

**COMMUNITY COLLEGES**

SAN DIEGO & IMPERIAL COUNTIES

**CAREER EDUCATION**

## *Electric Vehicle Strategy*

*San Diego & Imperial Counties*

*Workforce Development Council*

*Sept 9, 2022*

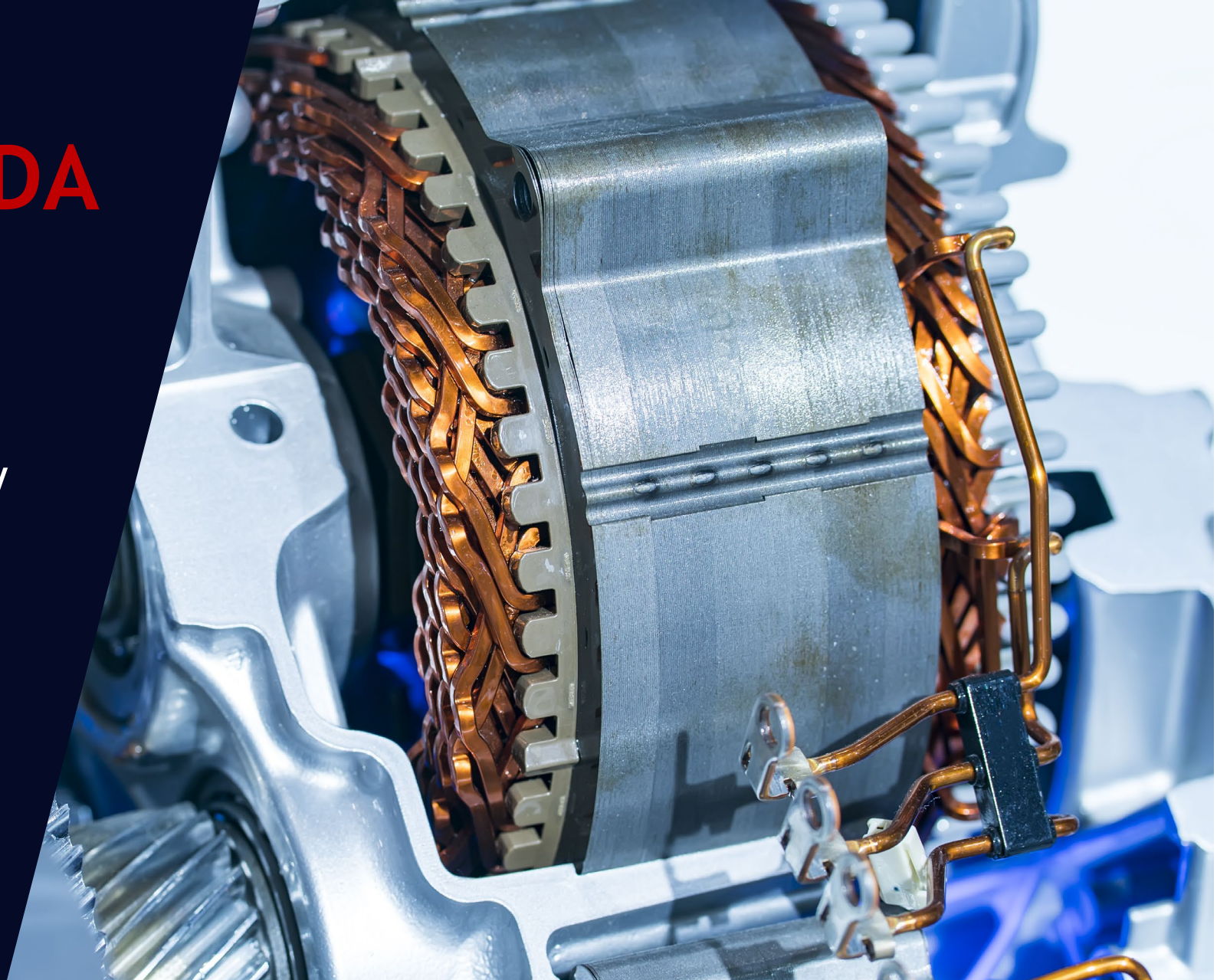
Jon Kropp, 2022



# TODAY'S AGENDA

## Electric Vehicle Strategy

- Electric Vehicles Overview (Jon)
- Methodology (Jon)
- Trends (Jon)
- Recommendations (Jon & Jannet)



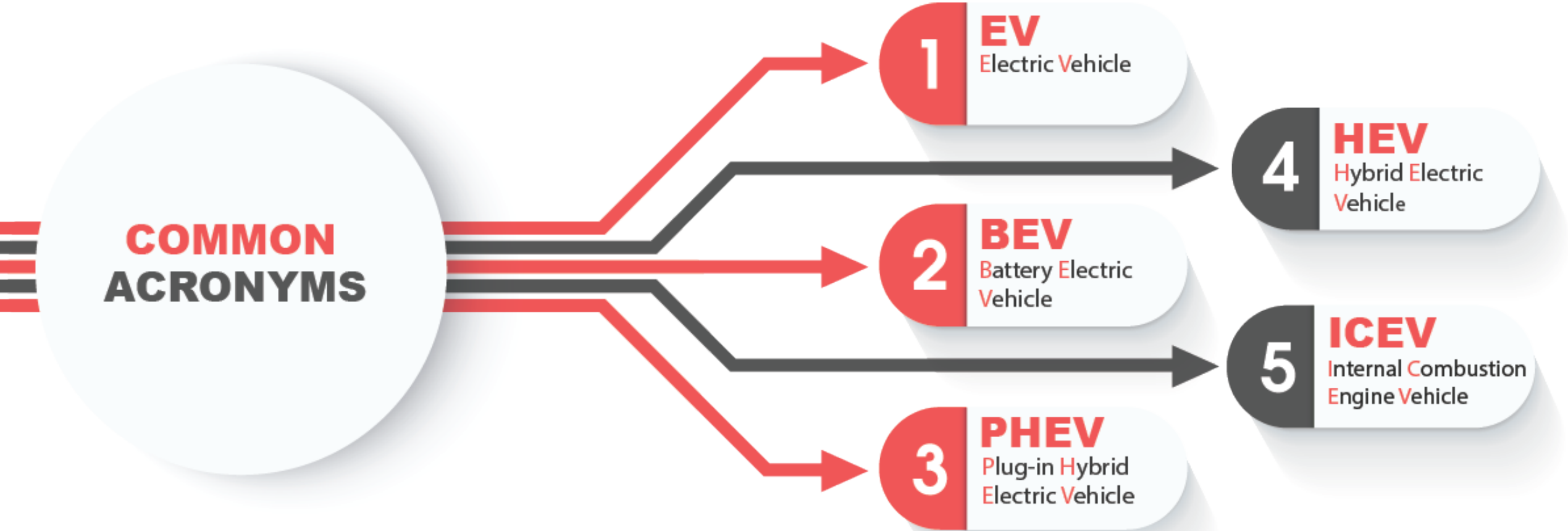
# EV Strategy Report

## Includes:

- EV Market Information
- Labor Market Information
  - COE (Supply, Demand, Occupation Info)
  - CARB + UC Transportation Study
- Employer Feedback Overview
- EV Education Strategy
- Appendix Resources



# COMMON ACRONYMS



# WHY **GO** ELECTRIC

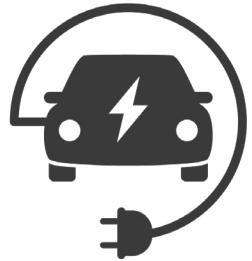
- Rising Demand
- Governor Newsom's Executive Order N-79-20
- California Air Resources Board (August 25, 22)
  - Advanced Clean Cars II Regulation (codifies & realizes N-79-20)



**1,214,516**  
CA EV SALES



**2,826,923**  
U.S. EV SALES



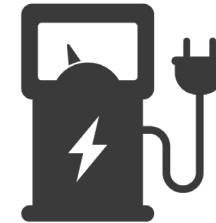
**115**  
CA MODELS  
AVAILABLE

## Quick Facts:

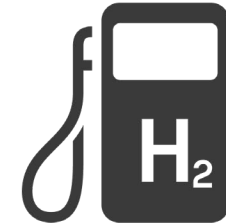
**#1 & #2** Top Selling Model in San Diego?  
**Tesla Model Y & Model 3**

**#2** Selling Brand in San Diego? **Tesla**

San Diego EV Sales Growth? Up **84% to 89%**  
depending on the Type (BEV, Hybrid, PHEV, etc.)  
from 2021 to 2022



**79,023**  
CA EV CHARGERS




**60**  
CA H2 CHARGERS


# LEGACY AUTO MAKER PLANS

**2025**   
⚡ Fiat (2025-2030)  
⚡ Mercedes-Benz (50% sales by 2025)  
⚡ Jaguar

**2026**   
⚡ Audi  
⚡ Mini (2026-2030 )

**2027**   
⚡ Alfa Romeo

**2030**   
⚡ Bentley  
⚡ Ford (Europe 2030, 40-50% global)  
⚡ Nissan  
⚡ Renault (90% by 2030)  
⚡ Rolls-Royce  
⚡ Volvo

**2035**   
⚡ Volkswagen  
⚡ General Motors

**2039**   
⚡ Land Rover (net-zero carbon business)

**2040**   
⚡ Honda (North America, China, Japan)  
⚡ Hyundai

**2050**   
⚡ Toyota 2050 (zero-emissions, hydrogen)

# REPORT & STRATEGY FOCUS



## AUTOMOTIVE SERVICE TECHNICIAN & MECHANICS (SOC 49-3023)

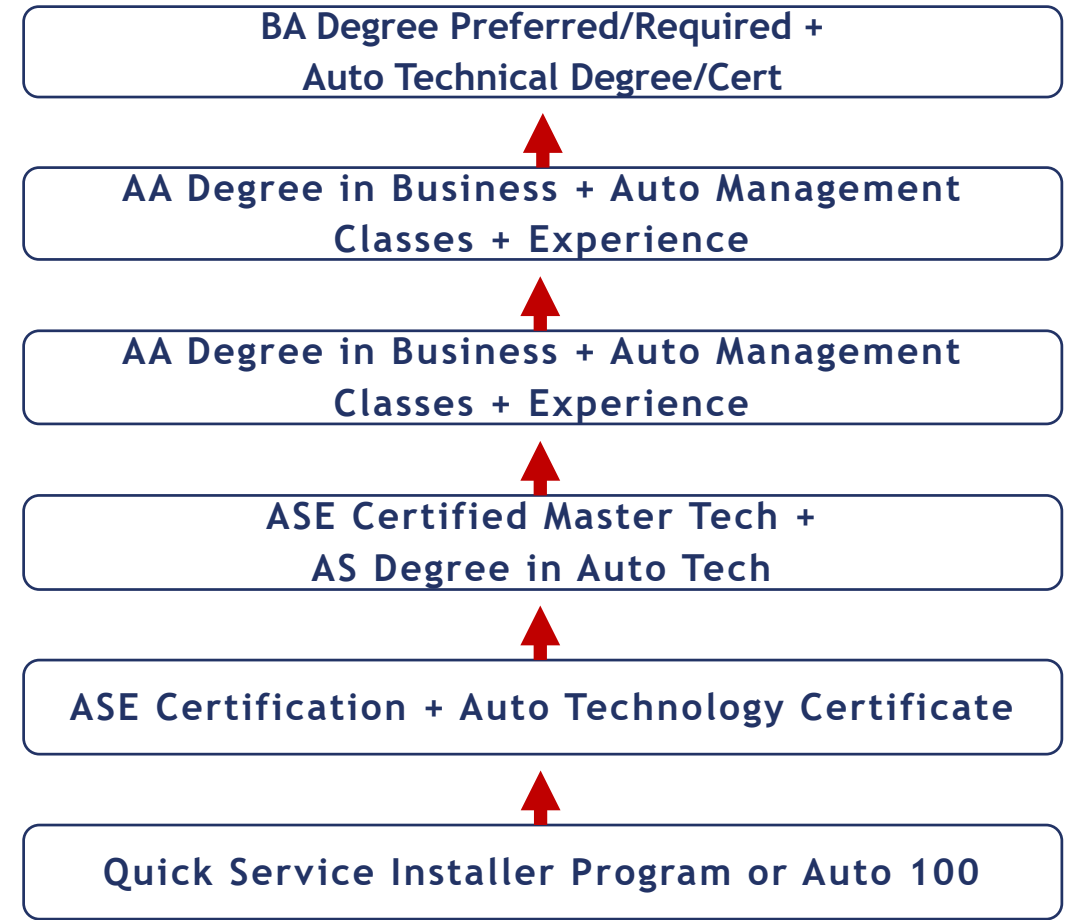
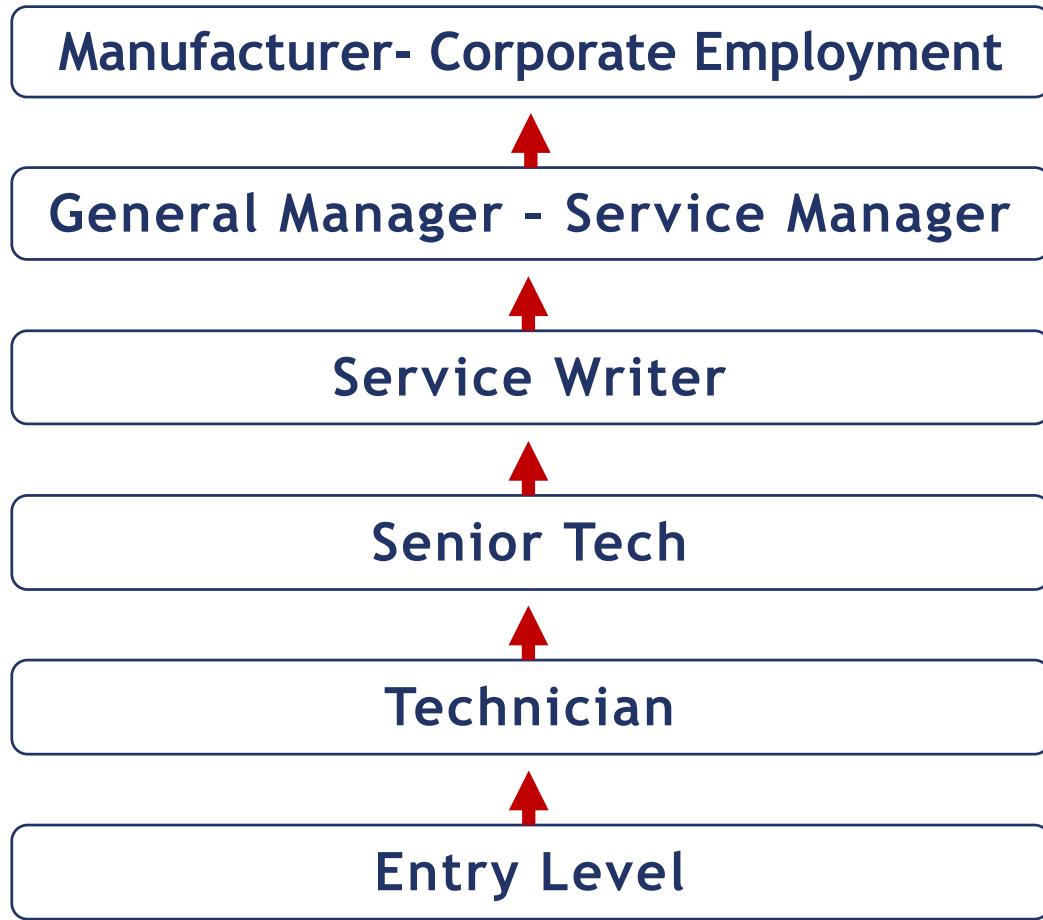
These individuals diagnose, adjust, repair, or overhaul automotive vehicles. Sample reported job titles include.

- Service Technician
- Quick Service Technician
- Mechanic
- Master Automotive Technician
- Automotive Drivability Technician
- Automotive Mechanic
- Heavy Line Technician

# TECHNICIAN CAREER LADDER

## CAREERS

## EDUCATION





# KNOWLEDGE, SKILLS, ABILITIES (KSAs)

Below represent the KSA's shared and gathered from our employer participants.

KNOWLEDGE, SKILLS AND ABILITIES		
SOFT SKILLS	TECHNICAL SKILLS	SPECIALIZED SKILLS
Problem Solving	Tires	Hybrid
Customer Service	Batteries	HVAC
Sales	Suspension	Electric motors, wiring and modules
Troubleshooting	Brakes	High Voltage Batteries
Management	Computer Systems	High Voltage Safety
Communications	ASE	Software diagnosis and Uploading
Operations	Preventative Maintenance	ADAS
Driving	Electrical Systems	
Trust	Hydraulics	
Leadership	Diagnosis	

# METHODOLOGY

- COE labor market information (LMI)
- Secondary research (reports & legislation)
  - Public Hearing to Consider the Proposed Advanced Clean Cars II Regulations (2022 Report)
  - Driving California's Emissions to Zero - Institute of Transportation Studies 2021 (UC Davis, UC Berkeley, UC Irvine, and UCLA)
- Primary research (interviews & surveys)
- Employer interactions, Mobilize California Conference

# EMPLOYER PARTICIPATION

## San Diego Specific

- Mossy Group
- Chula Vista Ford
- Poway Chrysler Dodge Jeep Ram
- Penske Lincoln
- Penske Ford

## Southern (OC) California

- Simpson Chevrolet
- Selman Chevrolet

## West Coast

- Green Transportation Summit & Expo

## Other

- San Diego New Car Dealer's Association
- Battle Motors

# EMPLOYER SURVEY DATA

**83%** of respondents agree that they see an increased need for more formal education, most indicating an associates degree

**66%** of respondents agree that ASE Certifications are *somewhat important* when choosing who to hire, while 16% responded with it is *very important*, and 1 employer did not respond

**100%** of respondents indicated there are not currently any industry certifications other ZEV related certifications they look for

**100%** of respondents indicated they are experiencing a shortage of technicians

**100%** of respondents agree that they expect the demand for technicians servicing EV and other zero emission vehicles to increase in the next 5-10 years.

# EMPLOYER SURVEY DATA

Most employers interviewed or surveyed agreed that they would like to see colleges provide more courses in **high voltage safety, basic and advanced electrical, electrical trouble shooting, and ADAS**. Additionally, employers indicated that they would like to see more critical thinking and logic, specifically for those who hope to pursue a career in EVs.

## Employer Provided Salary Ranges

Experience Level	Salary Range
Entry Level Technician	\$31,200 - \$72,000
Full-Time Technician (1-2 years)	\$52,000 - \$200,000
Service writer	\$48,000 - \$225,000

*The salary information is based on employer responses and include the lowest reported to the highest reported for each level of experience.*

# EMPLOYER QUOTES

*"GM is expecting to be produce 1 Million EV vehicles per year in the year 2025"*

*"I expect an increase in demand for qualified technicians. Many of today's technicians are reaching retirement age and others are just not interested in switching over from ICE repairs to EV repairs"*

*"My suggestion is to start now or sooner than the 5 years as aging techs in dealerships now are retiring and we need 100% trained techs now to start the wave of EV"*

# LOCAL EMPLOYERS

## New Car Dealers

109+ New Car Dealers in San Diego

## Independent Shops

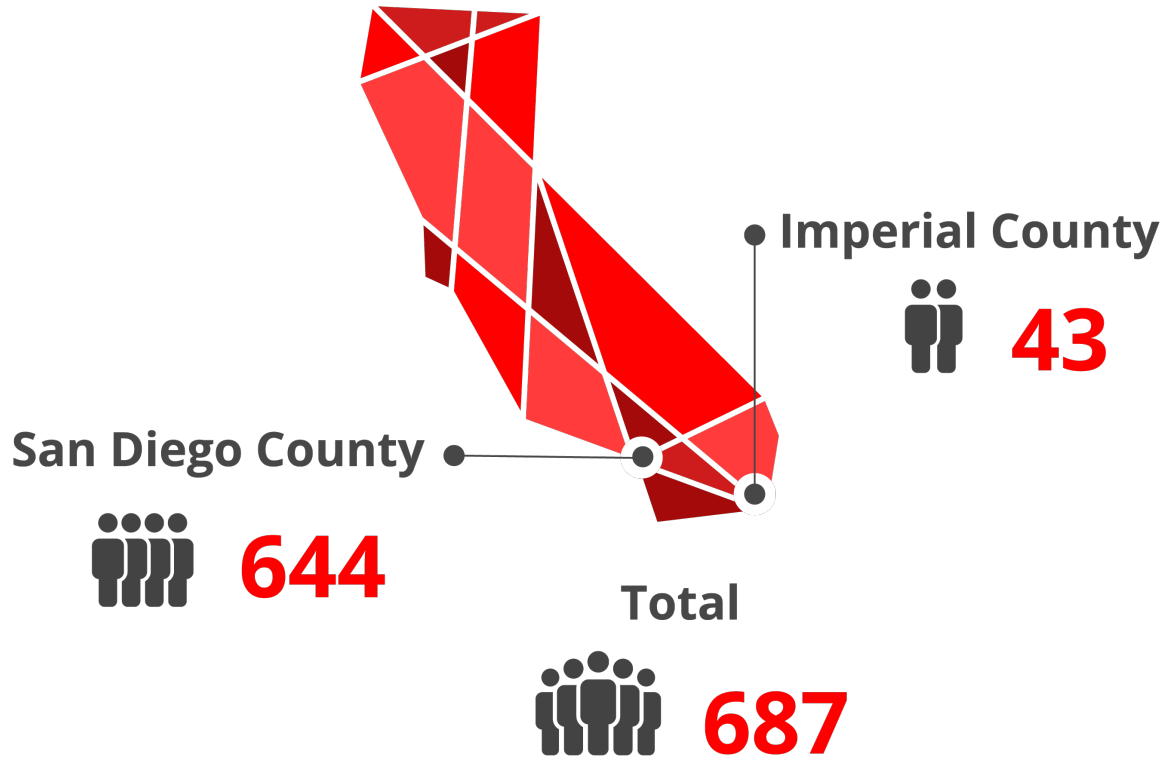
52+ Independent shops who participate in the Automotive Service Councils of California

## Manufacturers

- TransPower/Merritor
- Symbio North America
- Tesla (Direct to consumer model)

# DEMAND VS. SUPPLY

## Annual Openings



## Labor Demand Compared with Supply

Community Colleges & Other Postsecondary Educational Institutions	Demand (Annual Openings)	Supply (Annual Avg. Supply)	Supply Gap
San Diego - Imperial	687	392	295



# Other Labor **Market Information**

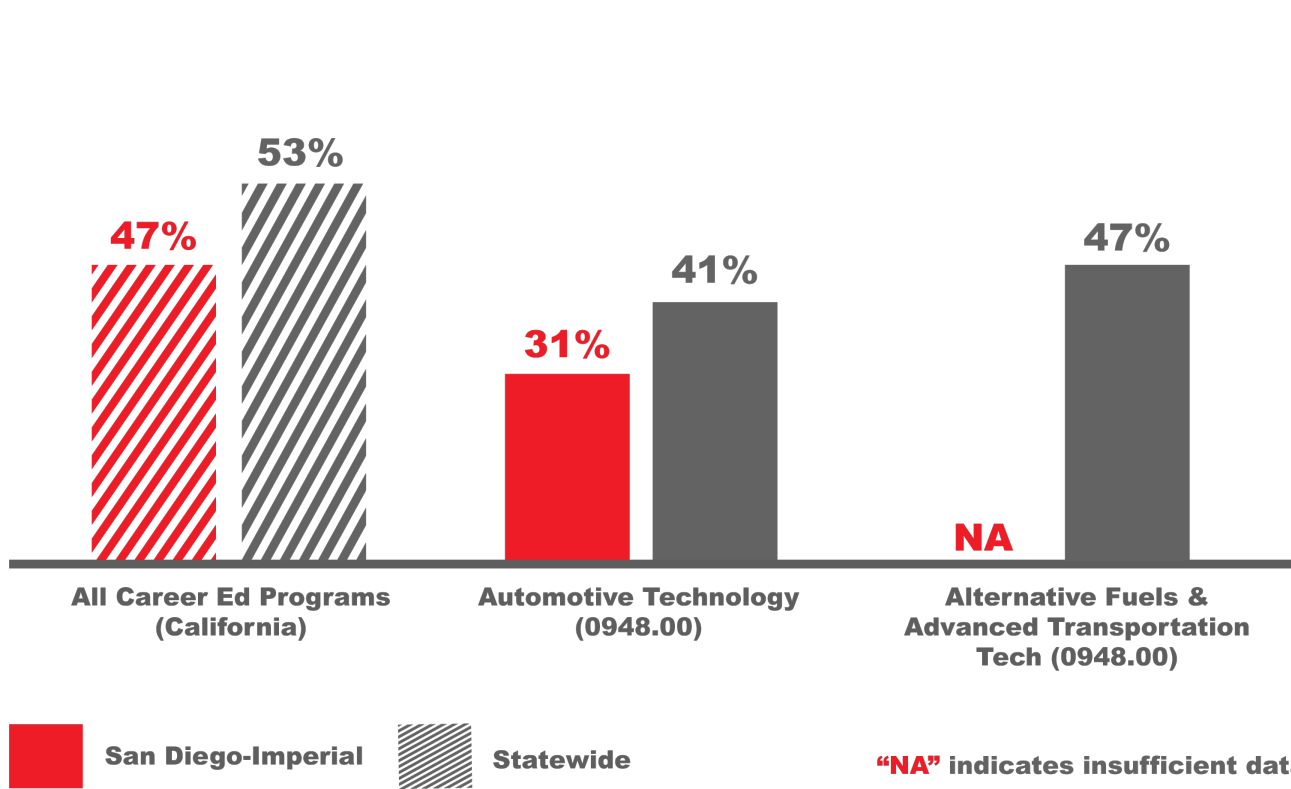
- 100% of local employers surveyed say they are experiencing a shortage in technicians.
- California Air Resources Board (CARB) published a report last month projecting that the Automotive Repair & Maintenance sector will see a contraction over around 127,800 workers between 2026 and 2040, with the largest 5 figure declines starting in 2030
- Driving California's Transportation Emissions to Zero, a University of California Institute of Transportation Study suggests we'll experience something more like -220,000 jobs by 2045 for Automotive Repair & Maintenance workers.

## **WHY?**

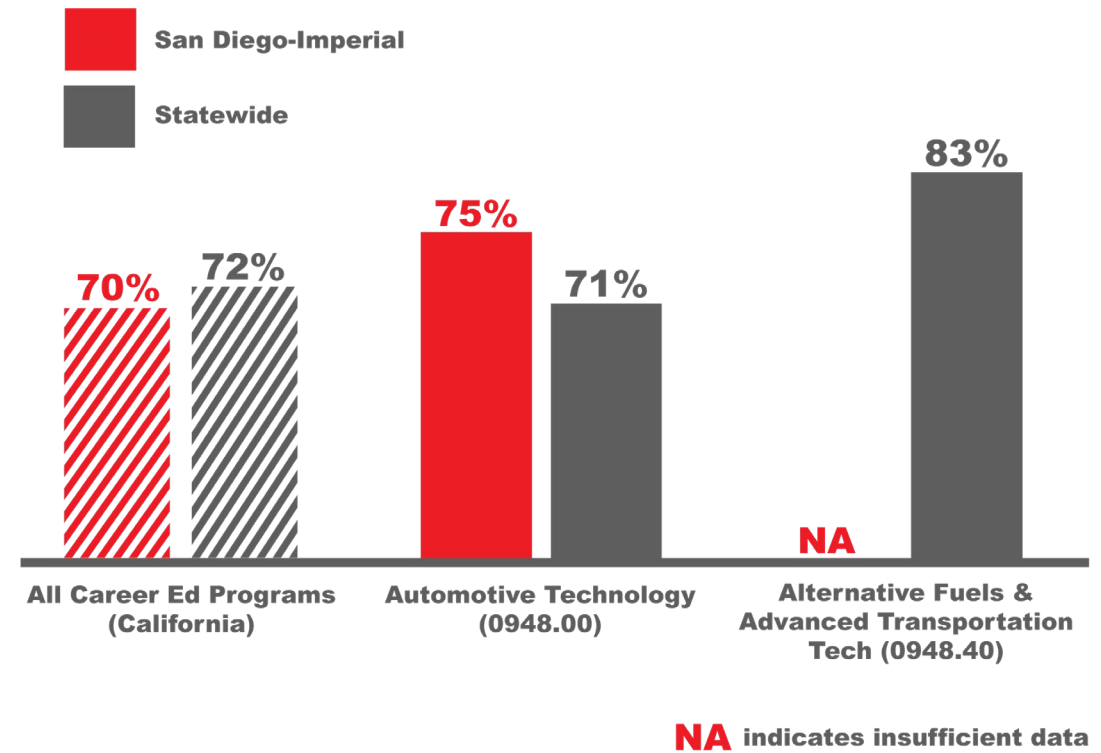
- *ZEVs are more efficient and have less moving parts thus requiring less maintenance and therefore, fewer maintenance jobs.*

# STUDENT OUTCOMES

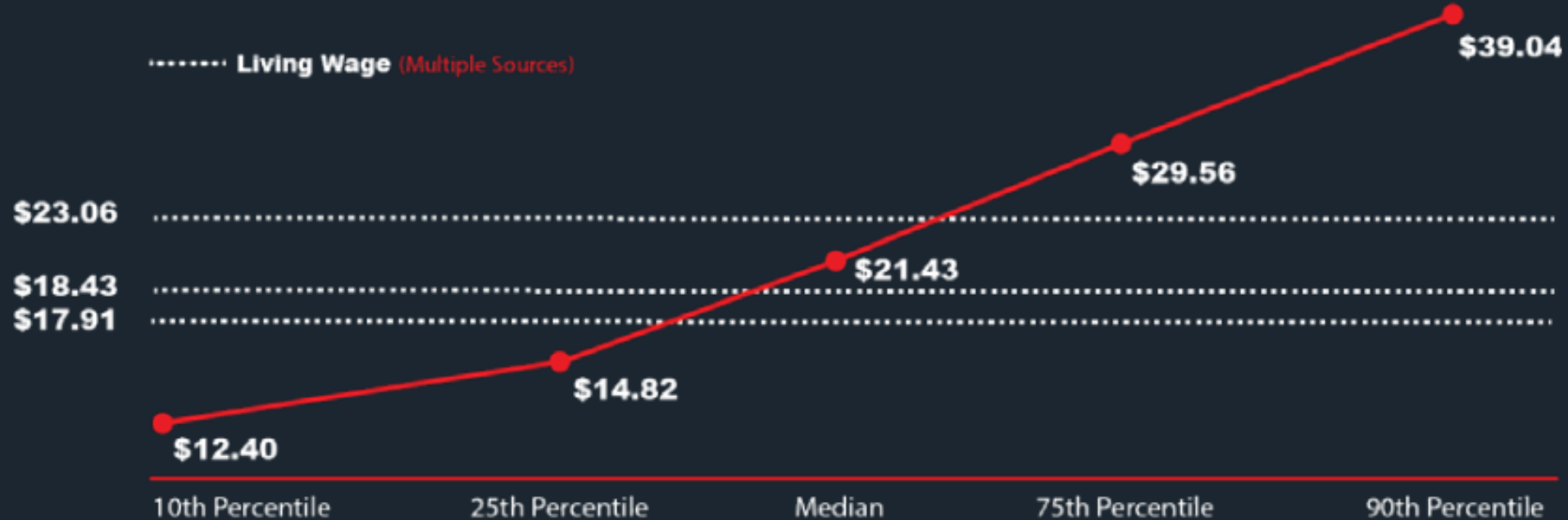
The Proportion of Students Who Earned a Living Wage by Program (PY18-19)



Percent of Students in a Job Closely Related to Field of Study by Program (PY17-18)



## AUTO SERVICE TECH WAGES (SAN DIEGO COUNTY)



### LIVING WAGES

- MIT Living Wage Calculator, Calculation for San Diego County \$23.06 (14)
- City of San Diego, Compliance Department, Office of Labor Standards Enforcement \$17.91 (15)
- Insight Center, Family Needs Calculator \$18.43 (16)

# CURRENT AUTOMOTIVE PROGRAMS

## Community Colleges



Cuyamaca College



Imperial Valley College



MiraCosta College



Palomar College



SD College of Continuing Education



SD Miramar College



Southwestern College

## Non Community Colleges



United Education Institute-Chula Vista

# COLLEGE **EV** MAPPING

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- Who's doing what in the EV Space
- Or who has plans to?

# EV PROGRAM MAPPING

## **MiraCosta College**

- Current EV course or program?
- Plans to develop or are developing an EV program?
- If funding was available would you apply?
- Advisory Committee Recommendation?

## **Palomar College**

- N** Current EV course or program?
- Plans to develop or are developing an EV program?
- If funding was available would you apply?
- Advisory Committee Recommendation?

## **Cuyamaca College**

- Current EV course or program?
- Plans to develop or are developing an EV program?
- If funding was available would you apply?
- Advisory Committee Recommendation?

## **Southwestern College**

- Current EV course or program?
- Plans to develop or are developing an EV program?
- If funding was available would you apply?
- Advisory Committee Recommendation?

# EV PROGRAM MAPPING CONT...

## **Miramar College**

- N** Current EV course or program?
- Y** Plans to develop or are developing an EV program?
- Y** If funding was available would you apply?
- Y** Advisory Committee Recommendation?

## **Imperial Valley College**

- N** Current EV course or program?
- ?** Plans to develop or are developing an EV program?
- Y** If funding was available would you apply?
- Y** Advisory Committee Recommendation?

## **San Diego Continuing Ed**

- N** Current EV course or program?
- Y** Plans to develop or are developing an EV program?
- Y** If funding was available would you apply?
- Y** Advisory Committee Recommendation?

# SECTOR STRATEGY

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- **Advisory Committees**
- **Professional Development**
- **Exploring Alternative Employment Pathways & Partnerships**
- **Marketing & Rebranding as a Technology Forward Program**
- **Curriculum Development & Program Improvement**



# CURRICULUM SUGGESTIONS

## CREDIT OPTIONS

The following courses can be considered as part of the certificate offered by a college, which aligns with the aforementioned ASE certifications:

### Course Recommendations

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Introduction to Automotive Technology (G1)

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Automotive Suspension, Steering, and Wheel Alignment (A4)

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Automotive Brake Systems (A5)

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Automotive Electrical/Electronic Systems (A6)

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Automotive Heating & Air Conditioning (A7)

---

Introduction to Hybrid/Electric Vehicle (L3)

---

### Additional Courses to be added in a stackable format:

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Advanced Driver Assistance Systems (L4)

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Advanced Electrical/Electronics Diagnostics (Knowledge of circuit boards, processors, chips, electronics, and computer hardware and software, including applications and programming)

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Automotive Customer Service (Knowledge of principles and processes for providing customer and personal services. This includes customer needs assessment, meeting quality standards for services, and evaluation of customer satisfaction)

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Time Management

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Work Ethics

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Team Building

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## FEE-BASED/CONTRACT EDUCATION OPTIONS

There will be a market opportunity for upskilling technicians already working in the field who are not supported by a manufacturer. While this will not be immediate, independent shops will eventually need to understand the technology. Additionally, there are opportunities to train first responders, tow truck drivers, and similar occupations on EV safety, which has been a continued request from SANDAG. Courses could include certifications:

### Course Recommendations

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Introduction to Hybrid/Electric Vehicle (L3)

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General Safety

---

High Voltage Safety

---

Automotive Electrical/Electronic Systems (A6)

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## SAMPLE STUDENT LEARNING OUTCOMES

### SLO Recommendations

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Diagnose and repair high voltage battery system concerns

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Test internal combustion engine for proper operations (Hybrid systems)

---

Test drive for proper operations

---

Diagnose and repair power electronics

---

Diagnose and repair hybrid supporting system

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## NON-CREDIT/NO-CREDIT OPTIONS

These options are intended for campuses that do not offer for-credit but have identified a need in supporting the Alternative Fuel industry segment:

### Course Recommendations

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General Safety

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High Voltage Safety

---

Automotive Brakes Systems

---

Automotive Suspension, Steering and Wheel Alignment (A4)

---

Automotive Electrical/Electronic Systems (A6)

---

Automotive Heating & Air Conditioning (A7)

---

Introduction to Hybrid/Electric Vehicle (L3)

---

Customer Service

---

Time Management

---

Work Ethics

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# FUNDING OPPORTUNITIES

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- Local Strong Workforce
- Regional Strong Workforce (TBD)
- Department of Energy
- Department of Labor
- California Energy Commission
- National Science Foundation (Advanced Technological Education) ATE

*Common themes I am seeing with grants include a DEI component, favor regional educational partnerships, and generally like to see strong ties to industry*

# QUESTIONS?

## Q&A

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