



Cover Sheet

JOINT ECONOMIC AND COMMUNITY DEVELOPMENT BOARD OF CHEATHAM COUNTY

2016 Labor Education Alignment Program (LEAP 2.0)

Mechatronics: A Pipeline from Dual Enrollment to TCAT
to Work-based Learning

Joint Economic and Community Development Board of Cheatham County

IN PARTNERSHIP WITH

1. Higher Education Institution-
Tennessee College of Applied Technology-Dickson
2. LEA/School Districts-
Cheatham County School System
Hickman County School System
3. Work-based Learning Employer Partners-
Tennsco
Dal-Tile Corporation

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Funding requested: \$400,000

Arrita W. Summers
Director of TCAT Dickson

Arrita W. Summers
Project Director

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- Industrial Development Board of Dickson County
- Hickman County Economic & Community Development Association
- Cheatham County Mayor
- Dickson County Mayor
- Hickman County Mayor
- Town of Centerville
- Dickson County Chamber of Commerce
- Hickman County Chamber of Commerce

Abstract

- (1) Project Title: Mechatronics: A Pipeline from Dual Enrollment to TCAT to Work-based Learning
- (2) Lead Applicant Name: Joint Economic and Community Development Board of Cheatham County
- (3) Higher Education Partner: Tennessee College of Applied Technology - Dickson
- (4) Employer WBL/Co-op Partners: Dal Tile Corporation and Tennsco
- (5) Area to be served by the grant: Cheatham, Dickson, and Hickman Counties
- (6) Total Funding Level Requested: \$400,000
- (7) Total Leveraged Resources: \$382,173 (TCAT resources); \$42,000 (employer wages)
- (8) Target Industry to be Served: Advanced Manufacturing
- (9) Targeted Occupations: Electrical, electronics, and electro-mechanical technicians; industrial machine mechanics; maintenance and installation workers
- (10) Target Population to be Served: K-12 students at: 1) Cheatham County Central High School; 2) East Hickman High School; 3) Hickman County High School; and, 4) Adult learners at Tennessee College of Applied Technology – Dickson.
- (11) Summary of Program Activities: Provide Mechatronics I and Mechatronics II curriculum to K-12 students leading to the award of certificates and Mechatronics technology to adult learners leading to the award of diploma(s).
- (12) List of Credentials to be Awarded: Certificates: Maintenance Helper - 432 hours and Electrician Helper - 864 hours; and Diplomas: Maintenance & Repair Worker – 1,296 hours, Machinery Maintenance Worker – 1,728 hours, and, Industrial Machinery Mechanics – 2,160 hours.

Program Proposal Introduction - *Mastered in Tennessee*, a TN Department of Economic and Community Development Report (2015), describes advanced manufacturing as a “high-tech endeavor that often requires a background in math, science or engineering. To stay competitive your company needs a steady pipeline of qualified workers who can excel in this new manufacturing environment.” This proposal details how such advanced manufacturing positions are going unfilled and how a collaborative of three counties, including Cheatham, Dickson, and Hickman in Middle Tennessee, will work to alleviate shortage in their region. This proposal, *Mechatronics: A Pipeline from Dual*



Enrollment to TCAT to Work-based Learning, focuses on advanced manufacturing and skilled labor areas represented by Mechatronics Technology. The geographic areas of Cheatham and Hickman Counties were not recipients of training opportunities in LEAP 1.0 and will benefit greatly from the infusion of training such as is being proposed in this LEAP 2.0 grant request as will the six additional counties served by the Tennessee College of Applied Technology-Dickson (TCAT Dickson).

Advanced manufacturing positions require a high level of skill in a wide range of skill sets. Currently, many industries, locally and nationally, are reporting a difficulty in filling these positions as applicants are often unqualified. Employers are becoming increasingly concerned as they consider the next ten years with many of their employees nearing the retirement age. The National Association of Manufacturers (NAM) reports, “Over the next decade, nearly 3.5 million manufacturing jobs will likely be needed, and 2 million are expected to go unfilled due to the skills gap” (2016). NAM further cites a report of 80 percent of manufacturers noting a moderate or serious shortage of qualified applicants for skilled and highly skilled production positions.

This proposal reflects an aligned, seamless pathway for a Mechatronics Technology curriculum from K-12 to higher education, including work-based learning opportunities for high school students and cooperative (co-op) education opportunities for adult learners. This proposal addresses noted skills gaps in the areas of advanced manufacturing such as those referenced by NAM. The workbased learning and co-op training will provide students a more rapid entry into the workforce by reducing the amount of enrolled in the post-secondary institution. This will not only save K-12 students time but will also lower their tuition expenses. Students will gain technical skills, soft skills, and employability development that will prepare them to enter the workforce upon graduation. Each work-based and co-op learning opportunity will be paid and will award academic credit from both the K-12 schools and the Tennessee College of Applied Technology, as applicable.

Section One: Demonstrated Need - Data demonstrates that a skills gap exists in our state.

Tennessee Senate Majority Leader, Mark Norris, notes in his article *LEAPing the Skills Gap* on The Council of State Governments website (May/June 2016) that, “It is in everyone’s best interest to maintain a long-term commitment to building the best workforce in the world.

Building a stronger economy—one that consists of a skilled workforce, declining unemployment and increasing gross domestic product—requires a sustained effort.” This proposal demonstrates a plan to work towards mitigating the demonstrated skills gap by sustaining the efforts of LEAP 1.0 by taking an established Mechatronics framework to two new counties in order to move those counties and our region towards mitigating workforce needs of existing business and industry and will also serve to attract new businesses to locate in the State of Tennessee.

This proposal addresses the workforce needs and skillset deficits in a new geographical area not previously awarded a LEAP 1.0 award – Cheatham and Hickman Counties. A

Mechatronics Technology program in Cheatham County Central High School, and upgraded Mechatronics equipment in two Hickman County high schools, will enable the school systems to offer a strong, technology-based curriculum with state of the art lab equipment to students prior to earning a high school diploma and will prepare them to participate in work-based learning opportunities at the same time. Upon graduation from high school, the students will be able to move directly into a post-secondary Mechatronics program at the technical college level to complete the program of study utilizing the same state of the art training equipment. TCAT Dickson was provided funding for equipment through the LEAP 1.0 grant, and with additional expenditures funded by state appropriations, has invested \$382,173 since 2015. This LEAP 2.0 grant can leverage those dollars and begin focusing on duplicating/enhancing equipment at the secondary level in two additional counties: Cheatham and Hickman.

Focusing on a Mechatronics curriculum to meet the advanced manufacturing needs in the proposed region directly supports the Tennessee Drive to 55 goals of increasing the overall higher education attainment in the state so that Tennesseans are workforce ready. In 2015, Cheatham County had 32% of its population, age 25-64, report a certificate or degree; Hickman County had 21.5% of the same population with a certificate or degree (TN ECD and UT Boyd Center, 2016). Cheatham County demonstrates the need for an additional 9,346 adults to meet the Drive to 55 for its county and Hickman County needs an additional 5,181 adults (Nashville Region's Vital Signs, 2015). Clearly, each county can benefit from postsecondary training offered in their county and within driving distance. The outlined region will support these goals through an aligned, seamless pathway from K-12 to higher education, including work-based learning opportunities for high school students and cooperative (co-op) education opportunities for adult learners.

According to a June 2016 Emsi data set report provided by South Central Tennessee Workforce Alliance, the five counties to which many individuals commute to for work within advanced manufacturing and industrial maintenance jobs demonstrate a positive growth potential over the next five years, even greater than the national potential, and with wages averaging

between \$18.80 and \$23.08. As the middle Tennessee region continues to attract new employers

Employment data reflective of five counties to which many Cheatham, Dickson, and Hickman individuals commute for work (Williamson, Robertson, Montgomery, Maury, and Dickson)		
	Advanced Manufacturing	Industrial Maintenance
2015-2021 Growth	+3.6% (2.4% nationally)	+10.2% (6.9% nationally)
Median Wages	\$23.08	\$18.80

such as Dal Tile, Hankook Tire, and Beretta, the competition for skilled labor will become more intense for all counties. Such competition suggests that secondary and post-secondary institutions must increase the training opportunities that prepares citizens for employment in high-skill, high-wage, and high-demand careers. Not only will graduates of the proposed Mechatronics programs of study benefit employers through the increase of available skilled applicants in the advanced manufacturing careers but they will benefit by earning \$5,941 more per year with a post-secondary certificate than with a high school diploma alone (CBER at UT and CER/TDEC, 2016). The Emsi data set further reports specific industrial occupations within the advanced manufacturing realm include electrical, electronics, and electro-mechanical technicians; industrial mechanics; and, installers/repairers. Occupations within the related industrial maintenance fields includes industrial machine mechanics, maintenance workers, maintenance repair work, and installation workers.

Section Two: Program Plan - Tennessee College of Applied Technology-Dickson, in partnership with Cheatham County School System and Hickman County School System, has the support of its local and regional Economic and Community Development partners, specifically the Joint Economic and Community Development Board of Cheatham County, the Hickman County Economic & Community Development Association, and the North Tennessee Workforce Board. Most importantly, this proposal is employer-driven as is evidenced by the companies who have demonstrated their support of the proposal through work-based and cooperative training: Dal Tile Corporation and Tennsco.

The Joint Economic and Communities Development Board of Cheatham County will serve as the lead entity for the grant with the responsibility of coordinating the grant activities and organizing partner participation. The Tennessee College of Applied Technology-Dickson is the higher education partner who will serve as the fiscal agent and the project administrator under the leadership of the TCAT institutional director. The Chief Academic Officer for Cheatham County Schools will serve as a project co-director.

To accomplish this Mechatronics pathway, over a 30-month period, TCAT Dickson and its partners will leverage the Mechatronics equipment in its program offerings, which was purchased with LEAP 1.0 funds, to extended pathways of learning that will include a new curriculum that will be implemented at Cheatham County Central High School that will require the purchase of Mechatronics Technology equipment to support the curriculum's lab needs; secondly, Hickman County High School and East Hickman High School currently have a Mechatronics program of study but are in need of enhanced equipment to fully develop and expand their training opportunities. In addition to classroom education and lab training, sustainable work experiences are available from two employers for the K-12 and adult learners

and additional employers will be sought to round out offerings. These companies have demonstrated shortages of skilled workers, have committed to providing opportunities for work-based learning, and are in the market to hire credentialed graduates of the proposed program.

TCAT Dickson and its K-12 partners are seeking \$400,000 to establish a pathway that leads to credentialed job candidates available for work immediately upon program completion through education and experience with lab equipment and work-based learning opportunities. The equipment will specifically address the labor market needs through theory and skill training in advanced manufacturing, integrated PLCs, robotics, electrical circuits, electrical control, mechanical systems, and drives. The equipment mirrors the capabilities of modern manufacturing equipment and will provide the same platform by which the students will continue their post-secondary training.

The Mechatronics training will be offered at three high schools: Cheatham County Central, East Hickman, and Hickman County; and, at Tennessee College of Applied Technology, a postsecondary institution. The Cheatham County High offering will be newly implemented and will require a large investment; the two Hickman County schools currently offers Mechatronics but is in need of additional equipment to enhance their efforts. Students from all three counties will be able to transfer to TCAT Dickson, which requires no fiscal aid at this time as it was a recipient of Mechatronics equipment in LEAP 1.0. Through the use of the lab equipment and work-based learning, students in rural communities will have local access to training that will prepare them for the workplace shortages identified and will serve to meet the Drive to 55 goals of aiding Tennessee citizens to earn postsecondary credentials.

Mechatronics and advanced manufacturing careers are reflected in regional workforce needs, which is important to notes as neither Cheatham nor Hickman Counties have the plethora

of manufacturing sites that many of their adjoining counties have. However, many residents of the participating counties travel out of their county to work and are therefore available to increase regional workforce capacity needs. Specifically, Cheatham County has 12,310 commuters who travel outside of their county, which represents 43.5% of their total commuters; and, Hickman County has 5,539 commuters who travel outside of their county representing 62.4% of their commuters.

This proposal is for the purchase of one set of mechatronics equipment to be placed at Cheatham County Central High School and various mechatronics equipment to augment the curriculum at two Hickman County High Schools. Secondary school students who participate in classes in their junior and senior year will qualify for dual enrollment credit with TCAT Dickson that will lead to post-secondary certificates. Engaging in post-secondary work while in high school allows students to earn early college credit in a high demand field with tremendous growth potential at no cost to the student. This partnership creates a pipeline for students to move through secondary, postsecondary, and work-based learning into highly skilled careers.

Timeframe	Action	Responsible Party
August 2016	Grant Announcements	THEC
August 2016	Dual enroll Mechatronics students at both Hickman County high schools with TCAT Dickson; Mechatronics classes begin.	TCAT Dickson
September 2016	Steering committee meet to formalize plans and coordinate efforts between the key partners for Cheatham County, which will need to institute a Mechatronics I and II program in the fall of 2017; and, two Hickman County high schools that already have a Mechatronics curriculum in place.	Joint Economic and Community Development Board of Cheatham County (JECDB)
September 2016	Execute MOU between TCAT Dickson and Cheatham County Schools System and Hickman County School System.	TCAT Dickson
September 2016	Execute MOU between TCAT Dickson and the cooperative learning employer partners.	TCAT Dickson
September 2016	Execute MOU between Cheatham County School System and Hickman County School System with work-based learning partners.	Cheatham County School System (CCSS) and Hickman County School System (HCSS)
September 2016 – February 2019	TCAT Dickson will enroll adult learners in its Mechatronics Technology program via open and ongoing enrollment throughout the years; credentials will be awarded as students master the competencies and graduate.	TCAT Dickson

September 2016 – February 2019	TCAT Dickson will engage its Mechatronics students in ongoing cooperative education opportunities.	TCAT Dickson
September 2016	Hickman County School Systems and the work-based learning (WBL) partners will develop a plan for the WBL to commence and proceed throughout the 30-month grant period.	HCSS
October 2016	Steering Committee to meet.	JECDB
October 2016	Cheatham County School System to add Mechatronics I and Mechatronics II courses to their fall 2017 Cheatham County Central High School offerings.	CCHS
October 2016	Begin procurement process to equip Cheatham County Central High School's Mechatronics lab.	TCAT Dickson
October 2016	Assess East Hickman High School and Hickman County High School's Mechatronics equipment and begin procurement process for expanded lab equipment.	TCAT Dickson
November 2016	Steering Committee to meet.	JECDB
November 2016	Issue purchase orders for equipment to be placed in Hickman County high schools.	TCAT Dickson
January 2017	Begin issuing purchase orders for equipment to be placed in Cheatham County Central High School.	TCAT Dickson
January 2017	Steering Committee to meet.	JECDB
January 2017	Hickman County High School programs will install purchased equipment begin using the expanded equipment in their Mechatronics I and II courses.	HCSS
February 2017	Cheatham County and Hickman County School Systems begin promoting Mechatronics courses for fall 2017.	CCSS and HCSS
March 2017	Cheatham County Central High School to begin receiving and installing Mechatronics lab equipment.	Cheatham County High School (CCHS)
May 2017	Steering Committee to meet.	JECDB
May 2017	Dual enrolled students completing their high school work will receive a transcript of their work from TCAT Dickson.	TCAT Dickson
May 2017	Cheatham County High School to hire a Mechatronics Technology teacher for fall 2017.	CCSS
June – September 2017	TCAT Dickson enroll graduating seniors in the Mechatronics Technology program.	TCAT Dickson
August 2017	Cheatham County Central High School begin offering Mechatronics I courses.	CCHS
August 2017	Cheatham County School System and the work-based learning (WBL) partners will develop a plan for the WBL to commence and proceed throughout the remainder of the 30-month grant period.	
August 2017	Dual enroll Mechatronics students at Cheatham County Central, and both Hickman County high schools, with TCAT Dickson; Mechatronics classes begin.	TCAT Dickson
September 2017	Steering Committee to meet.	JECDB
January 2018	Steering Committee to meet.	JECDB
February 2018	Cheatham County and Hickman County School Systems begin promoting Mechatronics courses for fall 2018.	CCSS and HCSS
February 2018	TCAT Dickson recruit graduating high school seniors to continue their postsecondary training at TCAT Dickson.	TCAT Dickson
May 2018	Steering Committee to meet.	JECDB
May 2018	Dual enrolled students completing their high school work will receive a transcript of their work, and certificates earned, from TCAT Dickson.	TCAT Dickson
June – September 2018	TCAT Dickson enroll graduating seniors in the Mechatronics Technology program.	TCAT Dickson
August 2018	Cheatham County Central High School begin offering Mechatronics II courses.	CCHS
August 2018	Dual enroll Mechatronics students at Cheatham County Central, and both Hickman County high schools, with TCAT Dickson.	TCAT Dickson
September 2018	Steering Committee to meet.	JECDB

To develop a Mechatronics curriculum in Cheatham County and two expand the curriculum in Hickman County, a steering committee will ensure the grant's success as it will establish, monitor and report to THEC monthly outcomes toward the achievement of the grant's goals.

Goal	Measurement	Measurable Outcome
Establish an advanced manufacturing course at Cheatham County Central High School	Program officially established	CCHS: One new program
Increase the number of high school students pursuing CTE advanced manufacturing courses	Number of students enrolled in CTE advanced manufacturing courses provided through this grant	CCHS enrollment goal: 50 HCSS enrollment goal: 150
Increase the number of high school students dual enrolling with TCAT Dickson	Number of students officially enrolled with TCAT Dickson's Mechatronics Technology program	CCHS enrollment goal: 50 HCSS enrollment goal: 150
Align and promote Drive to 55 initiatives	Number of individuals that earn a post-secondary credential from TCAT Dickson	CCHS, HCSS, and TCAT Dickson completer goal: 64
Close the skills gap by enabling students to complete their program of study and thereby increasing the skilled labor supply	Number of individuals obtaining post-secondary credentials from TCAT Dickson	Workforce entry goal: 64
Provide work-based learning opportunities to the K-12 students and cooperative education opportunities to the adult learners	Number of internships provided by employer partners	Work-based learning goal: 36 Cooperative education goal: 24
Provide a workforce to employers to fill open positions	Percentage of program completers that enter full-time employment	Employment goal: 85%
Provide training and certifications that lead to self-sufficient wages	Demonstration of entry-level earnings	Wage goal: \$15.00 - \$25.00 per hour

The Joint Economic and Community Development Board, under the leadership of Daryl Phillips, will serve as the lead entity, which will ensure that all stakeholders are engaged in the grant process. TCAT Dickson, under the direction of the project director, Dr. Arrita Summers, will oversee project governance and accountability of the grant. All fiscal efforts to account and disburse funding, per the attached budget, will be performed using the TCAT Dickson's processes established by the TBR. Further grant efforts will be under the advisement of a steering committee that will consist of Dr. Tara Tiller (CCSS), Don Qualls (HCSS), and representatives from local employer partners. The steering committee will meet monthly for the first three months then trimesterly, and as needed, over the remainder of the 30 month timeline to

maintain oversight of the program’s goals and to monitor the efforts for continuous improvement.

The proposed equipment will allow the establishment of a new training program at Cheatham County Central High School, and expansion of equipment at two Hickman County high schools, through a system of labs teaching mechanics, pneumatics, programmable logics controller technology, handling technology, electrical engineering, electronics, robotics and hydraulics. Each station facilitates challenging exercises on automation and mechatronics to simulated industry needs in the skills sets of fluid power (hydraulics & pneumatics); electrical controls; basic electrical and circuits; motor controls; programmable logic controls; mechanical systems; and, robotics.

Section Three: Strength of Partnerships - TCAT Dickson has long-term relationships with both Cheatham and Hickman County School Systems and the employers who have committed their support for this project.

Partner	Description of Role	Capability
Joint Economic and Community Development Board of Cheatham County	Serve as the lead entity to ensure the project progresses through the convening of a steering committee.	JECDB has demonstrated experience in economic, business and workforce development initiatives; is funded by local governments and the business community; and, has a mission to improve its county’s economic and overall quality of life.
TCAT Dickson	Serve as the higher education partner, the project director, the fiscal agent for the grant, and as a training provider for adult learners	TCAT Dickson is a Tennessee Board of Regents institution and has experience with LEAP and other state Reconnect grants; and has a mission of workforce development for individual citizens and businesses/industries through postsecondary technical training.
Cheatham County School System	Serve as a K-12 CTE partner to implement a new advanced manufacturing courses at Cheatham County Central High School	Cheatham County School System is a Tennessee public high school that has a demonstrated commitment to career and technical education and work-based learning.
Hickman County School System	Serve as a K-12 CTE partner to provide advanced manufacturing courses at two high schools	Hickman County School System is a Tennessee public high school that has a demonstrated commitment to career and technical education and work-based learning.
Employer Partners	Employer partners will provide work-based learning and cooperative	The committed employer partners are stable businesses in the TCAT Dickson service area

education opportunities to K-12 students and adult learners through a wage reimbursement rate of half the paid wage, up to \$2,000 per student.	and have a need for additional workers with advanced skills in manufacturing.
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Section Four: Budget Plan - This proposal reflects a request for \$400,000 to establish a new advanced manufacturing training program at Cheatham County Central High School and to enhance advanced manufacturing training at two Hickman County high schools. A line item and detailed budget can be found in Appendix B. As a recipient of a LEAP 1.0 grant, TCAT Dickson – the fiscal agent of this grant – is aware of the requirements of facilitating such a grant and demonstrates the capacity to serve as the fiscal agent through an annual operating budget of \$5.4 million; a federal Title IV financial aid budget of \$2.6 million; and, numerous grants including a Tennessee Reconnect grant and equipment grants from Governor Haslam’s office that have required data tracking, management, student recruiting, and performance reporting. Details of each budget line item are found in Appendix B.

Employer partners participating in the work-based learning and cooperative education programs will initially pay the student workers; once the students have satisfactorily completed their work-based/co-op training, the employers will request reimbursement for one half of the employee wages. TCAT Dickson will maintain record-keeping of all expenses reimbursed to employers through the LEAP 2.0 grant processes.

Section Five: Sustainability

Sustainability of this project beyond the 30 months is expected to be excellent as with the establishment of the curriculum and equipment, sustainability will largely consist of equipment maintenance, which will be afforded through institutional budget and student tuition. Other than software or warranty updates, maintenance efforts will be accomplished by students as part of the curriculum training. Because of the nature of scientific laws that remain relatively constant,

and due to the caliber of the training equipment, these trainers have an expected shelf life of decades.

Upon completion of the grant period, the partners will continue to promote the Mechatronics curriculum at each of the three high schools where the equipment will continue to be used to teach Principles of Mechatronics, Mechatronics I, and Mechatronics II, all with dual enrollment opportunities with TCAT Dickson, where students will be able to progress to a Mechatronics diploma. High school students will continue to have work-based learning opportunities and the school systems will be continually looking to expand their industry partners for this endeavor. TCAT Dickson will continue to promote cooperative education opportunities for the adult students and will expand their industry partnerships across its eight county service area. By the nature of their missions, the workforce board, industrial development partners, chambers, and county governments will support and pursue additional workforce opportunities that present themselves that would benefit the Mechatronics training.

TCAT Dickson meets multiple times throughout each year with CTE directors that it has dual enrollment programs with. Beyond this grant, TCAT Dickson will continue its annual renewal of dual enrollment and articulation agreements and will maintain communication efforts throughout the academic year to navigate the enrollment process and to share ideas and resources among the K-12 and postsecondary partners. The individual school systems and TCAT Dickson will maintain collaborations beyond the grant to maintain and expand the work-based learning and cooperative education efforts with the employer partners and with new partners picked up along the way.

Appendix A – Grant Budget

GRANT BUDGET				
LEAP Program Competitive Grant				
The grant budget line-item amounts below shall be applicable only to expenses incurred during the following				
Applicable Period: BEGIN: September 14, 2016 END: March 13, 2019				
POLICY 03 Object Line-item Reference	EXPENSE OBJECT LINE-ITEM CATEGORY¹	GRANT CONTRACT	GRANTEE PARTICIPATION	TOTAL PROJECT
1, 2	Salaries, Benefits & Taxes	42,000.00	42,000.00	84,000.00
4, 15	Professional Fee, Grant & Award ²	0.00	0.00	0.00
5, 6, 7, 8, 9, 10	Supplies, Telephone, Postage & Shipping, Occupancy, Equipment Rental & Maintenance, Printing & Publications	0.00	0.00	0.00
11, 12	Travel, Conferences & Meetings	0.00	0.00	0.00
18	Other Non-Personnel ²	0.00	0.00	0.00
20	Capital Purchase ²	358,000.00	0.00	358,000.00
22	Indirect Cost	0.00	0.00	0.00
24	In-Kind Expense	0.00	382,173.00	382,173.00
25	GRAND TOTAL	400,000.00	424,173.00	824,173.00

¹ Each expense object line-item shall be defined by the Department of Finance and Administration Policy 03, *Uniform Reporting Requirements and Cost Allocation Plans for Subrecipients of Federal and State Grant Monies, Appendix A*. (posted on the Internet at: www.state.tn.us/finance/act/documents/policy3.pdf).

² Applicable detail follows this page if line-item is funded.

Appendix B – Budget Detail

Salaries, Benefits & Taxes - Employer partners will provide work-based learning and co-op opportunities to K-12 and adult learners via a wage reimbursement of half the paid wage, up to \$2,000 per student.

- (36) K-12 students participating in work-based learning at earnings of \$1,000 each for a total of \$36,000 with a reimbursement of \$18,000 and employer contributions of \$18,000
- (24) TCAT Dickson adult learners participating in cooperative learning at earnings of \$2,000 each for a total of \$48,000 with a reimbursement of \$24,000 and employer contributions of \$24,000

Total reimbursement for work-based learning and cooperative learning wages **\$42,000**

Capital Purchase 2

1. TCAT Dickson will purchase Mechatronics equipment to establish an advanced manufacturing lab at Cheatham County Central High School that will include the following:

- Advanced Mechatronics Training System with integrated PLC & Robotics \$201,000
- Fluid Power Trainer Including Hydraulics and Pneumatics \$37,000
- Basic Electrical/Circuits Trainer \$12,000
- Electrical Control Portable Training System \$33,000
- Mechanical System and Drives Trainer \$38,000

2. TCAT Dickson will purchase Mechatronics equipment to expand the lab opportunities at East Hickman High School and Hickman County High School:

- East Hickman High School \$18,500
- Hickman County High School \$18,500

Total Equipment Purchases **\$358,000**

In-Kind Contributions

1. TCAT Dickson has purchased advanced manufacturing equipment for its Mechatronics Technology training through LEAP 1.0 funds and through state appropriations. \$382,173
2. In-kind employer wages \$42,000

Total In-kind Contributions **\$424,173**

Grand Total

- Employer wage reimbursement \$42,000
- Cheatham County Central High School (equipment) \$321,000
- Hickman County School System (East Hickman/ Hickman County High Schools) \$37,000
- In-kind \$424,173

Grand Total **\$824,173**

Appendix C – Letters of Support

- Higher Education
 - Tennessee College of Applied Technology-Dickson
- K-12
 - Cheatham County Board of Education
 - Hickman County Board of Education
- Economic and Community Development
 - Joint Economic and Community Development Board of Cheatham County
 - Industrial Development Board of Dickson County
 - Dickson County Chamber of Commerce
 - Hickman County Economic & Community Development Association
 - Hickman County Chamber of Commerce
 - North Tennessee Workforce Board and Workforce Essentials, Inc.
- Government
 - Cheatham County Mayor
 - Dickson County Mayor
 - Hickman County Office of the County Mayor
 - Town of Centerville
- Employer Partners
 - Dal Tile Corporation
 - Tennsco

CHEATHAM  **CONNECT**
ECONOMIC & COMMUNITY DEVELOPMENT

July 22, 2016

Mr. Curt Johnston
Tennessee Higher Education Commission
404 James Robertson Parkway, Suite 1900
Nashville, Tennessee 37243-0830

Dear Mr. Johnston:

I am writing you this letter to express my organization's willingness to serve as the grants lead entity to coordinate grant activities and organize partner participation for the *Mechatronics – Building a Pipeline from Dual Enrollment to Postsecondary to Work-based Learning* grant application being submitted by the Tennessee College of Applied Technology – Dickson.

This grant will be used to develop dual enrollment programs for secondary students who have limited access to training that leads to high skill, high wage, and high demand careers in the advanced manufacturing sectors. Upon graduation, these students will have the opportunity to continue their education alongside adults with the same educational pursuits. Both dual enrollment students and adult students pursuing a Mechatronics diploma will have the opportunity to participate in work-based learning to enhance their experiences and knowledge.

This grant will bring much needed equipment and training to students who will receive the benefit of earning college credit while simultaneously completing their high school education. This pipeline will be beneficial to shortening the time necessary for these students to complete a full Mechatronics diploma or degree at any number of TBR institutions that offer Mechatronics programs of study, including TCAT Dickson, Austin Peay State University, Nashville State Community College, and Columbia State Community College.

Graduates with the knowledge of Mechatronics will be of great benefit to the regional labor market, both to fill current positions and to attract new industries to locate in our communities. Mechatronics graduates will reduce the skills gap felt by many industries who are seeking employees with their skill sets.

We support the efforts of TCAT Dickson and its K-12 and business partners in developing this pipeline effort to develop skilled labor. We appreciate your consideration of funding this request and, if you have any question, please do not hesitate to contact me.

Sincerely,



Daryl D. Phillips, MBA, CEcD, EDFP
Director of Economic Development



TENNESSEE COLLEGE
OF APPLIED TECHNOLOGY
— DICKSON —
& CLARKSVILLE CAMPUS

July 22, 2016

Mr. Curt Johnston
Tennessee Higher Education Commission
404 James Robertson Parkway, Suite 1900
Nashville, TN 37243-0830

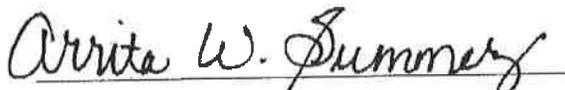
Dear Mr. Johnston:

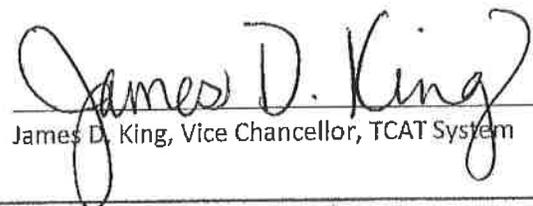
Tennessee College of Applied Technology-Dickson (TCAT) is pleased to commit to the LEAP 2.0 grant proposal, *Mechatronics: A Pipeline from Dual Enrollment to TCAT to Work-based Learning*, and to serve as the fiscal agent through a contract executed with the Tennessee Higher Education Commission. As a recipient of a LEAP 1.0 grant, our institution is aware of the requirements of facilitating such a grant and demonstrates the capacity to serve as the fiscal agent through an annual operating budget of \$5.4 million; a federal Title IV financial aid budget of \$2.6 million; and, numerous grants including a Tennessee Reconnect grant and equipment grants from Governor Haslam's office that have required data tracking, management, student recruiting, and performance reporting. TCAT Dickson further commits to supporting the efforts of the lead entity, the Joint Economic and Community Development Board of Cheatham County and the K-12 partners.

This grant proposal addresses skills gaps in our local workforce and promotes post-secondary educational opportunities for high school students, as well as, adult learners. Through the grant's efforts, an increased number of highly skilled workers will be developed for advanced manufacturing and industrial career paths, with specific focus on Cheatham and Hickman Counties. Neither of these counties were represented in the LEAP 1.0 awardees and would benefit greatly from Mechatronics training reflected in the proposal.

Thank you for considering this funding request as we know how greatly our region will be impacted with economic growth through the skilled workforce obtained as a result. Please contact me if I may provide additional information.

Sincerely,


Dr. Arrita W. Summers, Director


James D. King, Vice Chancellor, TCAT System



CHEATHAM COUNTY SCHOOL DISTRICT

Achieving Excellence Together

Director of Schools - Stan Curtis, Ed.D

102 Elizabeth Street • Ashland City, TN 37015 • Phone: 615.792.5664 • Fax: 615.792.2551

July 26, 2016

Mr. Curt Johnson
Tennessee Higher Education Commission
40 James Robertson Parkway, Suite 1900
Nashville, TN 37243-0830

Dear Mr. Johnson:

I am writing you this letter to support the partnership grant proposal submitted by the Dickson Campus Tennessee College of Applied Technology for the *Mechatronics – Building a Pipeline for Dual Enrollment to Post-secondary to Work-based Learning*.

As the Chief Academic Officer as well as the College, Career, and Technical (CTE) Director for the Cheatham County School District there is an overwhelming need to formulate partnerships to not only improve current programs but also implement new career and technical education programs of study (POS), specifically mechatronics within the Cheatham County School District. Cheatham County currently serves 6,500 students within thirteen schools. The district is comprised of three High Schools which serve approximately 2,000 students. The district currently offers the following career and technical courses across the: Agriculture, Criminal Justice, Human Services, Health Science, and Principles of Technology. Although our career and technical courses are diverse, the district is attempting to meet the changes in industry and work-force demands by expanding our program of study to include Mechatronics. Mechatronics consists of Principles of Manufacturing, Digital Electronics, Mechatronics I, and Mechatronics II or Manufacturing Practicum. Our district approved \$25,000 of local funding for CTE equipment and instructional supplies, in addition to Federal Funding Carl Perkins allocation of approximately \$90,000 for every program across three high schools. The minimal funding compounded by the high cost of equipment has resulted in our district being limited to offer additional CTE programs of study. Although Cheatham County is not a large school district, we have several students who consistently express an interest and desire to enroll and complete an Advanced Manufacturing POS specifically in Mechatronics. The Cheatham County School District would like to partner with local economic development and the TCAT Dickson to offer our students an opportunity to enroll and complete a mechatronics program, in addition to the post-secondary opportunities of dual enrollment and work-based learning.

We appreciate your consideration of funding this endeavor and look forward to our continued expansion of CTE programs and partnerships.

Respectfully,

Tara Watson

Tara Watson, Ed. D
Chief Academic Officer



Don Qualls
Hickman County Schools
115 Murphree Avenue
Centerville, Tennessee 37033

LEAP GRANT

Attention: Scott Sloan

Tennessee High Education Commission

404 James Robertson Parkway, Suite 1900

Nashville, TN 37243-0830

July 25, 2016

Subject: Labor and Education Alignment Program (LEAP) Grant Competition

Hickman County looks forward to partnering with local industry and Tennessee College of Applied Technology in Dickson, along with other partners. This project will help meet the demands of this growing industry. This will provide our students with the hands-on training, they will need to compete in this high wage, high demand industry. Our mechatronics programs are in their second year of existence and are growing in popularity. Last year, ten of our students in mechatronics received dual credit from TCAT in Dickson. Our mechatronics program will be greatly enhanced by these funds.

With limited industry opportunities for our students in Hickman County, this grant will help our students with the resources they need. Funding from this grant for equipment will help bridge the gap of having had limited funds in this area. The value of work-based learning will add an ingredient that is now missing in our Hickman County Schools. These partnerships will promote post-secondary training and help address the skill gaps in our workforce. Again, Hickman County Schools are thrilled to be a part of this endeavor.

Yours truly,

A handwritten signature in black ink that reads "Don Qualls". The signature is written in a cursive style.

Don Qualls

Career-and Technical Director-Hickman County Schools

July 26, 2016

Mr. Curt Johnston
Tennessee Higher Education Commission
404 James Robertson Parkway, Suite 1900
Nashville, TN 37243-0830

Dear Mr. Johnston:

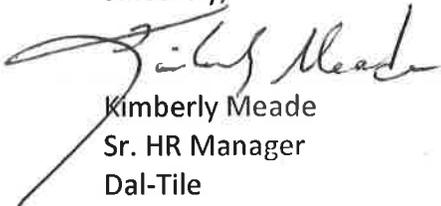
On behalf of Dal-Tile, I am writing in support of Tennessee College of Applied Technology's (TCAT) proposal for the LEAP 2.0 grant. As the newest facility in Dickson's industrial park, we welcome the opportunity to partner with TCAT to help educate and train tomorrow's workforce.

To support the Mechatronics: A Pipeline from Dual Enrollment to TCAT to Work-based Learning proposal, we commit to the following:

Hire 4 work-based learning and/or co-op students, who meet our workforce requirements, over the next two years that are enrolled in the Mechatronics training program at TCAT Dickson or the K-12 partners of this grant. Dal-Tile will compensate the Mechatronics students \$13 for their work during specific academic terms over the 30-month period, not to exceed \$2,000 per student. We understand that once the students have satisfactorily completed the academic term of work-based learning, we will be reimbursed 50 percent of their wages.

We believe the proposed grant will benefit both students seeking to gain practical work experience in their field of study and employers like Dal-Tile seeking to build a pipeline for the future of the company. We enthusiastically support this grant proposal and appreciate your consideration.

Sincerely,



Kimberly Meade
Sr. HR Manager
Dal-Tile



July 27, 2016

Mr. Curt Johnston
Tennessee Higher Education Commission
404 James Robertson Parkway, Suite 1900
Nashville, TN 37243-0830

Dear Mr. Johnston:

I am writing this letter in support of the LEAP 2.0 proposal *Mechatronics: A Pipeline from Dual Enrollment to TCAT to Work-based Learning*. If awarded, funding for this project will increase the supply of skilled workers available for advanced manufacturing positions. With a noted skills gap, it is important to build a training pipeline such as this one to increase the number of workers entering the labor pool.

This project will introduce secondary students to the opportunities provided through advanced manufacturing careers, will provide opportunities for work-based learning, and will prepare them to enter the workforce sooner. These students will also have the ability to continue their post-secondary education at TCAT Dickson, which will further enhance their knowledge and skills. Through competency based training, adult students studying at TCAT Dickson will work through the advanced manufacturing courses as quickly as their individual ability allows and they will be provided cooperative education opportunities.

Tennsco is committed to helping solve the demand for skilled workers and will serve as a work-based learning and co-op learning employer. During the 30 months of the grant, as our schedule allows, we will hire Mechatronics Technology students from TCAT Dickson and its K-12 partners through work-based learning and cooperative education agreements. The students will be compensated \$10.00 per hour, not to exceed \$2,000 per student. We understand that once students satisfactorily complete their work-based learning/cooperative training we will be reimbursed 50 percent of their wages.

We trust that you will find that this project will benefit students and employers alike through a combination of classroom, lab, and on the job training. We appreciate your consideration of this proposal.

Sincerely,

Tamara James
HR Director
TENNSCO CORP.

:tj



523 Madison St. Ste. A
Clarksville, TN 37040-3619

Solutions that work.

July 25, 2016

Dr. Arrita Summers
Tennessee College of Applied Technology
740 Highway 46 South
Dickson, TN 37055

Dear Dr. Summers,

The North Tennessee Workforce Board (NTWB) and Workforce Essentials, Inc. enthusiastically support the Pipeline from Dual Enrollment to TCAT to Work-based Learning LEAP 2.0 proposal. Encompassing Cheatham, Hickman and Dickson County school systems along with the Tennessee College of Applied Technology Dickson being the lead education agent, this program is designed as a self sustaining pipeline for advanced manufacturing. Advanced manufacturing is growing in middle Tennessee and couple this with an aging workforce, industry needs are out stripping the supply of skilled workers. Exposure to these in demand skill sets is currently not available in these counties and thus this grant will set the stage for continued economic growth and develop a hands on approach to skill set development.

Mechatronics training and dual enrollment to advanced manufacturing at the high school level in counties such as Cheatham and Hickman will create a career pathway of Mechatronics education and certification. This career pathway, including work based learning will produce a highly skilled workforce needed for middle Tennesseans to gain high wage jobs and assist business to compete in a global economy.

It is our mission to develop a strong workforce and meet employer's needs. I feel that the Board, TCAT Dickson and its partners along with local employers and economic development agencies will redefine the labor pool and create a win-win situation for job seekers and employers. Please accept this letter as our support and commitment toward the success of this initiative.

Sincerely,

A handwritten signature in black ink that reads "Marla Rye". The signature is written in a cursive, flowing style.

Marla Rye, President
Workforce Essentials

July 25, 2016

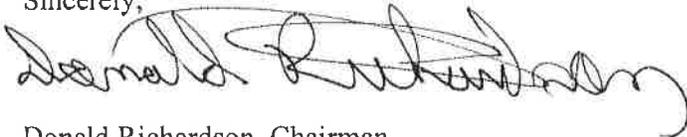
Mr. Curt Johnston
Tennessee Higher Education Commission
404 James Robertson Parkway, Suite 1900
Nashville, TN 37243-0830

Dear Mr. Johnston:

I am contacting you regarding the Tennessee College of Applied Technology – Dickson and its application for a Leap Grant. Funding from the grant will be used to fund a mechatronics curriculum for TCAT – Dickson’s students.

The Tennessee College of Applied Technology – Dickson has been a very vital part of industrial recruitment in Dickson County. They have always been willing to help industry with general training or more specialized training that employees needed in order to be successful in their employment. The mechatronics program will be of great value to high school students if they plan to seek further education upon high school graduation or immediately enter the work force. TCAT – Dickson offering the mechatronics curriculum will be a benefit to Dickson County in industrial recruitment by Dickson County having a better trained workforce.

Sincerely,

A handwritten signature in black ink, appearing to read "Donald Richardson", written over a horizontal line.

Donald Richardson, Chairman
Industrial Development Board of Dickson County, Tennessee



Hickman County Economic & Community
Development Association
130 Progress Center Plaza
PO Box 204
Centerville, Tennessee 37033-0204
www.hickmantn.org

Dr. Russ Deaton
Tennessee Higher Education Commission
404 James Robertson Parkway, Suite 1900
Nashville, TN 37243-0830

Dear Dr. Deaton:

This letter is in support of the *Mechatronics – Building a Pipeline from Dual Enrollment to Postsecondary to Work-based Learning* grant application being submitted by the Tennessee College of Applied Technology – Dickson.

This grant will be used to develop dual enrollment programs for secondary students who have limited access to training that leads to high skill, high wage, and high demand careers in the advanced manufacturing sectors. Upon graduation, these students will have the opportunity to continue their education alongside adults with the same educational pursuits. Both dual enrollment students and adult students pursuing a Mechatronics diploma will have the opportunity to participate in work-based learning to enhance their experiences and knowledge.

This grant will bring much needed equipment and training to students who will receive the benefit of earning college credit while simultaneously completing their high school education. This pipeline will be beneficial to shortening the time necessary for these students to complete a full Mechatronics diploma or degree at any number of TBR institutions that offer Mechatronics programs of study, including TCAT Dickson, Austin Peay State University, Nashville State Community College, and Columbia State Community College.

Graduates with the knowledge of Mechatronics will be of great benefit to the regional labor market, both to fill current positions and to attract new industries to locate in our communities. Mechatronics graduates will reduce the skills gap felt by many industries who are seeking employees with their skill sets.

We support the efforts of TCAT Dickson and its K-12 and business partners in developing this pipeline effort to develop skilled labor. We appreciate your consideration of funding this request.

Sincerely,

A handwritten signature in cursive script that reads "Brenda Pfeiffer".

Brenda Pfeiffer
Executive Director

Cc: Steve Graves, Chairman
Brad Martin
Rob Mitchell



**CHEATHAM
COUNTY**

*A great place
to raise a family*

County Mayor

David McCullough

david.mccullough@cheathamcountyttn.gov

Phone (615) 792-4316

Fax (615) 792-2001

July 22, 2016

Mr. Curt Johnston
Tennessee Higher Education Commission
404 James Robertson Parkway, Suite 1900
Nashville, Tennessee 37243-0830

Dear Mr. Johnston:

This letter is in support of the Mechatronics – Building a Pipeline from Dual Enrollment to Postsecondary to Work-based Learning grant application being submitted by the Tennessee College of Applied Technology – Dickson in collaboration with the Cheatham County JECDB. In my role as mayor, I see how this proposed project will not only benefit Cheatham County students, but will also benefit the region's employers with an enhanced labor force.

This grant will be used to develop dual enrollment programs for secondary students who have limited access to training that leads to high skill, high wage, and high demand careers in the advanced manufacturing sectors. Upon graduation, these students will have the opportunity to continue their education alongside adults with the same educational pursuits. Both dual enrollment students and adult students pursuing a Mechatronics diploma will have the opportunity to participate in work-based learning to enhance their experiences and knowledge.

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We support the efforts of TCAT Dickson and its K-12 and business partners in developing this pipeline effort to develop skilled labor. We appreciate your consideration of funding this request.

Sincerely,

David McCullough
Cheatham County Mayor

Mayor Bob Rial

Dickson County Tennessee

July 25, 2016

Mr. Curt Johnston
Tennessee Higher Education Commission
404 James Robertson Parkway, Suite 1900
Nashville, Tennessee 37243-0830

Dear Mr. Johnston:

I am writing this letter in full support for the Mechatronics – Building a Pipeline from Dual Enrollment to Postsecondary to Work-based Learning Grant Application being submitted by the Tennessee College of Applied Technology – Dickson.

This grant will bring much needed training and equipment to students who will receive the benefit of earning college credit while simultaneously completing their high school education. It will also benefit those students who have limited access to training that leads to high skill, high wage, and high demand careers in the advanced manufacturing sectors. This pipeline will shorten the time necessary for these students to complete a full Mechatronics diploma or degree at any number of TBR institutions that offer Mechatronics programs of study, including TCAT Dickson, Austin Peay State University, Nashville State Community College, and Columbia State Community College. Graduates with the knowledge of Mechatronics will be of great benefit to the regional labor market in both current positions and attracting new industries in our communities.

I appreciate your consideration of funding this request. Please do not hesitate to contact me if you have any questions.

Sincerely,



Bob Rial
County Mayor

BR/sm

HICKMAN COUNTY GOVERNMENT
OFFICE OF COUNTY MAYOR
114 NORTH CENTRAL AVENUE • SUITE 204
CENTERVILLE, TENNESSEE 37033-1454
PHONE (931) 729-2492 • FAX (931) 729-6150
MAYOR@HICKMANCO.COM

June, 24 2016

Dr. Russ Deaton
Tennessee Higher Education Commission
404 James Robertson Parkway, Suite 1900
Nashville, TN 37243-0830

Dear Dr. Deaton:

This letter is in support of the *Mechatronics – Building a Pipeline from Dual Enrollment to Postsecondary to Work-based Learning* grant application being submitted by the Tennessee College of Applied Technology – Dickson.

This grant will be used to develop dual enrollment programs for secondary students who have limited access to training that leads to high skill, high wage, and high demand careers in the advanced manufacturing sectors. Upon graduation, these students will have the opportunity to continue their education alongside adults with the same educational pursuits. Both dual enrollment students and adult students pursuing a Mechatronics diploma will have the opportunity to participate in work-based learning to enhance their experiences and knowledge.

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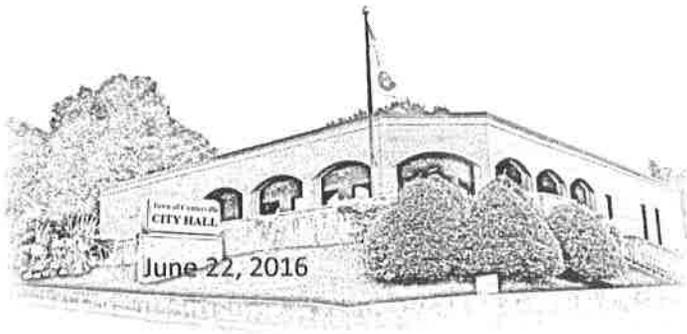
Graduates with the knowledge of Mechatronics will be of great benefit to the regional labor market, both to fill current positions and to attract new industries to locate in our communities. Mechatronics graduates will reduce the skills gap felt by many industries who are seeking employees with their skill sets.

We support the efforts of TCAT Dickson and its K-12 and business partners in developing this pipeline effort to develop skilled labor. We appreciate your consideration of funding this request.

Sincerely,



Shaun Lawson
Hickman County Mayor



TOWN OF CENTERVILLE

102 EAST SWAN STREET, CENTERVILLE, TN 37033 • 931.729.4246
GARY JACOBS, MAYOR

Dr. Russ Deaton
Tennessee Higher Education Commission
404 James Robertson Parkway, Suite 1900
Nashville, TN 37243-0830

Dear Dr. Deaton:

This letter is in support of the *Mechatronics – Building a Pipeline from Dual Enrollment to Postsecondary to Work-based Learning* grant application being submitted by the Tennessee College of Applied Technology – Dickson.

This grant will be used to develop dual enrollment programs for secondary students who have limited access to training that leads to high skill, high wage, and high demand careers in the advanced manufacturing sectors. Upon graduation, these students will have the opportunity to continue their education alongside adults with the same educational pursuits. Both dual enrollment students and adult students pursuing a Mechatronics diploma will have the opportunity to participate in work-based learning to enhance their experiences and knowledge.

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Graduates with the knowledge of Mechatronics will be of great benefit to the regional labor market, both to fill current positions and to attract new industries to locate in our communities. Mechatronics graduates will reduce the skills gap felt by many industries who are seeking employees with their skill sets.

We support the efforts of TCAT Dickson and its K-12 and business partners in developing this pipeline effort to develop skilled labor. We appreciate your consideration of funding this request.

Sincerely,

Gary Jacobs
Mayor

Dickson County
Chamber of Commerce



July 26, 2016

Mr. Curt Johnston
Tennessee Higher Education Commission
404 James Robertson Parkway, Suite 1900
Nashville, Tennessee 37243-0830

Dear Mr. Johnston:

I am writing you this letter of support for the Mechatronics – Building a Pipeline from Dual Enrollment to Postsecondary to Work-based Learning grant application being submitted by the Tennessee College of Applied Technology – Dickson.

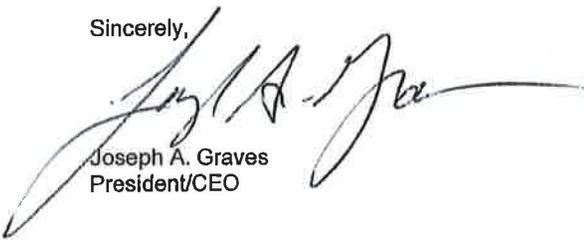
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This grant will bring much needed equipment and training to students who will receive the benefit of earning college credit while simultaneously completing their high school education. This pipeline will be beneficial to shortening the time necessary for these students to complete a full Mechatronics diploma or degree.

Several industries in Dickson County have announced or are preparing to announce workforce expansions. One industry will be hiring 75 employees due to an expansion. These new employees, respectively, will require a skill set in Mechatronics. As a community, as a region and as a State, we must attempt to meet the current and future needs of our employers and funding this grant request will help to accomplish this.

We appreciate your consideration of funding this request and, if you have any question, please do not hesitate to contact me.

Sincerely,


Joseph A. Graves
President/CEO



It pays to be local!

Live here...Buy Here...Thrive Here!

June 22, 2016

Dr. Russ Deaton
Tennessee Higher Education Commission
404 James Robertson Parkway, Suite 1900
Nashville, TN 37243-0830

Dear Dr. Deaton:

This letter is in support of the *Mechatronics – Building a Pipeline from Dual Enrollment to Postsecondary to Work-based Learning* grant application being submitted by the Tennessee College of Applied Technology – Dickson.

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We support the efforts of TCAT Dickson and its K-12 and business partners in developing this pipeline effort to develop skilled labor. We appreciate your consideration of funding this request.

Sincerely,

Mandy King
Executive Director