Michigan Academy for Green Mobility Alliance

Electric Vehicle Technician Certificate

Education and Training Provider
Request for Proposals

BACKGROUND

Michigan is moving rapidly toward renewable energy and other sustainable technologies to remain economically viable and protect our environment. In response to the rapid growth in this sector, the Michigan Department of Energy, Labor & Economic Growth (DELEG) has partnered with automotive manufacturing industry employers to establish the Michigan Academy for Green Mobility Alliance (MAGMA). The purpose of MAGMA is to ensure the automotive industry has the trained workers it needs to grow and prosper in the emerging green economy. Driven by the needs of the employers, the Academy is administered by a governing board made up of employers, education and training providers, the workforce development system, and state government. It is the role of the governing board to make decisions on behalf of the Academy.

MAGMA delivers rapid skill growth in green technology solutions for advanced mobility to meet industry needs. Its objective is to prepare individuals for emerging technologies in vehicle propulsion, component design, manufacturing, and maintenance. The skill development and training requested in this Request for Proposals (RFP) is in direct response to specific knowledge and skill demands of employers in the automotive manufacturing industry as they diversify into advanced technologies that support Michigan's green economy.

As Michigan's automotive industry transitions toward green mobility, there is an increasing demand for individuals with the knowledge, skills, and experience necessary to work on emerging vehicle technologies. There is a need for training to help prepare individuals to move quickly from jobs working on traditional gasoline-based vehicles to advanced propulsion vehicles that use green technologies and applications. DELEG works with automotive manufacturing employers, education and training providers, industry associations, and the workforce system to develop a mechanism for providing that training.

The mission of the Academy is to:

> *Provide rapid skill growth in green technology solutions for advanced mobility to meet industry needs.*

The mission of the Academy drives the following objectives:

- Prepare individuals for emerging technologies in vehicle propulsion and vehicle component design, manufacturing, and maintenance

- Encourage and support rapid/accelerated training and re-training

- Train individuals for green mobility jobs, including:
  - Incumbent and displaced engineers
  - Engineering students
  - Incumbent and displaced technicians
  - Technician program students

MAGMA endorses education and training based on the occupations, skills, and knowledge required by employers to design, develop and manufacture the next generation vehicles. The focus is on efficiently and effectively up-skilling the Michigan workforce to prepare them for new jobs in green mobility and retain existing jobs affected by the drive for improved fuel economy and less environmental impact. Education and training institutions provide learning opportunities that are short-term, targeted, innovative, flexible, and have a strong focus on hands-on practical experience. MAGMA endorsed education and training meets or exceeds employer defined skill and competency needs, positioning individuals to excel in green mobility jobs.

Partnerships are critical to make the most efficient use of established curriculums, facilities, laboratories, and equipment to provide the automotive industry with the talent necessary to succeed. Collaboration is necessary to create the right mix of theoretical knowledge with practical experience, and build on the strengths of individual organizations in order to provide the highest quality training available in this emerging field.

REQUIREMENTS

The following outlines the Education and Training Requirements for the RFP.

Applicants are encouraged to create innovative partnerships to make the most efficient use of established curriculum, resources, and expertise. Applications that combine coursework and lab experiences from multiple education providers are preferred.

The purpose of this Education and Training Provider Request for Proposals is to develop and implement an Associates Level Technician Certificate Program delivered by one or more provider(s) in the area of Vehicle Electrification. The Certificate Program should consist of a menu of courses (nominally equivalent to 12-18 college semester hours) that provide students with the knowledge and practical experience necessary to work with Electric Vehicle (EV) technologies. The selected training provider(s) will work with MAGMA to carry out its mission.

It is desirable that the courses selected for the subject Certificate Program be compatible with module concentration building within conventional associate level technical degrees. Thus upon completion of the Certificate Program, it is anticipated that the provider(s) would make available executable options that permit the Certificate Program courses to be used as building blocks within their conventional associate level technician degrees. While the primary short term objective of this Certificate Program is to provide incumbent and displaced technicians basic overall knowledge of EV technologies in an automotive system, it is anticipated that these initial Certificate Program courses will also form the "launching" platform for more advanced, in-depth courses in electric vehicle technologies which are compatible with advanced technology study in the area.

The Academy will assist in identifying students for this program. This RFP does not obligate the State of Michigan for the costs associated with the development or delivery of the solicited education and training program. This RFP does not address the future costs associated with the education and training program.

Training Requested:

- Electric Vehicle Technician Certificate

Target Audience:

- Incumbent and displaced technicians transitioning from traditional vehicle development and manufacturing to hybrid electric vehicle (HEV), plug in hybrid electric vehicle (PHEV), and battery electric vehicle (BEV) applications. Education and training for the Electric Vehicle Technician Certificate program should be structured for the technician with some secondary education or equivalent experience entering HEV, PHEV, BEV, component development, tooling development or manufacturing development areas. While service technicians currently have rigorous certification programs, they would have an excellent background for this certificate program.

Prerequisites:

- Associate of Applied Science; or
- Automotive Service Excellence Certification; or
- Entry Level Electronics/Electrical Courses; or
- Equivalent experience in a related industrial setting.

Learning Objectives and Outcomes:

- The Electric Vehicle Technician Certificate should expose technicians to a broad range of EV skill areas. The certificate should include a set of core coursework that provides the base knowledge necessary for working on EV technologies as well as opportunities to obtain more in-depth knowledge and experience in specific skill areas. The Electric Vehicle Technician Certificate program should include courses that cover all **or** a subset of the following key skill areas defined by employer needs:

- Overview of HEV, PHEV, BEV systems
- Safety working with high voltage systems
- High voltage battery systems
- HEV, PHEV, BEV battery controls
- Software for HEV, PHEV, BEV control systems
- Battery controls testing
- DC/DC converters
- Vehicle charging interface/infrastructure
- Regenerative braking
- Power electronic circuitry for electric drive systems
- Motor control electronic hardware
- Thermal system management and control
- Systems and integration
- High voltage electric distribution systems

- Technicians who receive this certificate are able to work on vehicles and subsystems in the areas listed above. MAGMA recognizes that all topics may not be covered by a single education provider or a single certificate program. Proposals should indicate which skill areas are met by each of the courses included in the proposed certificate program. Partnership with other institutions is encouraged to provide a comprehensive certificate program.

Applicants are encouraged to be innovative in their program design and delivery to meet the employer driven needs. Individual courses may focus on one or multiple skill areas and course design is at the discretion of the applicant.

Training Delivery:

- Method of Delivery:

  - Training should include at least one hour of lab/practical experience for every three hours of classroom style learning. (as applicable)

  - Training should include team-based, hands on learning opportunities.

- Delivery Timeframe:

  - Program delivery outside of normal business hours (Monday through Friday, 8 a.m. – 5 p.m.) is preferred.

  - No more than half of the training should be conducted during normal business hours (Monday through Friday, 8:00 a.m. – 5:00 p.m.).

Student Assessment:

- Students should be evaluated through a combination of tests and practical projects.

Credit:

- The Electric Vehicle Technician Certificate should consist of 12 – 18 credit hours (approximately one quarter the credit hours required for an associate degree)

- All credits earned through the Electric Vehicle Technician Certificate should be accepted toward an associate degree program, and be appropriate preparation for subsequent bachelor degree studies. Identification of associate degree and bachelor degree articulations should be included in the response.

- Proposed Electric Vehicle Technician Certificate programs should accept transfer credits from other MAGMA endorsed courses. A minimum of 20 percent of the proposed program's credit hours is preferred

    - *Partnerships that combine coursework and lab experiences from multiple education providers are encouraged.*

    - *Example: Community College A (applicant) offers a certificate program that includes three courses from Community College A, two courses from University B, and lab experiences at Community College C. Credits are articulated across all partners involved and a certificate is conferred by Community College A*

APPLICATION REQUIREMENTS

Eligibility:

- Eligible applicants are education and training providers with a significant presence in the State of Michigan including but not limited to universities, community colleges, private training providers, and industry associations.

- Proposals may be submitted by a single institution or in partnership with multiple institutions. Cross-institutional partnerships are encouraged to create the right mix of theoretical knowledge with practical experience and make the most efficient use of established curriculums, facilities, laboratories, and equipment. If the proposal is submitted in partnership, a lead agency must be identified to serve as the applicant.

Pre-Bid Webinar:

A Pre-Bid Webinar will be held to answer questions related to the RFP. The Webinar will be scheduled on May 5, 2011. We request questions be submitted in writing to MiSA@michigan.gov prior to the Webinar for responses to be provided during the Webinar. Please visit the Michigan Skills Alliances Web site at www.michigan.gov/rsa for information regarding this Webinar.

All PowerPoints, questions, and answers are posted to the Michigan Skills Alliances Web site at www.michigan.gov/rsa within three business days after the Webinar, or May 11, 2011.

Proposals:

Proposals must be filled out electronically using ATTACHMENT A: Michigan Academy for Green Mobility Alliance Application. Proposals received in other formats will not be considered.

This RFP does not require proposals to be submitted by a specific deadline. DELEG will accept proposals and MAGMA will endorse training providers throughout the year. Submit proposals electronically to Mr. Richard Fisher at fisherr2@michigan.gov. Hard copies may also be sent to:

Department of Energy, Labor & Economic Growth
Bureau of Workforce Transformation
Regional & Sectoral Strategies Division
Mr. Richard Fisher, Workforce Development Specialist
Victor Office Center
201 North Washington Square, 3rd Floor
Lansing, Michigan 48913

Review Process:

Proposals received by DELEG are evaluated by a committee consisting of MAGMA employers and workforce development representatives. The committee reviews proposals and recommends endorsement of education and training programs that most closely meet the needs identified by industry employers using the following criteria:

To be considered, the proposal must:

a. Align with the vision and objectives of MAGMA
b. Confer credits (through either the applicant or a partner organization)

Evaluation:

- Certificate Program/Course Content: 40 Points
  - Weighted toward alignment with industry needs
- Certificate Program/Course Delivery: 25 Points
- Student Assessment: 10 Points
- Partnerships: 10 Points
- Reciprocity of Credits: 15 Points
  - Provisional endorsement may be given while reciprocity agreements are in process

All proposals are considered and must be open to negotiation and/or modification. The review committee has the option to recommend changes to applicant's proposals prior to recommending endorsement. The MAGMA Governing Board has final approval of all education and training endorsed by the Academy.

Notification:

Successful applicants are notified of MAGMA endorsement within 60 days of proposal submission. This information will also be posted on the Michigan Regional Skills Alliances Website at www.michigan.gov/rsa.

Reporting Requirements:

Upon completion of the program, the selected education and training provider(s) must report the following information to the MAGMA Governing Board:

- Number of students enrolled
- Education level of enrolled students
- Technical discipline of enrolled students
- Demographic information of enrolled students (in aggregate)
- Number of students completing the program
- Education level of students completing the program
- Technical discipline of students completing the program
- Student assessment results including practical project results