

BATTERY PRODUCT DEVELOPMENT

GETTING TO MARKET QUICKLY AND EFFICIENTLY

Don Karner
Electric Applications Incorporated





WE MAKE BATTERIES WORK



Automotive
Aerospace
Motive Power
Grid Energy Storage
Telecommunications
Performance Evaluation
Standards Certification



Certification Test Planning
NRTL Coordination
Mechanical Abuse Testing
Electrical Abuse Testing
Forced Thermal Runaway
Fire Testing
DUT Logistics



Battery Product Research
Grid Energy Storage
Charging Infrastructure
Vehicle Electrification
Advanced Lead Chemistry
Lithium Chemistries
Power Generation

OUR BUSINESS



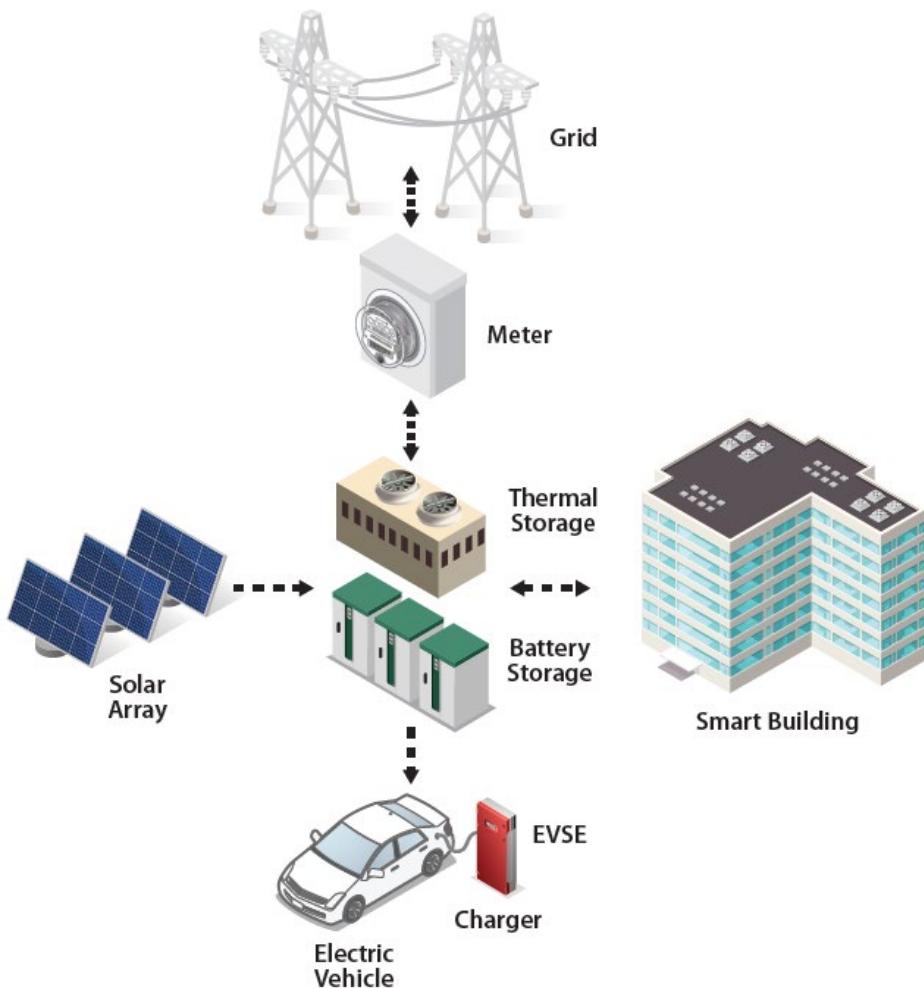
PRODUCT DEVELOPMENT SERVICES

- Application Operational and Safety Requirements
 - Operational Performance Testing
 - Safety Certification Planning
 - NRTL Interface
 - Certification Testing
- 
- Product Design**
- Product Certification**

We Make Batteries Work



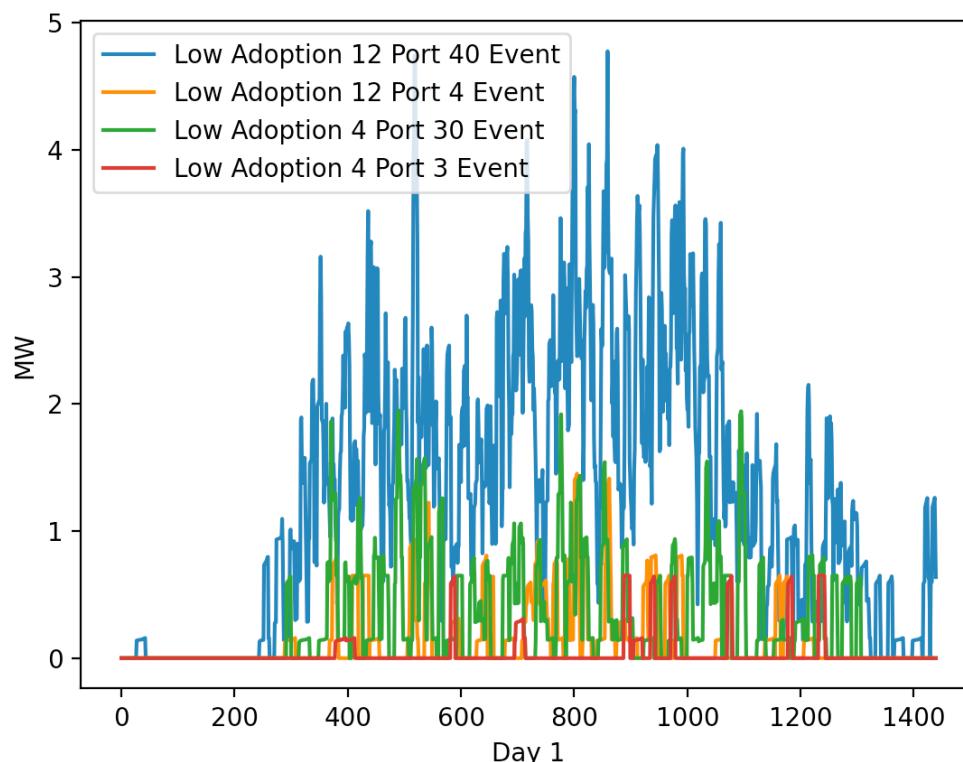
EV FAST CHARGE DEMAND REDUCTION OPPORTUNITIES



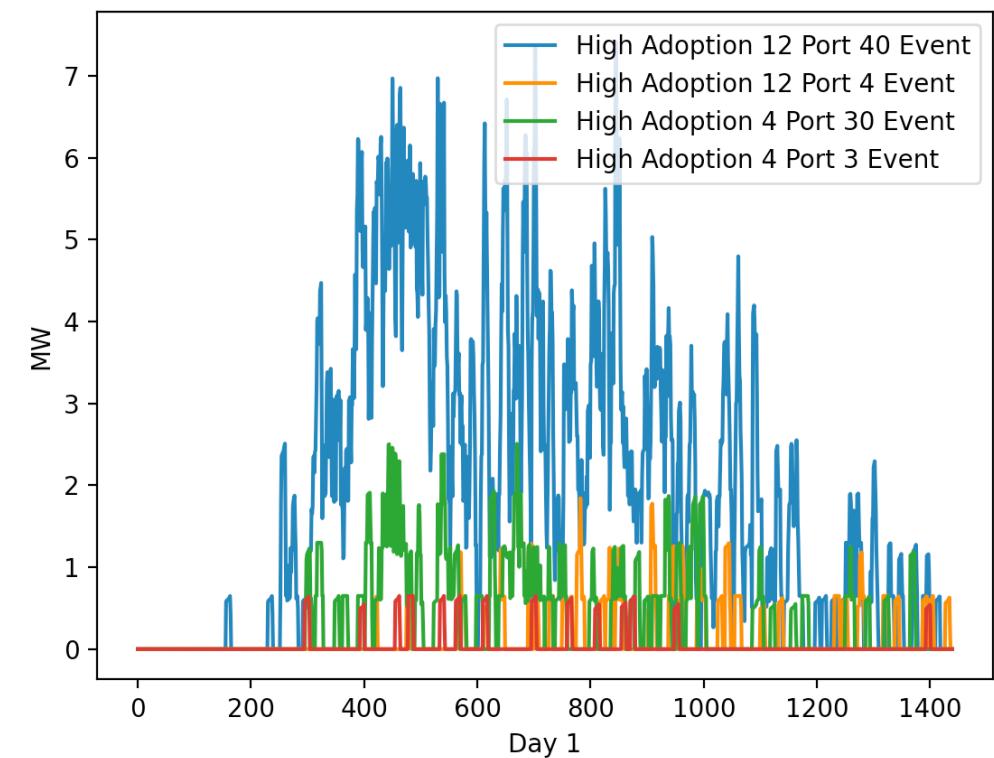
- **Infrastructure Funding Distributed Through Local Government**
- **Look To The Future**
 - **EV Charging Power up to 650kW**
 - **Multi-port Charging Facilities**
 - **Shared Use For Building Loads**
 - **Multiple Energy Sources**

FUTURE BATTERY POWER REQUIREMENTS

Early Vehicle Adoption



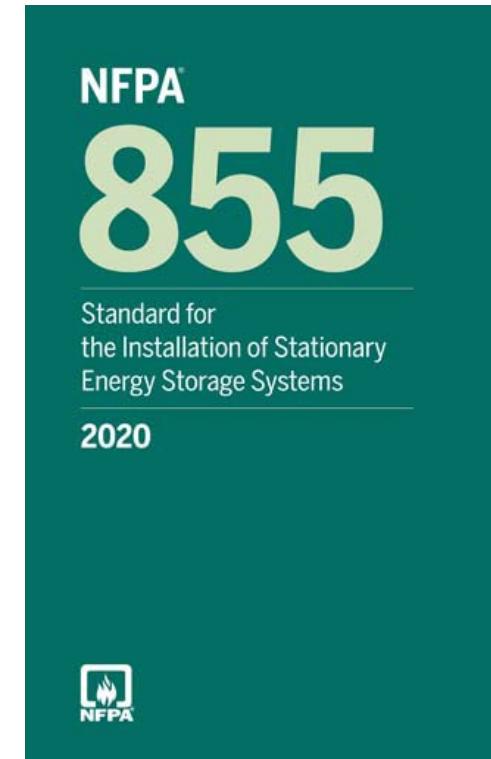
Mature Vehicle Adoption



STATIONARY BATTERY CERTIFICATION

New Building Codes

- **NFPA 855**
- **New Safety Standards**
- **UL 9540/A**
- **Revised Safety Standards**
- **UL 1973**



**ANSI/CAN/UL
9540A:2019**



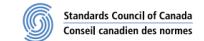
JOINT CANADA-UNITED STATES
NATIONAL STANDARD

STANDARD FOR SAFETY

Test Method for Evaluating Thermal
Runaway Fire Propagation in Battery
Energy Storage Systems



ANSI/UL 9540A-2019



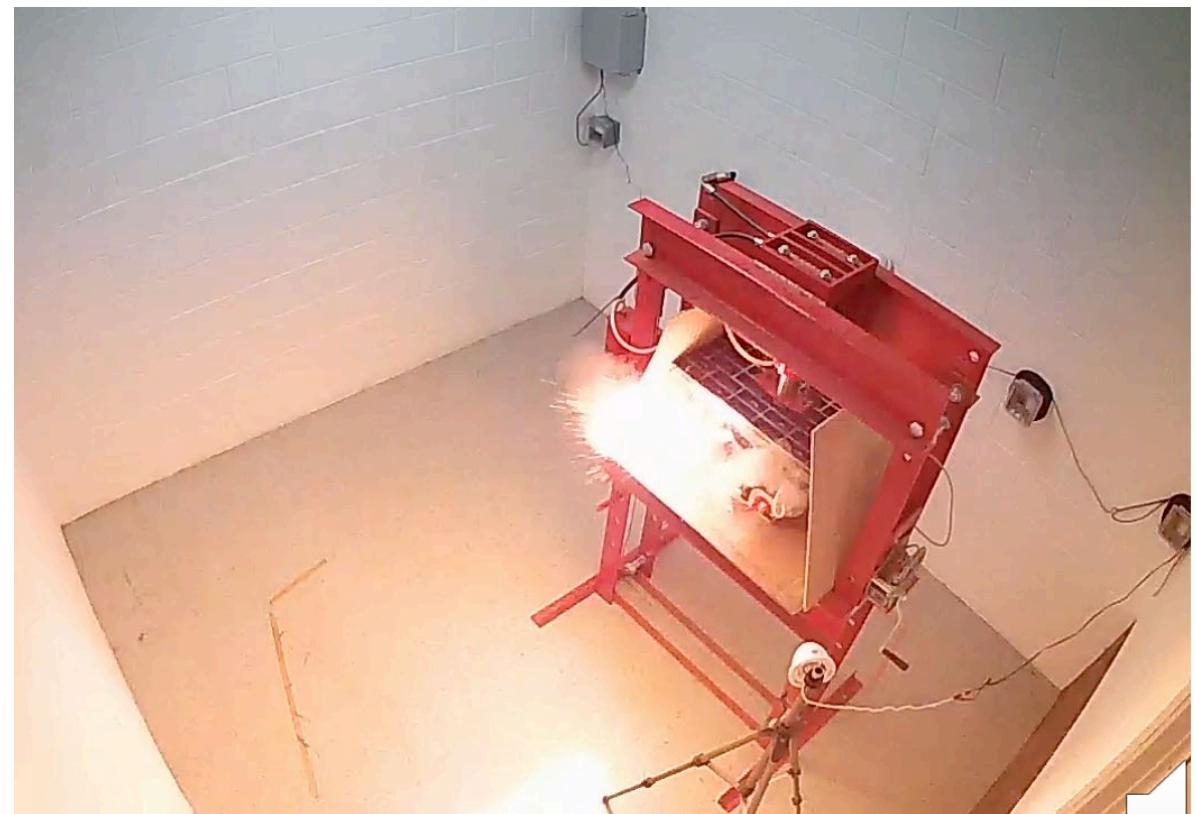
Standards Council of Canada
Conseil canadien des normes



EAI PRODUCT SUPPORT

Certification Planning

- Define Requirements
- Coordinate Testing
- Provide NRTL Interface
- Safety Testing
 - Electrical
 - Mechanical
 - Environmental



THANK YOU



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