

# **Battery Energy Storage Systems**

## **Assessment of Community Risks**

Multi-Municipal Wind Turbine  
Working Group  
March 9, 2023

# IESO New Capacity Initiatives

## Ministerial Directive – January 27, 2022

- Oneida Energy Storage – 250 MW

## Ministerial Directive – October 6, 2022

Program	Capacity		Decision
Expedited	1500 MW	Expansions or new projects	Feb 2023
Upgrades	300 MW	Improve facility; amend contract	Q1 2023
LT1 RFP	2200 MW	Expansions or new projects	Oct 2023

## Specific Requirements – October 7, 2022

- Storage - 1500 MW – Contracts up to 2047
- Natural Gas – 1500 MW – Contracts end in 2040

# Battery Storage Incidents

- Press report of 2021 fire at Tesla's 300 MW battery storage project in Victoria, Australia:

*“The fire started on the morning of Friday July 30 and was not brought under control until the afternoon of Monday August 2. More than 30 **fire trucks** and support vehicles and about **150 fire fighters** from the County Fire Authority and local Fire Rescue Victoria responded, containing the flames so they only **affected two Megapacks** of the approximately 210 that make up the system”.*

- Incident is not isolated – other reports from US

# **IESO's RFP Requirements**

## **Proposal/Contract Requirements**

- Price, financial arrangements
- Municipal Support
- Indigenous Engagement/Participation
- Community Engagement
- Meet “good engineering and operating practices”

## **Municipal Support Submission**

- Technology
- Location
- Capacity

## **Approval Process?**

# Standards for BESS Projects

## National Fire Protection Association

- Standard 855 – 2020; Revised 2023
- Significant safety hazards – toxic/flammable gases; fire intensity and explosion control

## Underwriters Laboratory

- ANSI/CA/UL9540 – April 2021
  - Fire detection/suppression/containment
- ANSI/CA/UL9540A - November 2019
  - Test methods at cell, module, unit & installation levels
  - Must meet performance criteria at each level

# Setback Requirements

## Hydro One

- Intense heat and smoke for prolonged periods represent increased risk to their system
- Setbacks of 250 m to 500 m from stations
- Setbacks of 150 m to 500 m from rights of way

## Other Rules

- 359/09 applies to specified renewable energy projects while other types of projects excluded
- Battery storage projects are not in either list.
- No known provincial setbacks.

## Municipal Zoning Rules

- Technology is too new to be covered in municipal zoning

# Noise Emissions

## Noise Issues Discussed at Meetings

- Focused on air cooling systems
  - Small projects would be allowed within noise by-laws
  - Noise emissions in large projects?
  - Need to be confirmed
- Regulation 359/09 outlines requirements for transformer stations associated with other renewable projects
  - Apply to Battery Storage?
- Need to include acoustic barriers in project design if required.

# Issues to Consider

## **Design Considerations**

- Management of toxic and explosive gases
- Dry sprinkler systems
- Access to large quantities of water
- Separation of modules to allow fire equipment access
- Acoustic barriers

## **Local Emergency Support Requirements**

- Specialized training for unique hazards
- Scale and duration of emergency situations
- Ability to handle toxic fumes and run-off



# **Status of Known Projects**

## **Projects with Municipal Support**

- Sault Ste. Marie – at least one supported
- Guelph – one project supported
- Lambton Shores - 3 Enbridge projects supported.
- Arran-Elderslie – Solar Flow Through Project supported
- City of Ottawa – one project supported

## **Projects Refused Municipal Support**

- Sault Ste. Marie – at least one declined
- Prince Edward County – rejected Solar Flow Through Project plus one other project
- Enniskillen – rejected one project

# Recommendations

- Add Battery Storage to Regulation 359/09
- Establish minimum setbacks from all activities
- Require design certification by an accredited body (UL9540A) and meets all standards (i.e. UL9540, and NFPA 855)
- Monitoring and fire containment systems linked to local emergency services
- Assessment of all noise emissions with abatement as required
- Emergency plan agreed with local authorities including specifications on support required
- Final package presented to municipal council for approval before permits issued.