



# Zacharias Macias, PE, CFEI

*Principal Engineer*

## CONTACT

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## WEBSITE

www.maciasforensics.com

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## PROFILE

Zacharias Macias, PE, CFEI is a licensed Professional Engineer and the founder of Macias Forensics, bringing over 10 years of specialized experience across forensic engineering, electrical systems, and MEP consulting. His technical expertise spans electrical failure analysis and power distribution design, with project work across California, Texas, Arizona, and beyond. He has designed fire alarm and technology systems, managed complex engineering projects, and developed cost estimates for a diverse range of clients — including federal and state correctional facilities, county municipalities, state hospitals, K-12 and higher education institutions, aerospace manufacturers, and private residential clients. Fluent in federal, state, and local electrical codes, Mr. Macias has also mentored and trained junior engineers throughout his career. His technical expertise includes the following:

### ELECTRICAL SYSTEMS

- ❖ Electrical Failure Analysis
- ❖ Medium & Low Voltage Power Distribution
- ❖ Motors & Transformers
- ❖ Circuit Breakers and Fuses
- ❖ National Electrical Code Review
- ❖ Cost Estimation

### EQUIPMENT LOSS

- ❖ Equipment Loss Consulting
- ❖ Equipment Breakdown
- ❖ Power Surge Assessment
- ❖ Water Damage
- ❖ RCV/ACV calculations
- ❖ Lightning Loss Assessment

- ❖ **Industries:** Forensics, Commercial, Aerospace, Industrial, Municipal, Educational, and Residential

### FIRE INVESTIGATIONS

- ❖ Fire Origin & Causation
- ❖ Arc Flash
- ❖ Structure Fires
- ❖ Vehicular Fires
- ❖ Product Defects
- ❖ Fire Damage Assessments

### SPECIALIZED CONSULTING

- ❖ Medical Equipment Consulting
- ❖ Technology Equipment Infrastructure
- ❖ Solar Panel Failure Analysis
- ❖ Electronic Damage Assessment
- ❖ Fire Detection and Alarm Systems
- ❖ Laboratory Equipment

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## LICENSES

### Professional Engineer (PE):

- ❖ California
- ❖ Colorado
- ❖ Arizona
- ❖ Nevada
- ❖ Wisconsin
- ❖ Washington
- ❖ Utah
- ❖ Idaho

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## REPRESENTATIVE PROJECT EXPERIENCE

### Electrical Distribution Systems

- ❖ Origin & cause of medium voltage cable loss valued at \$1,600,000 – Phoenix, AZ
- ❖ Failure analysis and repair recommendations for busbar – Manhattan, CA
- ❖ Theft investigation of multiple electric vehicle charging stations – Los Angeles, CA
- ❖ Damage assessment of commercial electrical system from vehicular collision – Los Angeles, CA
- ❖ Damage Assessment of cut feeders to a commercial electrical system resulting in arc flash – Albuquerque, NM
- ❖ Investigation to quantify and determine the missing copper wiring and electrical equipment from a warehouse electrical distribution system after a theft incident – Dallas, TX
- ❖ Construction Cost Estimation of 27kV equipment – Lynwood, CA
- ❖ Origin & cause of sewage pumps failure – Santa Anna, CA

### Weather Losses

- ❖ Damage assessment of residential electrical wire from water loss – Los Angeles, CA
- ❖ Damage assessment of residential electrical system from lightning loss – Dallas, TX

## Fire Investigations

- ❖ Origin & cause investigation of office fire – Laguna Hills, CA
- ❖ Origin & cause investigation of an overhead utility line – Agoura Hills, CA
- ❖ Origin & cause investigation of an electric vehicle fire – Irwindale, CA
- ❖ Origin & cause investigation of vehicle fire – City of Industry, CA
- ❖ Origin & cause investigation of an explosion at a fracking facility – Tyler, TX
- ❖ Origin & cause investigation of a claimed defective microwave – Kent, WA
- ❖ Origin & cause investigation of a locomotive re-fueler vehicle – Salt Lake City, UT

## Equipment Loss Consulting

- ❖ Damage Assessment of commercial kitchen equipment post-fire – Ontario, CA
- ❖ Spindle Failure of \$600,000 CNC machine – Reno, NV
- ❖ Damage assessment of mass spectrometer equipment after a fall – Los Angeles, CA

## Medical Equipment Consulting

- ❖ Failure analysis of MRI machine – Encino, CA
- ❖ Failure analysis of CT and PET Scanners – Glendale, AZ
- ❖ RCV/ACV calculation of medical equipment & supplies surpassing \$2,000,000 – Encino, CA

## Power Surge

- ❖ Failure analysis of Commercial building's HVAC, IT and security systems equipment – Tolleson, AZ

## Material Failures

- ❖ Origin and cause of a reverse osmosis system in a dental office – Huntington Beach, CA
- ❖ Origin and cause of refrigerator line leak – Upland, CA

## Engineering Design

- ❖ Design of a main-tie-main electrical system for a college building, utilizing the 13.2kV campus loop – Mountain View, TX
- ❖ Inspection, renovation, and new construction design of the electrical distribution system, technology infrastructure, audio/visual system, security system, and fire alarm system for multiple K-12 schools and college facilities – Various Locations
- ❖ Evaluation and design of over 120 electrical distribution equipment components including tertiary switchboards, automatic transfer switches, panelboards, and transformers – El Segundo, CA
- ❖ Inspection and renovation design of the electrical distribution system, which included a 4000A, 480Y/277V switchboard, for a youth detention hall – Downey, CA
- ❖ Project management of the design of Fire Alarm and Fire Sprinkler systems for California Department of Correction and Rehabilitation prison, which held over 1000 detainees – Crescent City, CA
- ❖ Design of Fire Detection and Alarm System at a K-12 school for the Los Angeles Unified School District – Various Locations
- ❖ Third-party constructability peer review of the electrical distribution system design of federal prison facilities – Various Locations

## CERTIFICATIONS & PROFESSIONAL AFFILIATIONS

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- ❖ NAFI Certified Fire and Explosion Investigator (CFEI)
- ❖ IAAI Fundamentals of Fire Investigation Certificate
- ❖ International Association of Arson Investigators (IAAI)
- ❖ National Council of Examiners and Surveying (NCEES)
- ❖ National Society of Professional Engineers (NSPE)
- ❖ National Academy of Forensic Engineers (NAFE)
- ❖ National Association of Fire Investigators (NAFI)

## PROFESSIONAL BACKGROUND

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### 2026 – Present: Macias Forensics

*Principal Engineer*

### 2024 – 2026: Envista Forensics, LLC

*Project Engineer*

### 2021 – 2022: Nelson Forensics, LLC

*Project Director*

### 2020 – 2021: MEPCE, Inc.

*Electrical Engineer/Project Manager*

### 2017 – 2020: JC Chang & Associates

*Electrical Engineer/Project Engineer*

## EDUCATION

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### Bachelor of Science in Electrical Engineering, 2016

*California State University – Long Beach, California*