

Contributors:

Marty Kamimoto, Automotive Technology Instructor/Coordinator
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 Brett Camacho, Advanced Fabrication /Department Chair/Welding Instructor
 Julie Lynes, Counselor
 Becky Barabe, Dean of Applied Technology Division

Automotive Technology Alternative Fueled Vehicle (AFV)

CTE NARRATIVE TEMPLATE for a (credit) Certificate of Achievement

ITEM1: Program Goals and Objectives

The Fresno City College **Automotive Technology Alternative Fueled Vehicle (AFV) Certificate** is designed to provide alternative fueled vehicle education and training in the service, maintenance, diagnosis and repair of Alternative Fueled Vehicles. The program consists of courses for vehicles powered by the internal combustible engines (**ICE**) with any of the following fuel sources: Gasoline, Ethanol, Methanol, Liquefied Petroleum Gas (**LPG**), Compressed Natural Gas (**CNG**), Liquefied Natural Gas (**LNG**), Diesel, and Biodiesel. These courses will form a new certificate program that will expose students to the most advanced and up-to-date service, maintenance, diagnosis and repair procedures for these Alternative Fueled Vehicles. Successful completion of the program could lead to salary advancement as an Alternative Fueled Vehicle Service Technician. The **Automotive Technology Alternative Fueled Vehicle (AFV) Certificate** is consistent with and supports the college's mission of providing quality, innovative educational programs and support services directed toward the enhancement of student success, lifelong learning and the economic, social, and cultural development of our students and region. These programs and services fulfill a primary mission of the college, career and technical education.

PROGRAM LEARNING OUTCOMES

Upon satisfactory completion of this program, the student should be prepared to:

1. Students will create a diagnostic path for the Alternative Fueled Vehicle powertrain system to industry standards.
2. Students will recommend an appropriate repair procedure for a given vehicle Alternative Fueled Vehicle (AFV) powertrain system to industry standards.

ITEM 2: Catalog Description

Satisfactory completion of this curriculum prepares the student for employment as a hybrid service technician.

ITEM 3: Program Requirements

PROGRAM REQUIREMENTS

To earn a Certificate in this major, the student must complete the required 26 units below.

Certificate of Achievement: Automotive Alternative Fueled Vehicle Service Technician

AUTOT 9	Automotive Essentials	3
ATGM 52	Automotive Electrical Systems	5
Or		
AUTOT 52	Automotive Electrical Systems	5
ATGM 53	Engine Performance	5
Or		

AUTOT 53	Engine Performance	5
ATGM 57	Automotive HVAC and Advanced Electronics	5
Or		
AUTOT 57	Automotive HVAC and Advanced Electronics	5
AUTOT 171A	Introduction to Alternative Fueled Vehicles (AFVs)	2
AUTOT 171B	Service and Maintenance to Alternative Fueled Vehicles (AFVs)	2
AUTOT 171C	Diagnosis and Repair to Alternative Fueled Vehicles (AFVs)	2
AUTOT 19	Vocational Work Experience	2

Dept. Name/#	Name	Units	Sequence
AUTOT 9	Automotive Essentials	3	Year 1 Fall
ATGM 52	Automotive Electrical Systems	5	Year 1 Fall
Or			
AUTOT 52	Automotive Electrical Systems	5	Year 1 Fall
ATGM 53	Engine Performance	5	Year 1 Fall
Or			
AUTOT 53	Engine Performance	5	Year 1 Fall
ATGM 57	Automotive HVAC and Advanced Electronics	5	Year 1 Spring
Or			
AUTOT 57	Automotive HVAC and Advanced Electronics	5	Year 1 Spring
AUTOT 171A	Introduction to Alternative Fueled Vehicles (AFVs)	2	Year 1 Summer
AUTOT 171B	Service and Maintenance to Alternative Fueled Vehicles (AFVs)	2	Year 1 Summer
AUTOT 171C	Diagnosis and Repair to Alternative Fueled Vehicles (AFVs)	2	Year 1 Summer
AUTOT 19	Vocational Work Experience	2	Year 1 Summer

TOTAL UNITS: 26 units

Proposed Sequence:

Year 1, Fall = 13 units

Year 1, Spring = 5 units

Year 1, Summer = 8 units

TOTAL UNITS: 26 units

ITEM 4: Master Planning

The Automotive Service Industry represents a major portion of employment in the Fresno area and the greater San Joaquin Valley. Currently, Fresno City College offers training in specific areas of engine mechanical, transmission/transaxle, differentials, axles, transfer cases, electrical, heating, ventilation and air conditioning (HVAC), brakes, steering, suspension, wheel alignment service, and tire/wheel service. However, there is an absence of a more advanced platform of training that meets the Alternative Fueled Vehicle industry needs. This new focus on Alternative Fueled Vehicles will offer an advanced-level approach for students to develop pathways of training for careers in these areas. In addition, this new program will offer more distinct directions and options for students seeking the next level of advanced automotive training and/or local automotive service facilities in the area that currently send their Intermediate (Skill Level B) and Advanced (Skill Level A) employees to Fresno City College to be enrolled in classes for advanced-level industry training with the possibility of earning a certificate.

The Fresno City College Applied Technology Division is the sponsoring instructional program. The program will be located on the Fresno City College Campus and rely on the rich history, expertise and capacity of Certified Automotive Technology Instructors will teach the program courses. Presently, there is adequate financial support in place to support the current program and this proposed new certificate.

Fresno City College faculty maintain an active relationship with local Automotive Service Facilities (Central Valley GM Dealers, ACDelco Professional Service Centers, Mopar/FCA Dealers, Fresno/Clovis New Car Dealers, Automotive Service Council - ASC Chapter 25) located in the Central San Joaquin Valley. The proposed **Automotive Technology Alternative Fueled Vehicle Certificate** as a program, brings together the most advanced knowledge and skill needs required of the most frequently hired intermediate (Skill Level B) to advanced level (Skill Level A) employment opportunities such as: Shop Foreman, Quick Service Technician, Automotive Master Technician, and/or Automotive Specialty Technician and therefore, appropriate to the objectives and conditions of higher education and community college education in California pursuant to Title 5 sections 55130(b) (6) and 55130(b) (7).

The Automotive Alternative Fueled Vehicle Service Technician Program will operate primarily out of the FCC Applied Technology Department: T-100 and T-200 Buildings. Open enrollment will be adhered to through observance of traditional college wide registration and enrollment practice available to all students seeking enrollment into college classes at Fresno City College – classes and program information will be published in the catalog and semester schedules for students seeking studies in Applied Technology. No additional student selection criteria are in place; this certificate complies with California Code of Regulations, Title 5, sections 55201 and 58106.

The FCC Applied Technology Division maintains active communication and employer relationship with local automotive service facilities. Input from local employers validate the need and justification for the **Automotive Technology Alternative Fueled Vehicle Certificate** aims to provide. The Fresno City College Automotive Technology Program is NATEF (National Automotive Technician Education Foundation) certified, which requires a minimum of two (2) annual Advisory Committee Meetings per year [[advisory minutes attached](#)]. FCC has also collected information in support for the new **Automotive Technology Alternative Fueled Vehicle Certificate** from its participation in local and regional meetings that have included:

- Central Valley Parts and Service Manager's Meetings
- Mopar CAP Local Stakeholders Meetings
- Automotive Service Council – Chapter 25 Meetings
- General Motors Automotive Service Educational Program (GM ASEP) – Western Region

[[Report attached](#)] Finally, the FCC Applied Technology Department further evaluated a response to the need based on the analysis of local employer internal training programs presently enrolling their employees in FCC Automotive Technology courses each year.

Automotive Technology Advisory Committee:

Marty Kamimoto	FCC Automotive Technology Instructor/Coordinator
Becky Barabe	FCC Applied Technology Division Dean
Julie Lynes	FCC Counseling
Brett Camacho	FCC Advance Fabrication Department Chair/Welding Instructor
Maria Hernandez	FCC – Automotive Technology Instructor
Kirk Bigelow	Gill Auto Center – Service & Parts Director
Beverly Bowling	Hedrick’s Chevrolet – Service Manager
Jesse Mincer	Hunter Engineering Company – Trainer/Sales Rep.
Danny Mincer	Hunter Engineering Company – Service Technician
Jason Mullikin	Clovis High School – Instructor/FCC Instructor
Michael Chicconi	FCC Automotive Technology Instructor
Matt Starry	FCC Automotive Technology Instructor

ITEM 5: Enrollment and Completer Projections

As a new program the FCC Applied Technology Division estimates certificate enrollment will grow to 30 students in its program courses within the first two years. The college anticipates the current program will achieve 10 completers by its 2nd year and grow this completion rate through its fifth year of

operation to 25 completers per year. Students will enroll into existing courses in the FCC Automotive Technology Department.

Course	Course Title	2014 - 2015		2015 - 2016	
		Annual Sections	Annual Enrollment	Annual Sections	Annual Enrollment
AUTOT 9	Automotive Essentials	14	294	14	255
AUTOT 52	Automotive Electrical Systems	2	54	2	41
AUTOT 53	Engine Performance	2	53	2	33
AUTOT 57	Automotive HVAC and Advanced Electronics	1	22	2	15
AUTOT 171A	Introduction to Alternative Fueled Vehicles (AFVs)				
AUTOT 171B	Service and Maintenance to Alternative Fueled Vehicles (AFVs)				
AUTOT 171C	Diagnosis and Repair to Alternative Fueled Vehicles (AFVs)				
AUTOT 19	Vocational Work Experience	4	109	4	65

Courses scheduled but never offered

Career Technical Education – Labor Review Labor Market Information has been evaluated. The EMSI economic analysis of data includes local, sub-region, Central San Joaquin Valley region and state level data [[study attached](#)]. In all sets of data, trends have indicated a steady need for local and regional **Automotive Service Technicians and Mechanics**. Specifically, the data illustrated below is projecting,

251 jobs between 2015 and 2025 (an average of 25 jobs annually) a 6.7% growth in related Automotive Service Technicians and Mechanics occupations. The employment range for the associated occupations are listed between \$11.75/hr. and \$19.33/hr. The analysis indicates a strong need for programs that can fill this need.

Automotive Service Technicians and Mechanics in 5 Counties

Automotive Service Technicians and Mechanics (SOC 49-3023): Diagnose, adjust, repair, or overhaul automotive vehicles. Excludes "Automotive Body and Related Repairers" (49-3021), "Bus and Truck Mechanics and Diesel Engine Specialists" (49-3031), and "Electronic Equipment Installers and Repairers, Motor Vehicles" (49-2096).

Sample of Reported Job Titles: Transmission Rebuilder, Service Technician/Mechanic, Truck Technician, Shop Foreman, Automobile Mechanic (Auto Mechanic) Lube Technician, Trim Technician, Quick Service Technician

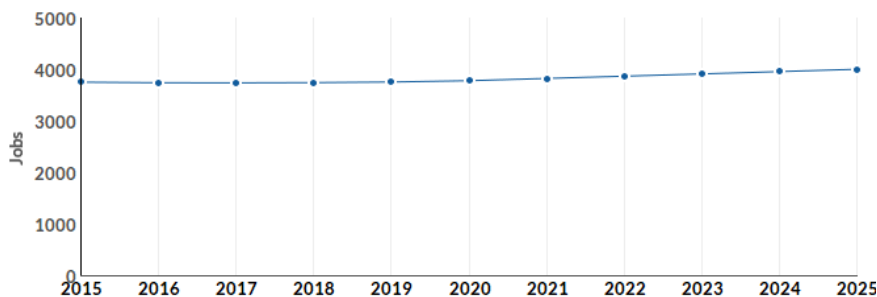
Related O*NET Occupations: Automotive Master Mechanics (49-3023.01) Automotive Specialty Technicians (49-3023.02)

Occupation Summary for Automotive Service Technicians and Mechanics

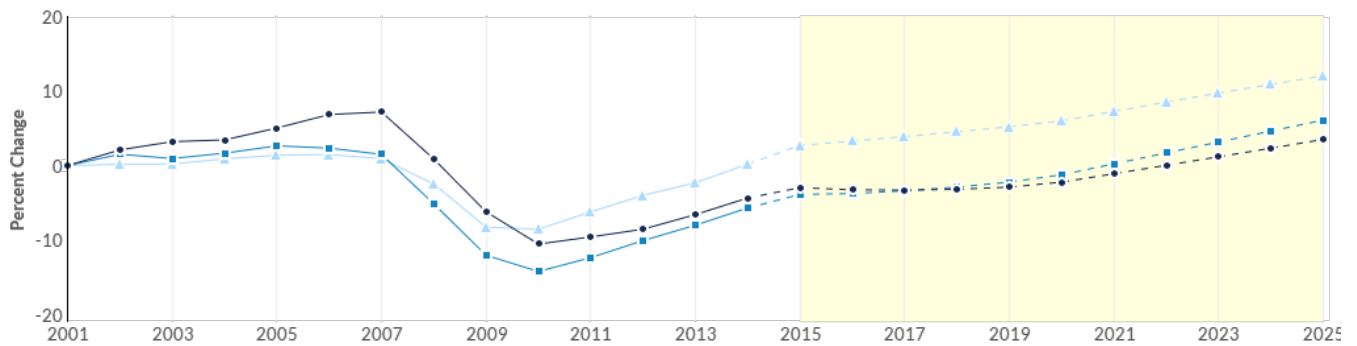
3,759 Jobs (2015) 3% below National average	6.7% % Change (2015-2025) Nation: 9.1%	\$15.22/hr. Median Hourly Earnings Nation: \$16.67/hr.
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Growth for Automotive Service Technicians and Mechanics (49-3023)

3,759 2015 Jobs	4,010 2025 Jobs	251 Change (2015-2025)	6.7% % Change (2015-2025)
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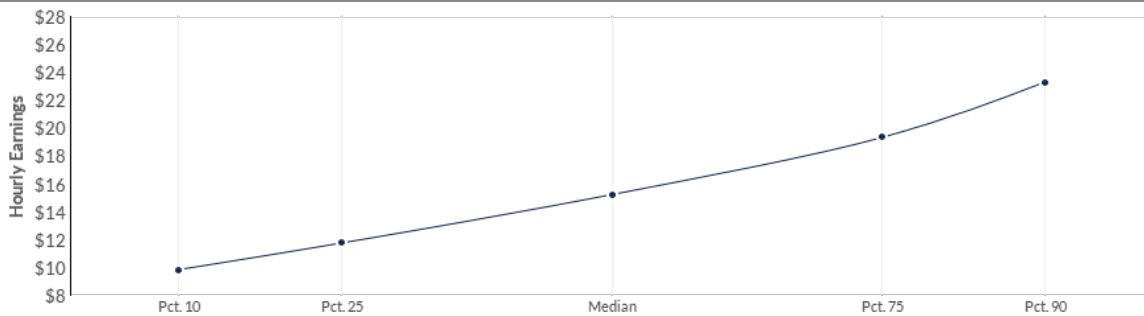
Regional Trends



	Region	2015 Jobs	2025 Jobs	Change	% Change
●	Region	3,759	4,010	251	6.7%
●	State	81,901	90,398	8,497	10.4%
●	Nation	788,950	860,559	71,609	9.1%

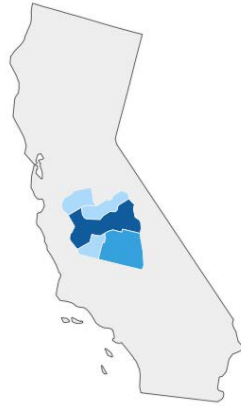
Percentile Earnings for Automotive Service Technicians and Mechanics (49-3023)

\$11.75/hr. 25th Percentile Earnings	\$15.22/hr. Median Earnings	\$19.33/hr. 75th Percentile Earnings
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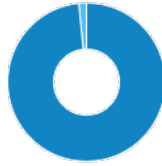
Regional Trends

Regional Breakdown



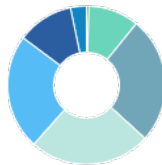
County	2025 Jobs
Fresno County, CA	2,373
Tulare County, CA	748
Merced County, CA	384
Madera County, CA	272
Kings County, CA	233

Occupation Gender Breakdown



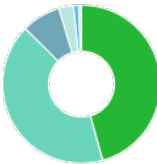
	Gender	2015 Jobs	2015 Percent
•	Males	3,700	98.4%
•	Females	60	1.6%

Occupation Age Breakdown



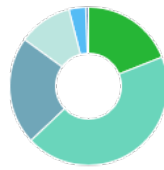
	Age	2015 Jobs	2015 Percent
•	14-18	19	0.5%
•	19-24	389	10.4%
•	25-34	973	25.9%
•	35-44	934	24.9%
•	45-54	886	23.6%
•	55-64	434	11.6%
•	65+	123	3.3%








Occupation Race/Ethnicity Breakdown



	Race/Ethnicity	2015 Jobs	2015 Percent
●	White	1,717	45.7%
●	Hispanic or Latino	1,566	41.7%
●	Asian	300	8.0%
●	Black or African American	113	3.0%
●	Two or More Races	39	1.0%
●	American Indian or Alaska Native	14	0.4%
●	Native Hawaiian or Other Pacific Islander	10	0.3%

National Educational Attainment



	Education Level	2015 Percent
●	Less than high school diploma	19.0% 
●	High school diploma or equivalent	43.9% 
●	Some college, no degree	22.0% 
●	Associate's degree	11.0% 
●	Bachelor's degree	3.4% 
●	Master's degree	0.5% 
●	Doctoral or professional degree	0.1% 

Occupational Programs

	1 Programs (2014)	130 Completions (2014)	175 Openings (2014)
CIP Code	Program		Completions (2014)
47.0604	Automobile/Automotive Technology/Technician		Mechanics 130

Industries Employing Automotive Service Technicians and Mechanics

Industry	Occupation Jobs in Industry (2015)	% of Occupation in Industry (2015)	% of Total Jobs in Industry (2015)
General Automotive Repair	1,236	32.9%	54.5%
New Car Dealers	788	21.0%	18.5%
Automotive Parts and Accessories Stores	281	7.5%	11.4%
Automotive Body, Paint, and Interior Repair and Maintenance	213	5.7%	15.4%
Used Car Dealers	142	3.8%	16.9%

FCC GM ASEP GENDER	2013-14		2014-15		change:	
	#	%	#	%	#	%
Female	2	3.6%	2	2.7%	0	0.0%
Male	54	96.4%	73	97.3%	19	35.2%
Not specified	0	0.0%	0	0.0%	0	N/A

ETHNICITY	2013-14		2014-15		change:	
	#	%	#	%	#	%
African-American/non-Hispanic	0	0.0%	0	0.0%	0	N/A
American Indian/Alaskan Native	0	0.0%	0	0.0%	0	N/A
Asian/Pacific Islander	9	16.1%	6	8.0%	-3	-33.3%
Hispanic	45	80.4%	57	76.0%	12	26.7%
White/non-Hispanic	2	3.6%	12	16.0%	10	500.0%
Unknown	0	0.0%	0	0.0%	0	N/A

AGE	2013-14		2014-15		change:	
	#	%	#	%	#	%
19 or less	14	25.0%	4	5.3%	-10	-71.4%
20-24	38	67.9%	47	62.7%	9	23.7%
25-29	4	7.1%	13	17.3%	9	225.0%
30-34	0	0.0%	8	10.7%	8	N/A
35-39	0	0.0%	3	4.0%	3	N/A
40-49	0	0.0%	0	0.0%	0	N/A
50+	0	0.0%	0	0.0%	0	N/A
Age not available	0	0.0%	0	0.0%	0	N/A

	2013-14	2014-15	change:	
GPA	2.78	2.72	-0.06	-2.1%
Retention	100.0%	100.0%	0.0%	0.0%
Success	98.2%	94.7%	-3.5%	-3.6%

FCC AUTO TECH	2013-14		2014-15		change:	
	#	%	#	%	#	%
GENDER						
Female	49	5.8%	42	5.4%	-7	-14.3%
Male	777	92.4%	720	92.7%	-57	-7.3%
Not specified	15	1.8%	15	1.9%	0	0.0%

ETHNICITY	2013-14		2014-15		change:	
	#	%	#	%	#	%
African-American/non-Hispanic	42	5.0%	41	5.3%	-1	-2.4%
American Indian/Alaskan Native	5	0.6%	5	0.6%	0	0.0%
Asian/Pacific Islander	146	17.4%	162	20.8%	16	11.0%
Hispanic	506	60.2%	461	59.3%	-45	-8.9%
White/non-Hispanic	129	15.3%	96	12.4%	-33	-25.6%
Unknown	13	1.5%	12	1.5%	-1	-7.7%

AGE	2013-14		2014-15		change:	
	#	%	#	%	#	%
19 or less	172	20.5%	130	16.7%	-42	-24.4%
20-24	429	51.0%	441	56.8%	12	2.8%
25-29	121	14.4%	103	13.3%	-18	-14.9%
30-34	56	6.7%	40	5.1%	-16	-28.6%
35-39	22	2.6%	35	4.5%	13	59.1%
40-49	16	1.9%	15	1.9%	-1	-6.3%
50+	25	3.0%	13	1.7%	-12	-48.0%
Age not available	0	0.0%	0	0.0%	0	N/A

GPA	2013-14		2014-15		change:	
GPA	1.96		2.07		0.12	6.0%
Retention	95.8%		95.6%		-0.2%	-0.2%
Success	62.2%		65.8%		3.6%	5.8%

ITEM 6: Place of Program in Curriculum/Similar Programs

The **Automotive Technology Alternative Fueled Vehicle Certificate** will provide an opportunity to offer a new certificate that responds to advanced technical skills required by the majority of local automotive service facilities employers for intermediate-level (Skill Level B) and advanced-level (Skill Level A) technician positions. These specialized programs are appropriate if the student/technician has 3-5 years of related experience in industry. The **Automotive Technology Alternative Fueled Vehicle Certificate** is designed to target students with the experience in industry and seeking an advanced set of skills to enhance their careers as high-level service technician personnel. The program is a better option for students/technicians seeking employment in the industry who have experience working in various automotive service facilities.

ITEM 7: Similar Programs at Other Colleges in Service Area

The **Automotive Technology Alternative Fueled Vehicle Certificate** is a new offering for high demand. In the Fresno region, there are competing programs:

1. Fresno City College Career and Technology Center, Automotive Mechanic Program
2. Reedley College, Automotive Technology Program
3. College of the Sequoias, Automotive Technology Program
4. Merced College, Automotive Technology Program
5. Modesto Community College, Automotive Technology Program
6. Bakersfield College, Automotive Technology Program

**Automotive Technology Program
FCC GM ASEP Program
Advisory Meeting Agenda
December 21, 2016**

Time: 5:30 PM
Building: T-100
Toom: T-110

Fresno City College Mission:

Fresno City College, California's first community college, provides quality, innovative educational programs and support services directed toward the enhancement of student success, lifelong learning and the economic, social, and cultural development of our students and region.

Introductions:

Marty Kamimoto – FCC, Maria Hernandez – FCC, Matt Starry – FCC, Michael Chicconi – FCC, Jesse Mincer – Hunter Engineering, Danny Mincer – Hunter Engineering, Jason Mullikin – FCC/CHS CUSD, Richard Latona – Midstate Automotive Equipment, James Smith – Midstate Automotive Equipment, Carlos Menchu – AES Wave of Fresno, Jorge Mechu – AES Wave of Fresno, Tim Kacerek – Matco Tools.

Agenda:

1. Title Five - Review New Certificate specifications for HEV and AFV
Proposal
2. Budget - Review current budget
3. NATEF Self-Evaluation
4. Recruitment efforts – FCC GM ASEP, FCC AUTOT/Mopar CAP Local,
HEV Certificate of Achievement (CA) , and AFV Certificate of
Achievement (CA)
5. Tour of facility

**Automotive Technology Program
FCC GM ASEP Program
Advisory Meeting Agenda
December 21, 2016**

**Time: 5:30 PM
Building: T-100
Toom: T-110**

Minutes

The bi-annual Advisory Committee meeting for the Automotive Technology/GM ASEP Programs were held on December 21, 2016 at 5:30 pm in the Fresno City College Applied Technology Division room T-110.

Committee members present:

Marty Kamimoto – FCC, Maria Hernandez – FCC, Matt Starry – FCC, Michael Chicconi – FCC, Jesse Mincer – Hunter Engineering, Danny Mincer – Hunter Engineering, Jason Mullikin – FCC/CHS CUSD, Richard Latona – Midstate Automotive Equipment, James Smith – Midstate Automotive Equipment, Carlos Menchu – AES Wave of Fresno, Jorge Mechu – AES Wave of Fresno, Tim Kacerek – Matco Tools.

1. Self-Introductions:

2. Title Five - Review New Certificate specifications

Review SLO's Student Learning Outcomes for:

**Automotive Advanced Technology Vehicle Service Technician Certificate
Automotive Alternative Fueled Vehicle Service Technician Certificate**

SLO's for: Automotive Advanced Technology Vehicle Service Technician Certificate

1. Compare Advanced Technology Vehicle measurements, specifications, diagnostic flow charts, service/repair procedures in automotive service information.
2. Operate to industry standards the appropriate Advanced Technology Vehicle machinery and/or equipment in the automotive laboratory.
3. Create a diagnostic path to address a customer concern for a given Advanced Technology Vehicle system fault.

SLO's for: Automotive Alternative Fueled Vehicle Service Technician Certificate

1. Compare Alternative Fueled Vehicle measurements, capacities, specifications, and service procedures in service information.
2. Operate to industry standards the appropriate Alternative Fueled Vehicle machinery and/or equipment in the automotive laboratory.
3. Create a diagnostic path to address a customer concern for a given Alternative Fueled Vehicle system fault.

3. Budget - Review current budgets:

XXO – General operating Budget = \$10,000.00

Strong Workforce Funding:

Laptops, Printers, and Environmental Systems Products (ESP) Generation 3 - Emission Inspection System (EIS) (Year 1: 2016-2017) = \$36,398.24

Automotive Lift Replacement/Update (Year 2: 2017-2018 Phase 1) = \$180,737.60

Educational Partnerships and Dual Enrollment Opportunities (Year 2: 2017-2018) = \$171,913.51

Perkins – Career Technology Education = \$40,000.00

4. NATEF Self-Evaluation – to be completed during tour of the facility
5. Recruitment efforts – Facebook, Brochures, FCC Web site, Career's Day, College Night, Career Tech Expo.
FCC GM ASEP
FCC AUTOT/Mopar CAP Local
HEV Certificate of Achievement (CA)
AFV Certificate of Achievement (CA)
6. Tour of the facility and completion of NATEF Self-Evaluation

Adjournment at 8:00 pm

