From Cradle to Grave
Addressing End-of-Life Management for Batteries for Electric Vehicles and Energy Storage

August 13, 2019 | 8:30 a.m.—9:30 a.m.
California’s EV Battery Regulatory Landscape

**Electric Vehicle Batteries Regulatory Authority**

**Manufacturing**
- **ARB**
  - Sets Zero Emission Vehicle regulations
  - Regulates automakers
- **CPUC**
  - Oversees EV rebate programs
  - Approves rates, tariffs, and infrastructure spending
- **CEC**
  - Conducts EV Market Studies
  - Funding & Technical Support for Vehicle Technologies

**End of Life**
- **DTSC**
  - Regulates Hazardous waste batteries at EOL management
  - Participant on EV Advisory Group
- **CalRecycle**
  - Supports recycling and market development
  - Participant on EV Advisory Group
AB 2514, SB 801 & AB 2868: Energy Storage Mandates (R.15-03-011)

SB 700: Self Generation Incentive Program ("SGIP") (R.12-11-005)

SB 350: Integrated Resource Plans ("IRPs") (R.16-02-007)
Light-Duty Electric Vehicle ("EV")
Sales Projections

- March 2019 (actual sales)
- 2020
- 2025
- 2030

- California EV Sales
- California ZEV goal

SB 350, AB 1082 & AB 1083: Zero-Emission Vehicles ("ZEV")
(R.18-12-006)
• Solar PV & Storage
  • Incentives and Programs Spur Growth
  • 2019 Building Energy Efficiency Standards Solar Mandate
  • Industry Collaboration and Technical Support

• Transportation Electrification
  • Funding and Technical Support for Alternative Fuel Infrastructure and Vehicle Technologies
  • Potential for EV Batteries to be Repurposed for Stationary Applications

• Research
  • Research Funding Supports Development, Deployment, and Life Cycle Assessment in Solar PV, Transportation Electrification, Storage
Climate and Air Quality Targets Require Aggressive Electric Vehicle Market Growth

- **ZEV Regulation**
  - Regulates automakers
  - Current rule ~10% sales 2025
  - New rule will push higher; Board decision ~2021

- **Clean Miles Standard**
  - Regulates ride hailing firms
  - New rule; Board decision 2020
  - Will include electric VMT target
  - High mileage vehicles
DTSC Oversight: Solar Panels & Electric Vehicle Batteries
APRIL 3, 2019

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Hazardous Waste Management Program
DTSC Jurisdiction & Oversight

- Works in partnership with CalRecycle regarding waste management
  - Wastes = materials that no longer serve their intended purposes and are discarded
- DTSC Jurisdiction: oversees **hazardous** waste management in California
  - Hazardous Waste: listed wastes and characteristic hazardous wastes
  - Universal Waste: hazardous wastes managed under alternative management standards
Solar Panels & Electric Vehicle Batteries Management

Solar Panels
- Current: Full hazardous waste management in CA
- Proposed: Add to California’s Universal Waste Program
- SB 489

Electric Vehicle Batteries
- No specific exclusions/exemptions for management in California
- Would need to be characterized
- Recycling = Treatment
  *(if they are hazardous)*
- AB 2832
CalRecycle manages the E-Waste consumer fee and payment program and various Extended Producer Responsibility Programs.

Electronic Waste Management

Product Stewardship

Recycling Programs

- Paint
- Carpet
- Mattresses
- Bottles and Cans