



Battery Energy Storage Systems

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What are Battery Energy Storage Systems (BESS)

Definition and Function

BESS store electrical energy from the grid or renewable energy source for later use, providing flexible power management.

Range of Applications

BESS range from small residential systems to large utility-scale facilities that support broader electricity needs.

Role in Energy Flexibility

BESS improves grid flexibility by storing electricity when demand is low and supplying it when demand is higher, without generating electricity themselves.



Federal Guidelines

National Fire Protection Association Guidance

Environmental Protection Agency

National Electrical Code

Occupational Safety and Health Administration

American National Standards institute

Underwriters Laboratories



Washington

Washington State Fire Code

Washington State Building Code

Washington State Energy Code

Department of Ecology

Department Labor and Industries



Neighboring Jurisdictions

Thurston County model code

- Adopts fire standards from Washington State Code
- Developed with Thurston County Fire Chiefs Association
- Other stakeholders needed for other considerations
- Before adopting, other standards need to be considered:
 - Tiering thresholds
 - Permit Pathways
 - Allowed Zoning Districts
 - Setbacks and other adjacent use issues



A Balanced View for Tumwater – Comprehensive Plan

- The Climate Element promotes energy resilience and expansion of renewable energy systems.
- The Utility Element encourages coordination with private utilities and supports the adoption of clean energy technology.
- The Land Use Element directs development to ensure compatible adjacent land uses.



Why BESS Matters Today



Increasing Electricity Demand

Electricity demand is rising overall and during peak hours, especially in mornings, evenings, and hot summers.

Shift from Fossil Fuels

Policies are driving a transition away from fossil-fuel peaker plants toward cleaner energy solutions like battery storage.

Why BESS Matters Today



Benefits of Battery Storage

Battery storage reduces grid strain, lowers emissions, improves reliability, and supports resilience during outages.

Immediate System Impact

Battery storage delivers immediate benefits without requiring changes in consumer behavior once installed.

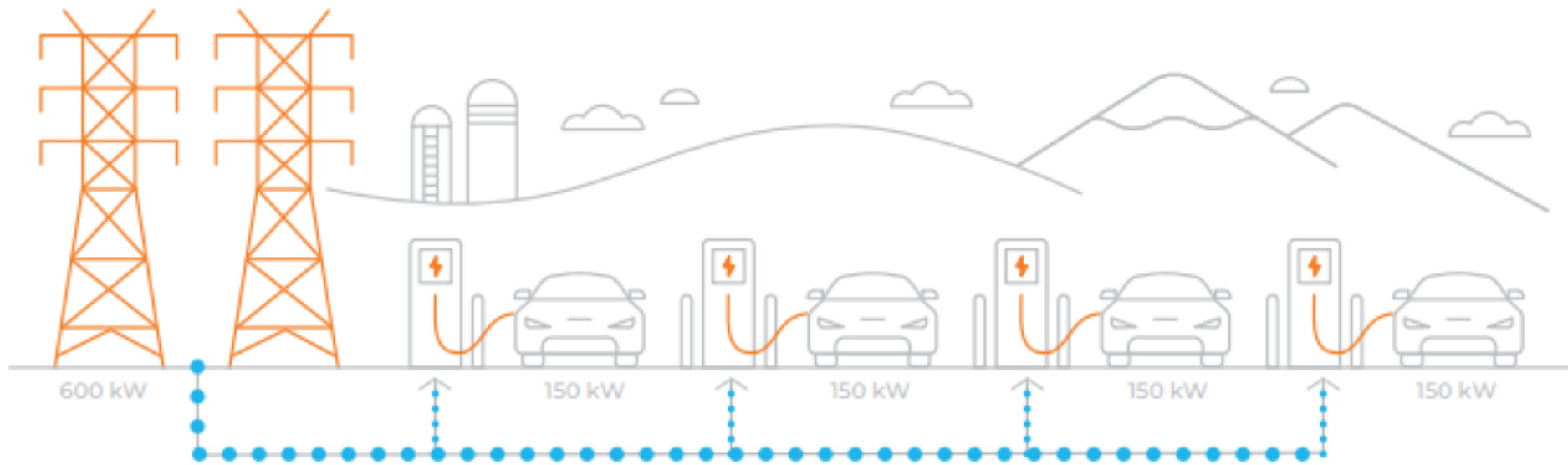
Benefits of BESS

Standard Fast Charging

High-Capacity Infrastructure

Intermittent Vehicle Charging

Short Charging Times



Benefits of BESS

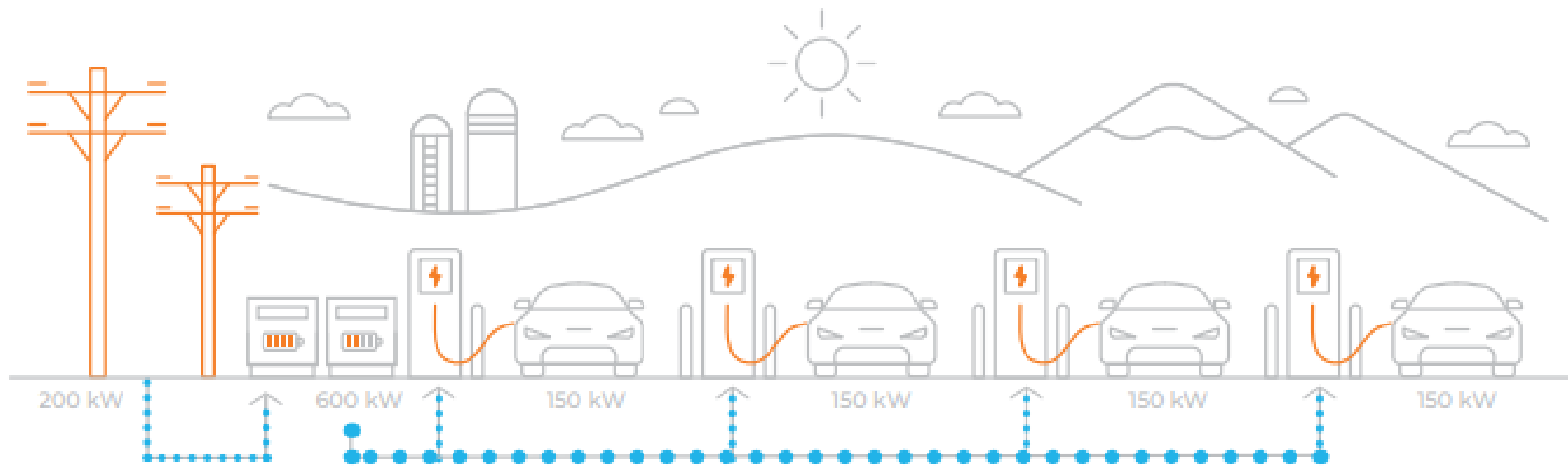
Battery-Buffered Fast Charging

Low-Cost Infrastructure

Continuous Battery Charging

Intermittent Vehicle Charging

Short Charging Times



What This Could Look Like in Tumwater

Considerations:

- Energy storage capacity and use
- Physical scale
- Accessory vs. Primary Use

Other Factors:

- Adjacent supportive facilities
- Incompatible land uses nearby
- Parcel sizes



Tier 1 – Residential Scale Systems



- **Storage Capacity: 0-80 kWh**
- **Scale: gym bag to small refrigerator**
- **Limited to 20 kWh per installation by NFPA**
- **WA State Fire Code restricts residential use**

Tier 2 – Medium Scale Systems



- **Storage Capacity: 80-600 kWh**
- **Scale: Refrigerator to several shipping containers**
- **Capable of serving business or community centers or hubs**
- **Allowed under WA State Fire Code for non-residential uses**

Tier 3 – Utility Scale Systems



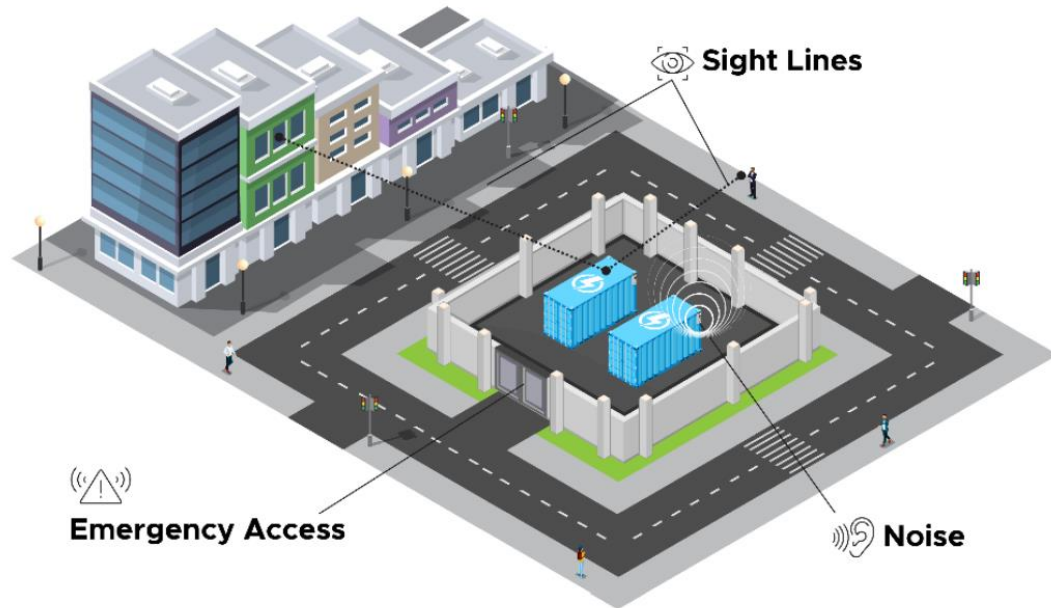
- **Storage Capacity: greater than 600 kWh**
- **Scale: varies**
- **Capable of supporting a substation**
- **Additional requirements under WA Fire Code**

Zone Districts



- Scale varies depending on capacity and use
- Residential scale: allow in all districts only as accessory to residences
- Medium scale systems: allow in all districts only as an accessory to non-residential uses
- Utility scale systems:
 - Support utilities near substations
 - Separated from high density affordable housing and environmentally constrained areas.

Proposed Setbacks



- Provides separation from incompatible uses
- Residential scale: separated by 3 feet (NFPA 70), no vegetation buffer
- Medium scale: vegetation clearing is required, to foot setbacks from property line
- Large scale:
 - match substation setbacks 30 feet front, 20 sides and back
 - double the setback where residences are adjacent.

Proposed Fire Safety Regulations

- No battery energy storage systems installed in basements
- Residential scale: Labor and Industries permits and inspects.
- Medium systems: Fire Marshal or designee review and approval.
- Utility scale:
 - Develop emergency management plan with fire department.
 - Fire Marshal or designee review and approval.



Proposed Screening and Fencing

- Residential scale: no screening needed
- Medium scale:
 - clear vegetation within 10 feet
 - Match screening for mechanical equipment in Citywide Design Guidelines for commercial developments
- Utility scale:
 - Vegetation cleared
 - Maintain firewise landscaping and screening materials
- Residential and Medium scale: no fences required
- Utility scale:
 - 7 feet tall, fences comply with National Fire Protection Association standards.
 - Dedicated use buildings can allow 10% for other uses provided egress is available without passing through hazard areas



Proposed Noise and Lighting

- All scales not to exceed existing standards in TMC 8.08.040.
- All scales follow standards in Citywide Design Guidelines for the appropriate use.
 - Reduce glare and trespass
 - Increase night sky visibility



Proposed Decommissioning and Ownership Changes

- Residential scale: no decommissioning standards.
- Medium scale: require recycling electronic equipment.
- Utility scale: require decommissioning plan, bonding and electronics recycling.

Ownership changes of utility scale systems requires written agreement to assume obligations of existing plans.

Reported with annual fire inspections



Thank you!

Comments and questions:

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