UFU National Committee of Management 2022

Electric Vehicles and BESS Policy

As Approved by NCOM 11/11/2022

Noting the call by the COP27 climate change conference for a reduction in emissions through a shift to renewable energy sources, and noting previous policies of NCOM related to climate change, the UFU National Committee of Management recognises the acceleration in the use of electric vehicles and Battery Energy Storage Systems (BESS).

NCOM identifies an urgent and pressing need for Commonwealth, State and Territory Governments to enact a comprehensive emergency management framework with respect to the fire and rescue implications of BESS and electric vehicles including, but not limited to:

- Bicycles;
- Scooters;
- Hoverboards;
- Motor scooters;
- Electric micro-mobility devices
- Electric motorcycles;
- Cars;
- Buses;
- Trucks;
- Light Rail Vehicles

The emergency management framework needs to include planning, suppression, entrapments, firefighter health and safety, public awareness, and environmental consequences as follows:

INFRASTRUCTURE FOR CHARGING ELECTRIC VEHICLES

Recommendation 1
That Commonwealth, State and Territory Governments support the development of Australian Standards based on NFPA 855 to regulate the installation of charging and storage infrastructure.

[To address the rollout of electric vehicles, all Australian Governments should support the development of more comprehensive standards, such as those of the National Fire Protection Association in the United States, which has published NFPA 855, "Standard for the Installation of Stationary Energy Storage Systems".]

PLANNING AND SUPPRESSION

Recommendation 2
That with regard to the installation of Battery Energy Storage Systems (BESS) associated with electric vehicles, the approach recommended in the case of the McMicken incident[i] in Arizona USA be applied by Australian authorities, specifically:

- A heavy emphasis on cell quality in installations;
- Design and installation to prevent cell-to-cell cascading, for example barriers to limit the or prevent cascading;
- Addressing proximity of modules to prevent module-to-module cascading and propagation of gases;
- Adequate Ventilation and cooling and dissipation of gases;
- Proper extinguishing using a combined approach of fire suppression followed by ventilation and cooling strategies; and
- Response plans and entry procedures that incorporate system monitoring, the detection of gases, ventilation practices, extinguishing methods, and information to gather before entry by

firefighters. This needs to be supported by training of installers, operators and firefighters in the project development and commissioning process. This needs to be underpinned by procedures that are documented and available outside the BESS container or building, and reinforced through training which should be refreshed and updated periodically as part of Australia firefighting services' mandatory skills maintenance program.

The above measures should also be used in relation to charging facilities for vehicles such as electric scooters, garages where electric vehicles are parked, and showrooms / dealerships where electric vehicles are stored.

Recommendation 3
That Commonwealth, State and Territory Governments mandate through planning legislation a requirement that the approval of their respective firefighting services be required in the setting of standards and thresholds pertaining to the fire safety and suppression features of:

- "Electric Vehicle Ready Buildings";
- Class 7a Buildings (carparks);
- Buildings where processes are taking place which should be classified as either class 8 or as a new class

Recommendation 4
That Commonwealth, State and Territory Governments support the further research of the work health and safety implications of firefighter chemical exposure arising from thermal runaway events.

Recommendation 5
That Commonwealth, State and Territory Governments work with suppliers of electric vehicles and BESS, and with their respective firefighting services to develop and implement public awareness materials on the dangers of thermal runaway events.

Recommendation 6
That a new nationally applicable series of stop codes be developed and implemented to accurately classify emergency incidents concerning electric vehicles and BESS.

VEHICLE COLLISION AND ENTRAPMENT CHALLENGES

Recommendation 7
That Commonwealth, State and Territory Governments provide additional funding to their respective firefighting services to develop specific bespoke information, instruction and training for firefighters in relation to electric vehicle emergencies such as thermal runaway events and entrapments.

ENVIRONMENTAL RUN OFF

Recommendation 8
That Commonwealth, State and Territory Governments facilitate partnerships with academic institutions, the UFU and State and Territory firefighting services to study approaches to suppression, capture and treatment of run off from vehicle and BESS thermal runaway events. An avenue such as Australian Research Council linkage grants should be pursued.

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[i] McMicken Battery Energy Storage System Event -Technical Analysis and Recommendations, Arizona Public Service, July 18, 2020