

Michigan: Growing a Global Engineering Village

Executive Summary

Business Leaders for Michigan's (BLM) Michigan Turnaround Plan identified six opportunity areas to grow Michigan's economy based upon the state's existing assets. BLM called these opportunities a strategy for building a *New Michigan*. One of those six opportunity areas is our engineering talent and the strategy envisioned turning Michigan into a *Global Engineering Village*.

A strong base of engineering talent positions Michigan well to leverage increasing global demand for engineering services to grow the economy. Engineering services are predicted to experience significant growth in the upcoming years. The market is exhibiting increasing demand for high-tech manufacturing industries such as automotive, aerospace, medical devices and precision instruments. Overall, Michigan ranks highly on output metrics for industries in the *Global Engineering Village* opportunity. It ranks in the top three nationwide for GDP and employment, and is 14th for average earnings. Michigan also ranks well above average in input metrics as well. It ranks in the top five states for the number of engineering firms, engineering patents awarded and engineers per capita.

Michigan can become a *Global Engineering Village* by branding the engineering sector, growing engineering education capacity and growing engineering firms and firms with in-house engineers. With the goal of making Michigan a Global Engineering Village, BLM worked with engineering stakeholders to create this business plan as a path to reach the goal. It includes both short-term and long-term action steps. While there may be additional steps that can be taken to help achieve the goal and many efforts are underway by a variety of groups, these action steps, particularly those identified in the business plan summary, are an important place to start. This plan is not intended to charge any one particular entity with implementation. Rather, a broad group, including business, government, education and civic stakeholders, will be needed to move the plan forward. It is our hope that this plan will help prioritize and guide further efforts.

Thank you to the following individuals who were involved in developing this business plan:

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Growing a Global Engineering Village

Business Plan Summary

Business Leaders for Michigan's (BLM) New Michigan strategy identified Michigan's engineering talent as a key asset that could be leveraged to help grow the state's economy into a Global Engineering Village. This plan was developed by a group of stakeholders to help achieve that result.

GOAL: Increase the engineering sector's contribution to the Michigan economy over the next ten years and help Michigan achieve recognition as a Global Engineering Village with exceptional and plentiful engineering talent.

WHY: Michigan has more engineers per capita than any other state in the nation. Complex global problems will continue to require the services of engineers and Michigan could be uniquely poised to help solve them.

KEY RECOMMENDATIONS:

1. Develop a branding and marketing campaign showing that there are many and diverse engineering job opportunities in Michigan.
2. Develop an engineering-specific component for the Michigan Economic Development Corporation's (MEDC) out-of-state talent attraction program.
3. Encourage businesses and universities to offer more co-op and internship opportunities as a way to retain engineering talent.

Growing a Global Engineering Village Business Plan

GOAL: Increase the engineering sector's contribution to Michigan's economy over the next ten years and help Michigan achieve recognition as a Global Engineering Village with exceptional and plentiful engineering talent.

STRATEGY #1: Attract Engineers from out-of-State and Retain Those Already in Michigan

Michigan, while having the largest number of engineers per capita, still suffers from a shortage of engineers with specific job qualifications to meet employer needs. Given the demand for engineering services, it is important for the state to retain those engineers currently in Michigan and to attract engineers from outside the state. Options to accomplish those goals are outlined below.

A. Talent

1. Develop an "engineering job center" and list all engineering vacancies by engineering sector. The existing Michigan Economic Development Corporation (MEDC) website could be used as a portal for all engineering job openings so all job opportunities can be easily found by job seekers.
2. Develop an engineering-specific component for the MEDC's out-of-state talent attraction program.
3. Develop/expand training programs so Michigan engineers can easily obtain skills to transfer from one sector to another for engineering jobs (automotive, defense, etc.).
4. Work with the federal government to develop a program to allow international students to obtain green cards with their diplomas so they can stay in Michigan and work.
5. Encourage businesses to offer part-time project work for retired engineers to help address talent needs and encourage retired engineers to get back into the work place to help address the demand for engineering work.

B. Support Services

1. Develop an ecosystem for engineers similar to what Palo Alto offers for entrepreneurs (venture capital, university research, support services, etc.) to ensure engineers have the support services they need, including technicians, designers, draftsmen, tool & die makers, etc.
2. Provide an incubator facility such as “Robot Garage” in Birmingham that is geared to engineers and provides an environment where engineers can make things without having to create their own infrastructure.
3. Encourage employers to provide flexibility to allow engineers to spend a small portion of their time doing community service work or self-directed projects.
4. Survey engineers to determine what other types of support services would encourage them to locate or stay in Michigan.

STRATEGY 2: Implement a Marketing & Branding Campaign that positions Michigan as a hotbed for engineers

Michigan is still seen in some areas of the nation and globe as an “old economy, rust belt” state. While that is not an accurate portrayal, the perception exists and should be addressed in order to attract both talent and business investment. Below are actions that could be implemented by a variety of groups—government, business, associations, foundations—to help provide an accurate portrayal of the state’s image.

A. Marketing /Branding Components

1. Develop a branding and marketing campaign in collaboration with the state, engineering professional associations and major engineering companies announcing that there are many engineering job opportunities in Michigan; show the diversification of engineering jobs in the state (auto, furniture, IT, life sciences, defense, etc.) and showcase companies and key spokespeople. Components could include:
 - i. Creation of a social media campaign showing engineers in Michigan working hard and playing hard; include brief videos of engineers. Send to all engineering associations and other business groups to share with their members and peers across the country.
 - ii. Utilizing the strength of other organizations: Identify key message points & media outlets; create talking points, materials and social media tools

and share with engineering associations, chambers, etc. to share with their members and peers across the nation and globe.

2. Develop a marketing/branding campaign around the mobility/automotive industry to showcase it as exciting, positive and reflect its high tech nature. Use cool/hip spokespeople.
3. Host and conduct familiarization tours for engineering recruiters; educate them on the engineering employment opportunities in Michigan, the major businesses located in the state and the strong quality of life.

B. Events

1. Identify and aggressively pursue hosting the top national engineering and engineering-related conferences. Use the opportunity to showcase the state's strengths—talent, quality of life, business-friendly environment—to attendees to help change the state's image and attract them to the state. Partner with the MEDC, Convention and Visitors Bureaus, chambers and other associations in this effort.
2. Take advantage of large, statewide professional conferences like the Center for Automotive Research's Management Briefing Seminars and annual meetings of the Michigan Economic Developers Association, the Michigan Society of Association Executives, and others to spread the word about the state's strengths—talent, quality of life, business-friendly environment.
3. Create new events to attract engineering talent and to help change the state's image. Examples include:
 - i. An "engineers conference" that includes all engineering disciplines or an "engineering leadership" conference that would bring together the global leaders of the profession in Michigan.
 - ii. An innovation contest "Invented in Michigan" focused on engineers to showcase inventions across the state or in individual cities (modeled after Grand Rapids' ArtPrize for the arts).
 - iii. A "Michigan Fix-it" conference to solve the world's problems. Encourage Michigan employers to donate engineers for one week every year to participate in the conference and help solve problems. Promote the conference and accept problems from businesses, governments and educational institutions across the globe. Select the top 5 problems to resolve and publicize the conference and results.

4. Create a new “destination” in Michigan focused on the future of the mobility industry and showcase advancements.

STRATEGY #3: Strengthen Michigan’s education system and expand practical applications to encourage students to engage in science, technology, engineering and math (STEM) careers, specifically engineering.

An important component of growing a Global Engineering Village and ensuring Michigan students have the skills needed to compete in the global marketplace is to educate and expose students to the opportunities in the marketplace. This includes short and long-term actions.

- A. Create new and expand existing programs that expose high school students to engineering jobs so they are aware of opportunities. Ensure high school counselors and other administrators are aware of and inform students who to contact if they are interested in an internship or co-op.
- B. Encourage businesses and universities to offer more co-op and internship opportunities for students to help connect students to Michigan jobs before they graduate.
- C. Attract More Students to Technical Fields (STEM)
 - a. Implement programs with practical applications in middle school & high school
 - b. Educate students on the various types of jobs engineers perform; show they are exciting, use role models
 - c. Determine drop-out rates of technical degree programs and the reasons for the drop-outs; identify methods to lower the drop-out rate.

