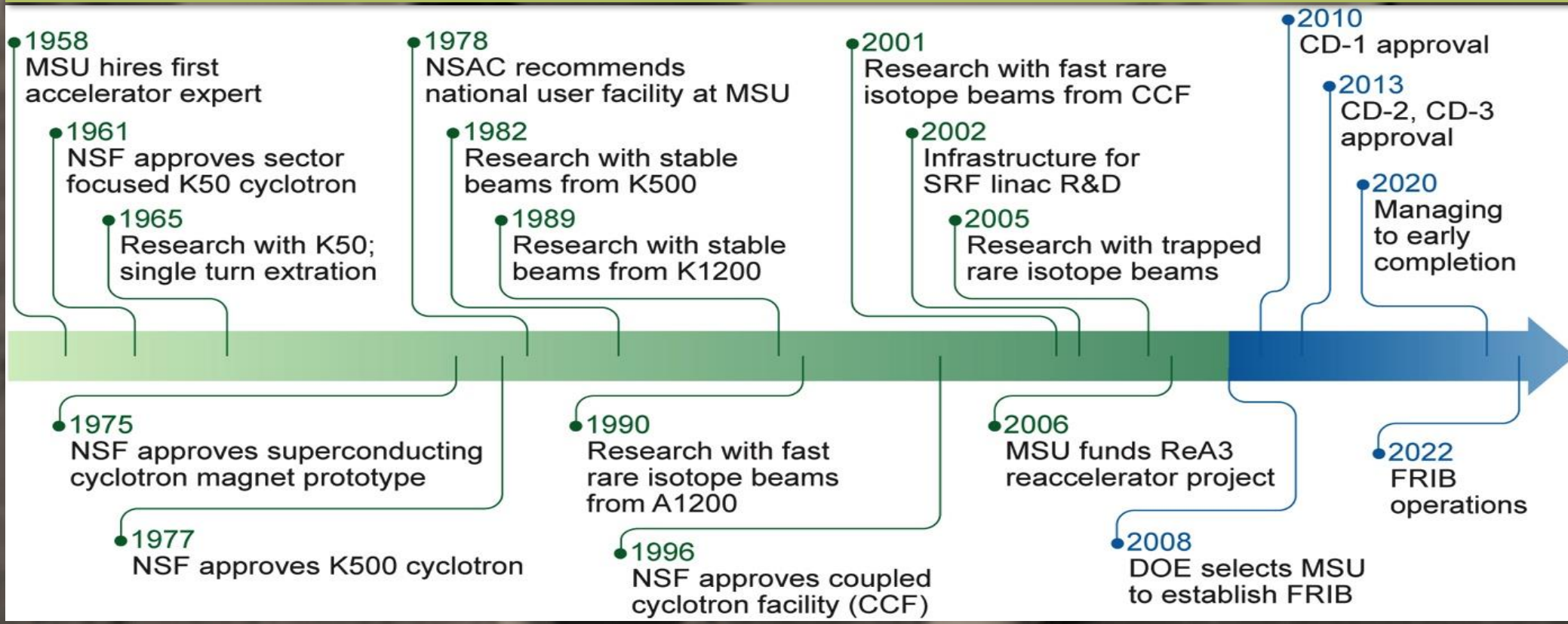
FRIB

What is it?

- The Facility for Rare Isotope Beams (FRIB)
- Particle accelerator nuclear research facility
- Located on the campus of Michigan State University
- Discover rare isotopes
- Enhance mankind's understanding of nuclear science
- A rare isotope is not naturally occurring and can have unique properti

Source: MSU Today

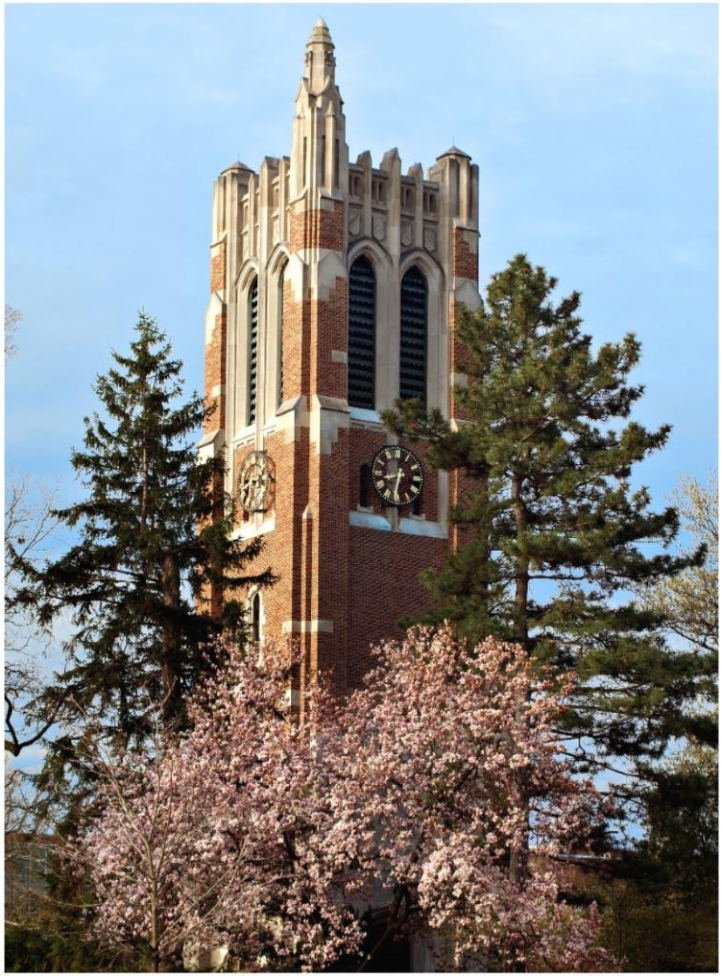
MSU NUCLEAR RESEARCH HISTORY



Source: MSU Today

Greater Lansing Today and Anchor Institutions

Source: Association of Fundraising Professionals

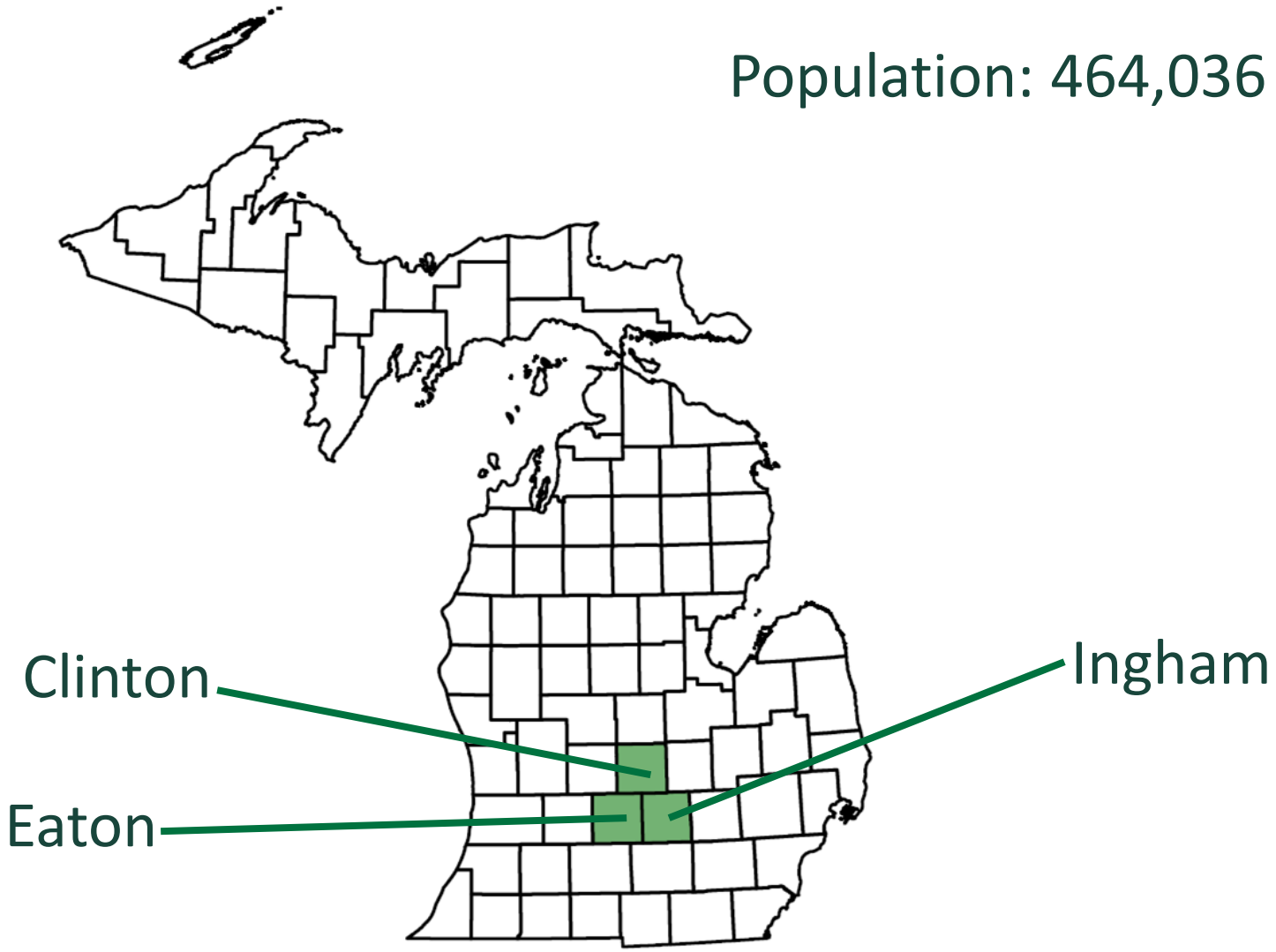


Source: MSU Today

Greater Lansing

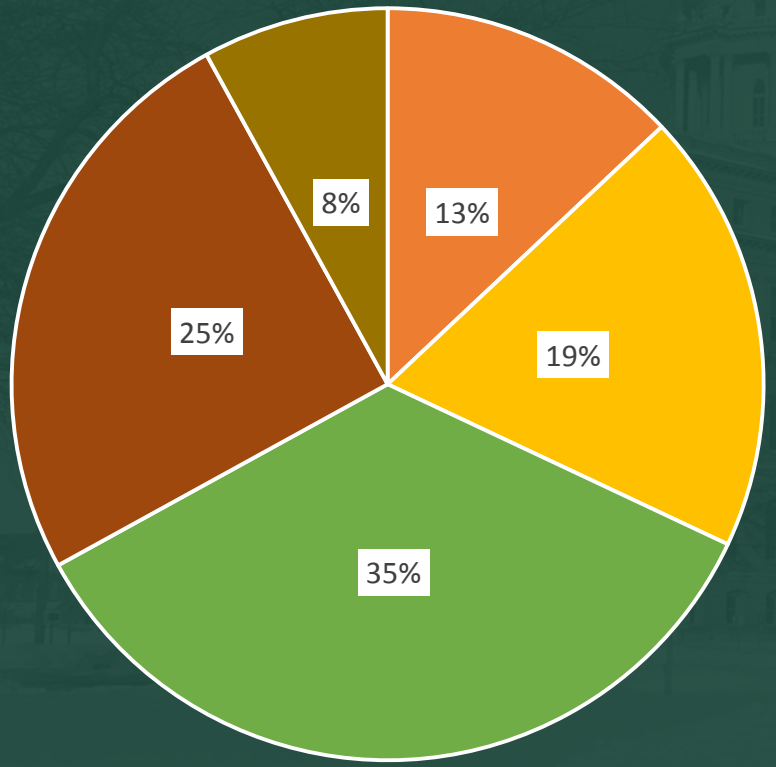
And Economic Data

Population: 464,036



SOCIOECONOMIC DATA

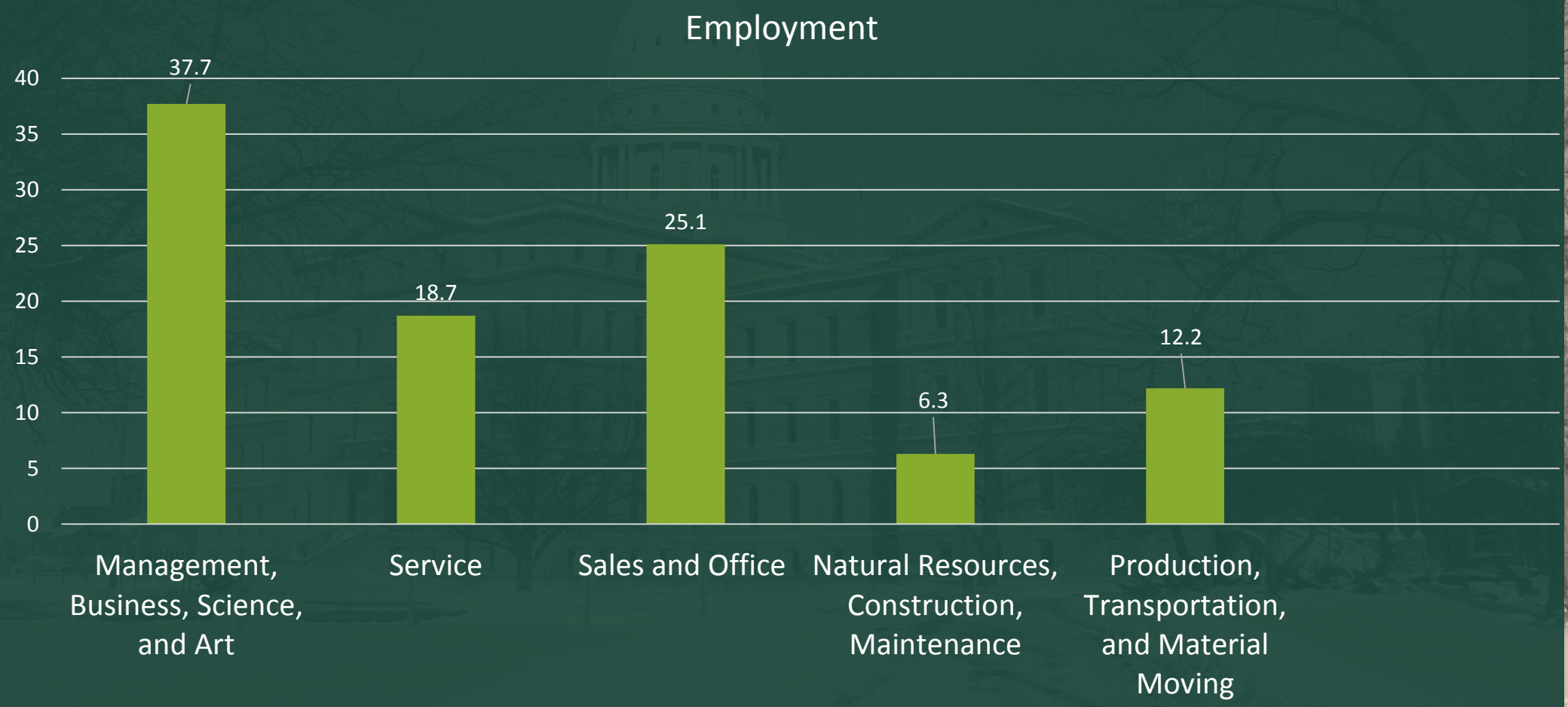
Educational Attainment



Source: United States Census American Community Survey 2008-2012

Source: Wikipedia

SOCIOECONOMIC DATA



Source: United States Census American Community Survey 2008-2012

Source: Wikipedia

ANCHOR INSTITUTIONS

The University of Pennsylvania Institute for Urban Research defines an anchor institution as “economic engines for cities and regions, acting as real estate developers, employers, and purchasers of goods, magnets for complementary businesses, community-builders, and developers of human capital”.

- ❑ State of Michigan
- ❑ Michigan State University
- ❑ Sparrow Health System
- ❑ General Motors

Source: Wikipedia

Technology Transfer & Regional Impact

Source: MSU Today

Highly skilled individuals are attracted to regions that have a **"buzz"** around them… places where the most exciting work is happening[1]

Think Silicon Valley

Source: CBS Detroit

[1]"Universities and Regional Economic Development", Bramwell, 2008

KNOWLEDGE TRANSFER

Characteristics of Knowledge Transfer

- Attract and retain top caliber talent
- Provide Research and Development assistance to local firms
- Exchange knowledge at regional and global levels
- Facilitation of entrepreneurial activities

Source: NSCL

KNOWLEDGE TRANSFER

Ex: University of Waterloo, Ontario, Canada

University of Waterloo

Location: Waterloo, Ontario, Canada

Established: July 4, 1956

Undergraduates: 26,987

Postgraduates: 4,375

"Largest post-secondary co-operative education program in the world"

TECHNOLOGY TRANSFER

Characteristics of Technology Transfer

- Provision of support tools for start-up enterprises
- Creation of new jobs and industry
- Multiplier effect of adding new jobs
- Facilitating research-based commercialization

Source: UCF

Source: NSCL

TECHNOLOGY TRANSFER

Ex: University of Central Florida, Orlando, FL, USA

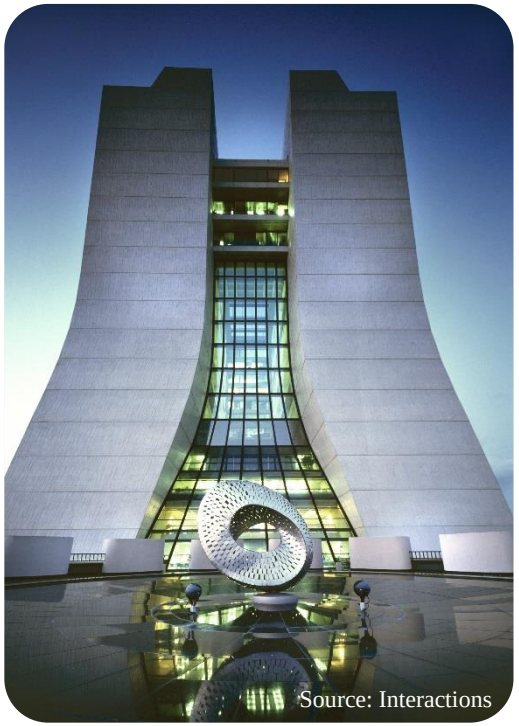
University of Central Florida

Location: Orlando, Florida, USA
Established: June 10, 1963
Undergraduates: 50,968 (Spring ’13)
Postgraduates: 9,213 (Spring ’13)

“A University-driven community partnership providing early stage companies with the enabling tools, training and infrastructure to create financially stable high growth / impact enterprises” (source: incubator.ucf.edu)

Case Study Facilities

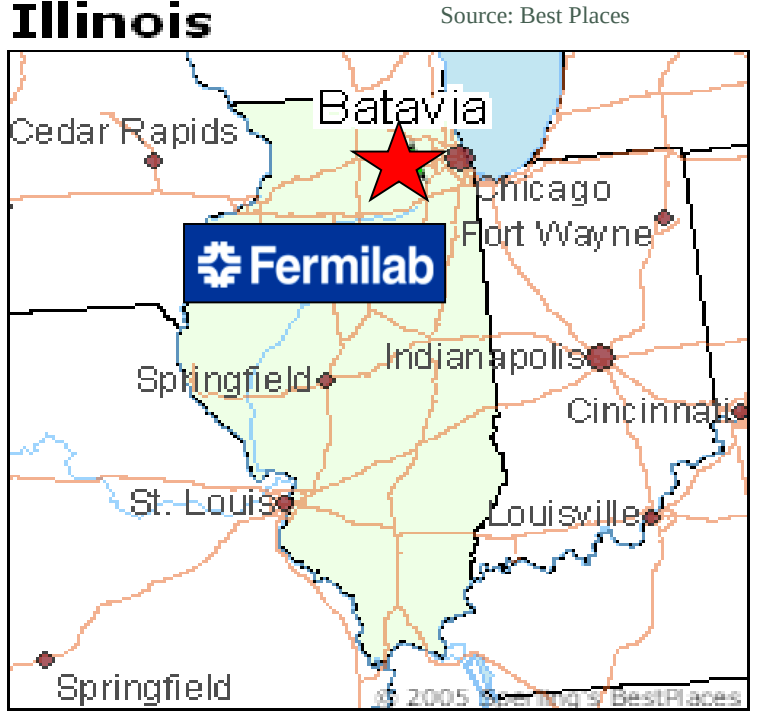
TRIUMF

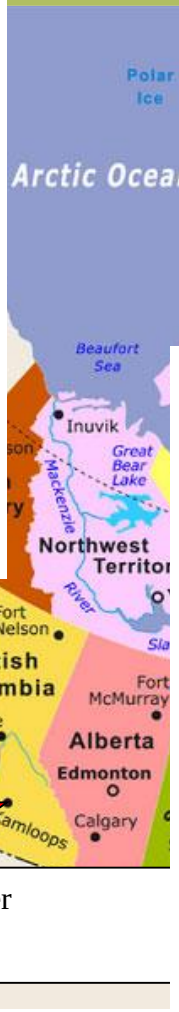


Fermi Laboratory

Jefferson Laboratory (J-Lab)

National Superconducting Cyclotron Laboratory (NSCL)





Source: Canada Cities Map

Indicators/ Data Variables	TRIUMF	J-LAB	FERMILAB	NSCL
# Incubators in the region	5	2	N/A	N/A
# Spin-Offs (10 yrs.)	6	2	N/A	4
# Full-Time Employees (FTE)	340	720	1,757	240
# Patents (10 yrs.)	30	85	8	N/A
# Conferences (Annually)	Average 7-11 per year	6	24	3-4
Visiting Researchers (Per yr.)	500 (10-15 per day)	1,250	2,300 (in year 2010)	200
Conference Attendees (Per yr.)	1,000 – 1,500	80	1,581	300
Royalties (10 yrs.)	$17,279,000 (FY2002-03 – FY2012-13)	$606,512 (8 year period)	N/A	$100,000
Operating Funding (Per yr.)	2013 ($86 million) 2014 est. ($74 million)	$100 million	2010 ($478.3 million)	$22.5 million

Variables	TRIUMF	J-LAB	FERMILAB	NSCL
Intellectual Property Assistance	X	X	X	X
Partners/Public Private Partnership (PPP)	X	X	X	
Hazard Mitigation Plan	X	X	X	X
University Partnership	X	X	X	X
Venture Capital Fund	X		X	

Recommendations

Action Item	Responsible Party	Timeframe
Develop a branding / marketing strategy for the F-RIB & Greater Lansing Region	Educational Institution, Regional Economic Development Organization	Short-Term (Less than 2 years)
Review existing regional incubator facilities and existing capacity, determine future demand	Regional Economic Development Organization	
Prepare a Hazard Mitigation strategy for the F-RIB	Educational Institution	Medium-Term (2-5 years)

Recommendations

Action Item	Responsible Party	Timeframe
Hold a series of community meetings to receive input regarding F-RIB and potential regional impact	Regional Economic Development Organization, Government Entity	Ongoing (for 5 or more years)
Establish an F-RIB specific ongoing analytics and measurement plan with regional indicators of barriers and success	Educational Institution, Regional Economic Development Organization	
Hold Accelerator Task Force meetings to engage all interested stakeholders at a regional level	Regional Economic Development Organization	
Determine the feasibility of MSU and Lansing Community College (LCC) specific degree programs related to entrepreneurship, co-operatives, and accelerator technology	Educational Institution, Regional Economic Development Organization	

Thank You for your time!