FAIRFAX COUNTY
VIRGINIA

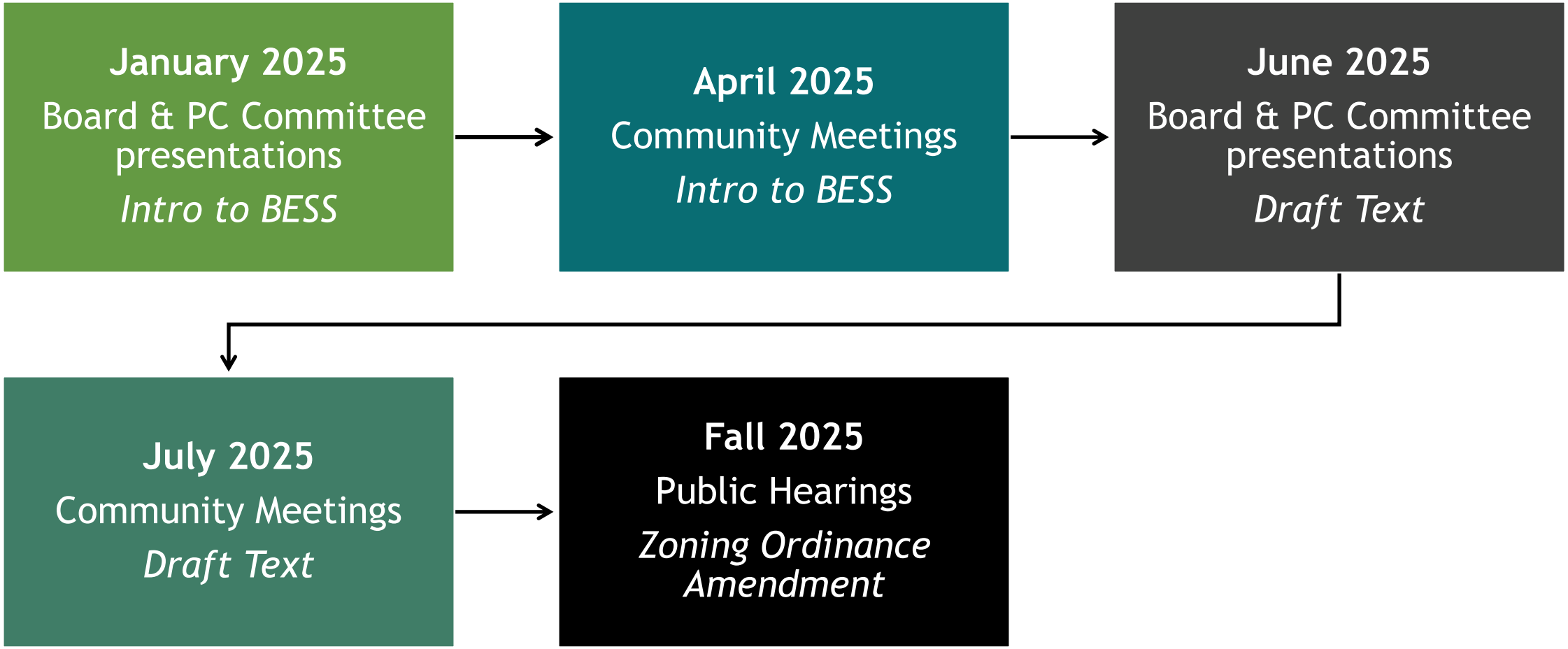


Battery Energy Storage Systems (BESS)

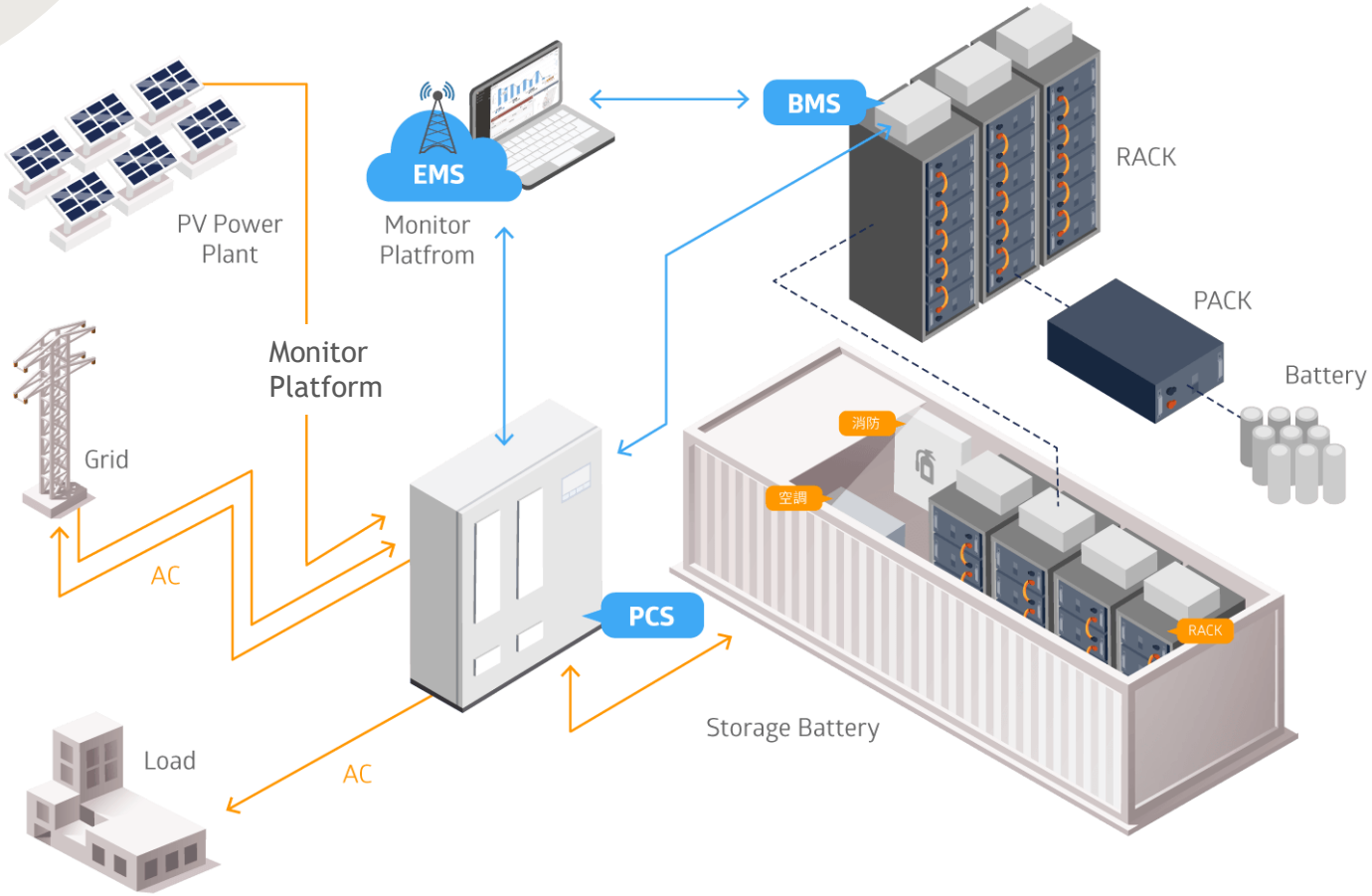
Land Use Policy Committee
June 17, 2025

Jacqui Kamp, Zoning Administration Division

Project timeline



What is a battery energy storage system (BESS)?

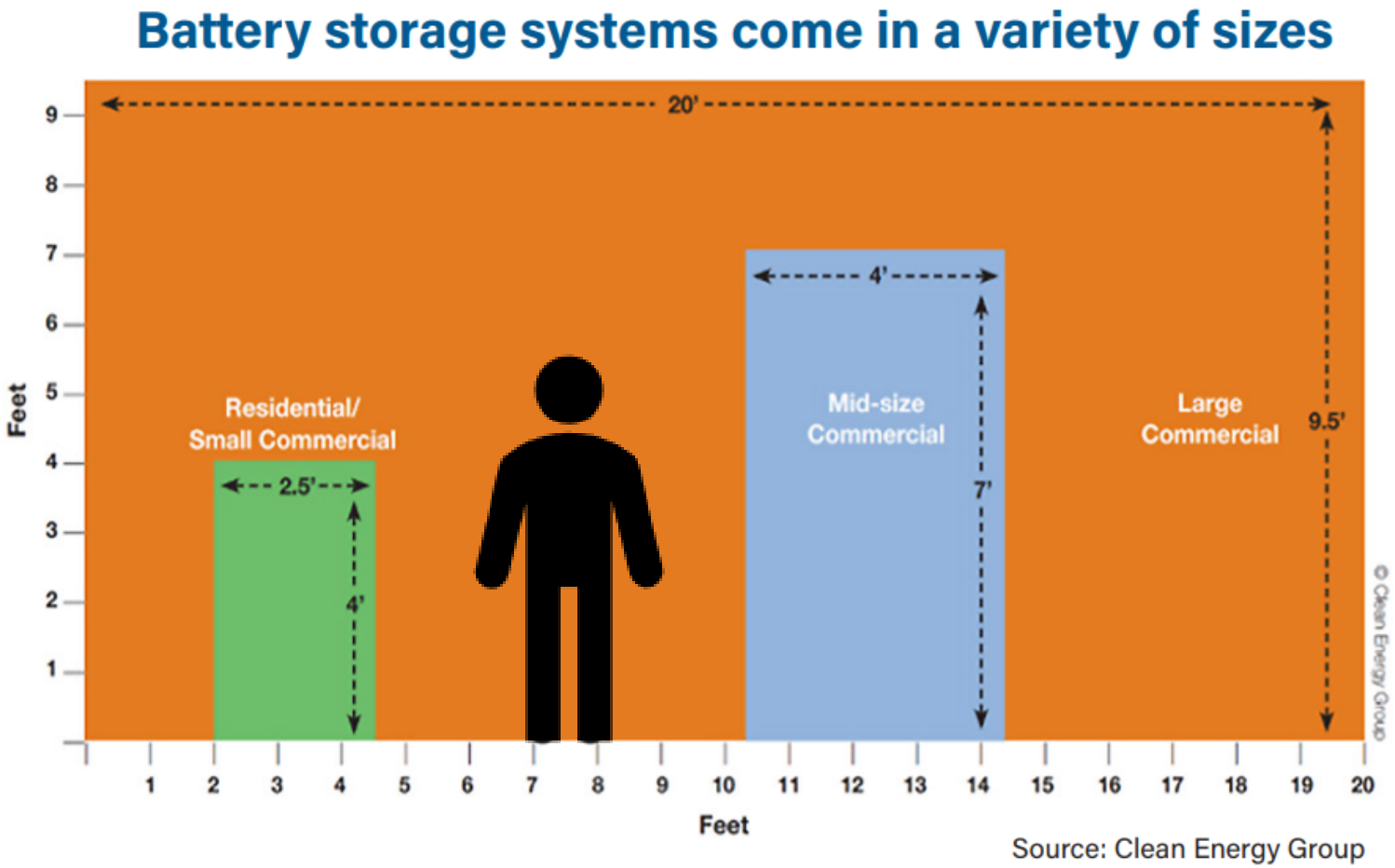


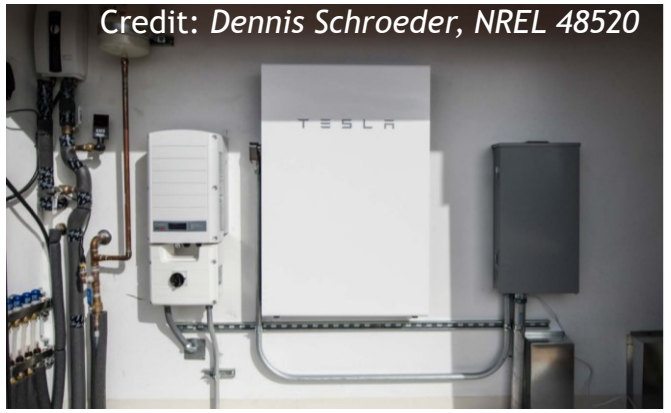
Credit: osmbattery.com

BESS is an electrochemical device that charges (or collects energy) from the grid or a power generation facility, like solar and wind power, and then discharges that energy later to provide electricity when needed.

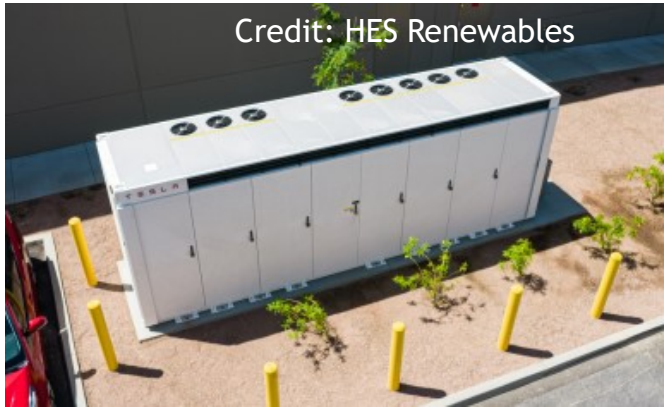
EMS=Energy Management System
BMS=Battery Management System
PCS=Power Converter System

BESS Types:
Accessory and Principal Uses





Residential



Mid-size Commercial



Large Commercial/Utility-Scale

Existing regulations - Zoning Ordinance (principal use)

- Use: Light utility facility
- Current Permissions:
  - Not allowed: R-A, I-I, PCC
  - Allowed by right: I-3, I-4, I-5, I-6
  - SE: all other districts
  - Development plan or SE: all P districts (except PCC)
- Not subject to lot size or bulk regulations (setbacks, height, FAR)
- Transitional screening Type 2/Barrier Types D or E for all residential uses and no requirements for other adjacent uses



Credit: Dominion Energy
Powhatan County - Scott Solar Facility (12 MW/48 MWh)

Proposed New Use definition

- Add definition for “Battery Energy Storage Systems, Large-Scale” under Light Utility Facility
  - Maximum stored energy greater than 600 kWh ***[>600 kWh-10 MWh]***
  - 600 kWh ***[>600 kWh-10 MWh]*** or less = Accessory (would be subject to accessory structure location regulations)

WATT HOURS VERSUS WATTS

A watt hour refers to the total amount of energy that a system can store.

A watt is a unit of power. It is how much energy is produced or used at any point in time (rate of energy).

1,000 kWh = 1 MWh / 1 MW = 1,000 KW



Credit: sunbeltrentals.com (600 kWh)



Credit: Dominion Energy (2 MW, 4MWh)

Proposed permissions/locations

- Not permitted in residential districts, the PDH, PRC, PRM, PCC or the I-I districts, unless co-located with substation or solar power facility through SE

- Allow with SE in all commercial, industrial and in the PDC and PTC districts



Credit: Dominion Energy - Chesterfield County
(20 MW/ 80 MWh)

Proposed use-specific standards

- Setbacks
  - Minimum of 100 feet ***[50-300 feet]*** from all property lines
  - Minimum of 200 feet ***[50-300 feet]*** from R district or residential use
- Adequate public water supply for fire protection
- Fence height eight feet maximum
- Emergency operations plan
- Decommissioning plan



Credit: Dominion Energy – Powhatan County
Scott Solar + Storage (12 MW/48 MWh)

Proposed transitional screening and barrier requirements

- Add Large-scale BESS with same requirements as Solar Power Facility
- Add Type 1 screening when adjacent to certain other uses

TABLE 5108.2: Transitional Screening and Barrier Type Requirements

Numbers in individual cells represent transitional screening type required (1, 2, or 3)
Letters in individual cells represent barrier type required (A through E)

	Adjacent Use								
Use Classification	**Single-Family Dwelling, Attached and Detached**	**All Other Residential Uses**	**Solar Power Facility, Battery Energy Storage System, Large-scale**	**Utility Facility, Heavy**	**All Other Public, Institutional, and Community Uses**	**Vehicle Repair and Maintenance, Heavy**	**All Other Commercial Uses**	**Craft Beverage Establishment**	**All Other Industrial Uses**
Public, Institutional, and Community Uses									
Solar Power Facility, Battery Energy Storage System, Large-scale[3]	Type 3 Barrier D or E	Type 2 Barrier D or E	None	None	Type 1 Barrier D or E	None	Type 1 Barrier D or E	Type 1 Barrier D or E	None
Utility Facility, Heavy	Type 3 Barrier D or E	Type 3 Barrier D or E	None	None	Type 1 Barrier A, B, or C	None	Barrier D or E	Barrier D or E	None
All Other Public, Institutional, and Community Uses	Type 2 Barrier D or E	Type 2 Barrier D or E	None	None	None	None	None	None	None
All Other Industrial Uses	Type 3 Barrier D or E	Type 3 Barrier D or E	Barrier D or E	Barrier D or E	Type 1 Barrier D or E	Type 1 Barrier D or E	Type 1 Barrier A, B, or C	Type 1 Barrier D or E	None

Proposed additional submission requirements for BESS

- Noise study
  - Demonstrate that the design and operation will comply with Noise Ordinance
- Emergency operations plan requirements
  - Procedures for safe shutdown; inspection and testing of safety systems
  - Emergency plan in case of incident
  - Training and communication protocols for local first responders
- Decommissioning plan requirements
  - Mitigation procedures for hazardous materials
  - Restoration plan

Potential other approvals

- State Corporation Commission
- 2232 review
- Siting agreement
- Building, fire, and electric codes

Jurisdictional research

	Loudoun County	King George County	Prince George County	Hanover County	City of Virginia Beach	Dominion Energy Model Ordinance	Fairfax County BESS Proposal
Size	>600 kWh	Not specified	>600 kWh	>600 kWh	Not specified	10 MWh	>600 kWh ***[>600 kWh-10 MWh]***
Use permissions	**SE**: PD-RDP; Commercial/Light Industry; Transition Rural; JLMA; Office Park **Minor SE:** Industrial Park; General Industry; Mineral Resource-Heavy Industry Districts	SE: Agriculture and Industrial Districts	SE: Agricultural and Industrial Districts	SE: Agricultural and Industrial Districts	Conditional use: Industrial Districts	Not specified	SE: Commercial, Industrial, PDC, and PTC Districts
Setbacks	50-feet to non-residential; 100-feet to residential (unless more restrictive in underlying zoning)	100-feet to non-residential; 200-feet to residential	Underlying zoning or 100-feet (whichever is greater)	Underlying zoning district	100-feet	50-feet to non-residential; 100-feet to residential	100-feet to non-residential ***[50-300 ft]***; 200-feet ***[50-300 ft]*** to residential
Noise study	Yes	No	No	No	Yes	No	Yes
Decommissioning Plan and security	Plan only	Plan and security	Plan and security	Plan and security	Plan and security	Plan and security	Plan only

PLANNING & DEVELOPMENT

Email: Jacqui.Kamp@fairfaxcounty.gov

Webpage: https://www.fairfaxcounty.gov/planning-development/zoning-ordinance/amendments