

STAFF REPORT

GENERAL INFORMATION:

REQUEST: **ORDINANCE AMENDMENT / OA 25-16**: Pennington County. To amend Section 317 “Alternative Energy Systems” [to amend and supersede the existing Section 317“Alternative Energy Systems”] of the Pennington County Zoning Ordinance.

REPORT BY: Brittney Hand

GENERAL DESCRIPTION: To amend Section 317 to reflect the proposed changes of the Alternative Energy Committee and Board of Commissioners.

PROPOSED TEXT: § 317 (Changes in **RED**)

SECTION 317 – ALTERNATIVE ENERGY AND BATTERY ENERGY STORAGE SYSTEMS

- A. *Purpose.* These provisions are intended to establish minimum standards for solar energy systems, wind energy facilities, and battery energy storage systems in order to minimize impacts on neighboring properties, ensure compatibility with surrounding land uses, protect environmental resources, and promote the safe, responsible, and coordinated development of renewable energy while safeguarding the public health, safety, and general welfare.
- B. *Definitions.* In addition to the definitions in PCZO § 103, the following are applicable to this section:
 - 1. *AES.* Alternative Energy System. Any device, equipment, structure, or combination thereof used to capture, convert, store, or distribute energy from renewable or non-conventional sources, including solar and wind sources for the purpose of generating electricity for on-site use or transmission.
 - 2. *Airfield Elevations/Length.* Ellsworth Air Force Base (AFB) has a Class B Runway with established airfield elevation of approximately 3,280 feet above Mean Sea Level (MSL). Ellsworth AFB runway length is 13,497 feet. Rapid City Regional Airport runway is 3,204 feet above MSL with max length of 8,701 feet.

3. *Airspace Imaginary Surfaces*. A structure of imaginary control surfaces that exist primarily to enhance the safety and efficiency of aircraft operations by preventing existing or proposed manmade objects, objects of natural growth or terrain from extending upward into navigable airspace. These imaginary surfaces either slope out and up from all sides and ends of runways or are a horizontal plane or a sloping plain above airport. (Imaginary surfaces are shown on Exhibits at the end of this Ordinance.)
4. *Airstrip*. A strip of ground set aside for the takeoff and landing of aircraft.
5. *Angle of Incidence*. The angle that a ray of sun makes with a line perpendicular to the surface. For example, a surface that directly faces the sun has a solar angle of incidence of zero, but if the surface is parallel to the sun (for example, sunrise striking a horizontal rooftop), the angle of incidence is 90°.
6. *ANSI*. American National Standards Institute.
7. *Battery(ies)*. A single cell or a group of cells connected together electrically in series, in parallel, or a combination of both, which can charge, discharge, and store energy electrochemically. For the purposes of this ordinance, batteries utilized in consumer products are excluded from these requirements.
8. *Battery Energy Storage Management System*. An electronic system that protects energy storage systems from operating outside their safe operating parameters and disconnects electrical power to the energy storage system or places it in a safe condition if potentially hazardous temperatures or other conditions are detected.
9. *Battery Energy Storage System (BESS)*. One or more devices, assembled together, capable of storing energy in order to supply electrical energy at a future time, not to include a stand-alone 12-volt car battery or an electric motor vehicle. A battery energy storage system is classified as a Tier 1 or Tier 2 BESS as follows:
 - a. Tier 1 BESS have an aggregate energy capacity less than or equal to 600kWh and, if in a room or enclosed area, consist of only a single energy storage system technology.
 - b. Tier 2 BESS have an aggregate energy capacity greater than 600kWh or are comprised of more than one storage battery technology in a room or enclosed area.
10. *Cell*. The basic electrochemical unit, characterized by an anode and a cathode, used to receive, store, and deliver electrical energy.

11. *Class Delta Airspace.* Class D airspace can generally be described as a controlled airspace that extends from the surface or a given altitude to a specific higher altitude. Ellsworth Air Force Base and Rapid City Class D Airspaces overlap. Ellsworth Air Force Base and Rapid City Air Traffic Control facilities mutually agree that the ridge of hills southeast of Ellsworth Air Force Base constitute the geographical boundary between the Class D Airspaces (Imaginary surfaces are shown on Exhibits at the end of this Ordinance). Ellsworth Air Force Base's Class D Airspace extends from the surface up to and including 5,800 feet Mean Sea Level (MSL) and a 5.9 nautical mile (6.8 mile) radius of the airport center. Rapid City's Class D airspace extends from the surface up to and including 5,700 feet mean sea level (MSL) and a 4.4 nautical (5 mile) mile radius from the airport center.
12. *Collector Line.* A single or group of transmission lines that links one generator, or a group of generators, to the bulk power grid.
13. *Commissioning.* A systematic process that provides documented confirmation that a BESS functions according to the intended design criteria and complies with applicable code requirements.
14. *dB(A).* A frequency weighting that relates to the response of the human ear to sound.
15. *Decibel (dB).* A unit for expressing the relative intensity of sounds on a scale from zero to greater than 130, with 85 possibly being harmful to humans.
16. *Dedicated-Use Building.* A building that is built for the primary intention of housing BESS equipment, is classified as Group F-1 occupancy as defined in the International Building Code, and complies with the following:
 - a. The building's only use is battery energy storage, energy generation, and other electrical grid-related operations.
 - b. No other occupancy types are permitted in the building.
 - c. Occupants in the rooms and areas containing BESS are limited to personnel that operate, maintain, service, test, and repair the BESS and other energy systems.
 - d. Administrative and support personnel are permitted in areas within the buildings that do not contain BESS, provided the following:
 - (1) The areas do not occupy more than 10 percent of the building area of the story in which they are located.
 - (2) A means of egress is provided from the administrative

and support use areas to the public way that does not require occupants to traverse through areas containing BESS or other energy system equipment.

17. *Distributed Solar Energy System (DSES)*. A SES to directly power a home, farm, or small business as its primary use.
18. *Distributed Wind Energy System (DWES)*. Turbines to directly power a home, farm, or small business as its primary use.
19. *Easement*. A right whether or not stated in the form of a restriction, option to obtain an easement, easement, covenant, or condition, in any deed, will, or other instrument executed by or on behalf of any owner of land.
20. *Facility*. A place, especially including buildings, where a particular activity happens.
21. *Federal Aviation Administration (FAA)*. The Federal Aviation Administration is the national aviation authority of the United States, with powers to regulate all aspects of American Civil Aviation.
22. *Fence*. A manmade, unroofed structure, barrier, railing, or other upright structure, typically of wood or wire, enclosing an area of ground to mark a boundary, control access, or prevent escape.
23. *Glare*. A continuous source of brightness, relative to diffused lighting. Not a direct reflection of the sun, but a reflection of the bright sky around the sun. Glare is significantly less intense than glint.
24. *Glint*. Also known as a specular reflection, produced as a direct reflection of the sun in the surface of the PV solar panel. Also, a momentary flash of light.
25. *Glint and Glare Assessment*. An assessment to determine the impact of solar reflections upon surrounding roads, dwellings and aircraft locations.
26. *Grid*. An interconnected network for delivering electricity from suppliers to consumers.
27. *Interconnection Agreement*. To set forth the terms and conditions to allow entities to install an independent power generation system and connect to a utility.
28. *Inverter*. A device that converts direct current electricity to alternating current either for stand-alone systems or to supply power to an

electricity grid.

29. *Megawatt (MW)*. 1,000 kilowatts, or 1 million watts; standard measure of electric power plant generating capacity.
30. *Meteorological Tower*. A tower which is erected primarily to measure wind speed and direction, plus other data relevant to siting of a WES. Other meteorological towers, such as those used by airports, municipalities, weather services or research facilities, are not affected by this definition or this section of the Ordinance.
31. *National Electrical Code (NEC)*. National Electrical Code sets standards and best practices for wiring and electrical system, which contains guidelines for all types of electrical installations. The current version of the NEC shall be followed.
32. *Non-Dedicated-Use Building*. All buildings that contain a BESS and do not comply with the dedicated-use building requirements.
33. *Obstruction Evaluation / Airport Space Analysis (OE/AAA)*. An Obstruction Evaluation is required for all systems 200 feet or above in total height from ground level. An object typically is considered an obstruction when it exceeds (penetrates) Airspace Imaginary Surfaces and/or Class D Airspace, whichever is lowest, but the FAA may have additional restrictions in any airspace. The OE/AAA is a process for aeronautical studies of obstructions to air navigation or navigational facilities to determine the effect on the safe and efficient use of navigable airspace, air navigation facilities or equipment; and the process to petition the Federal Aviation Administration (FAA) for discretionary review of determinations, revisions, and extensions of determinations. View Title 14 Chapter 1 Subchapter E Part 77 Subpart 9 (14 CFR Part 77.9) for the most current information.
34. *Solar Energy*. Electromagnetic energy transmitted from the sun (solar radiation).
35. *Solar Energy System (SES)*. A device or structural design feature intended to provide for collection, storage, and distribution of solar energy.
36. *Solar Skyspace Easement*. Air space for the purpose of ensuring adequate exposure of a photovoltaic solar power system to the sun, or an agreement to refrain from developing a photovoltaic solar power system.
37. *Substations*. Any electrical facility designed to convert electricity to a voltage for interconnection with transmission lines.

38. *System*. A set of connected things or devices that operate together.
39. *Turbine*. All the parts of the WES, including the blades, generator, and tail.
40. *Utility*. Any person or entity engaged in the generation, transmission or distribution of electric energy in this state including, but not limited to: a private investor owned utility, a cooperatively owned utility, a consumer's power district and a public or municipal utility. The term utility shall not include a person or entity that generates electric energy solely for on-site consumption and not for sale, resale, or delivery to the public, including behind-the-meter facilities.
41. *Utility-Scale Solar Energy System (USES)*. Any SES with the primary purpose of delivering electricity to the power grid and distributed to the end user by electric utilities or power system operators. USES can also be referred to as Solar Farm.
42. *Utility-Scale Wind Energy System (UWES)*. Turbines delivering electricity to the power grid and distributed to the end user by electric utilities or power system operators. UWES can also be referred to as Wind Farm.
43. *Watt*. The rate of energy transfer equivalent to one ampere under an electrical pressure of one volt.
44. *Wind Energy System (WES)*. A system that converts wind movement into electricity. All of the following are encompassed in this definition of system:
 - a. Tower or multiple towers, including foundations;
 - b. Generator(s);
 - c. Blades;
 - d. Power collection systems, including pad-mount transformers;
 - e. Access roads, meteorological towers, on-site electric substations, control building, and other ancillary equipment and facilities; and,
 - f. Electric interconnection systems or portion thereof dedicated to the WES.
45. *Wind Generator*. A mechanical device designed and operated so as to generate electricity.
46. *Wind System Height*. The height of the total system measured from grade to the center of the hub height.

- C. *General Requirements.* All AES and BESS in Pennington County are subject to these regulations in addition to all other applicable local, state, and federal regulations.
1. *Building Code.* All systems must meet or exceed standards and regulations of the U.S. Department of Energy, the International Energy Conservation Code, International Code Council, South Dakota State Statutes, and any other agency of federal, or local government with the authority to regulate energy systems.
 2. *Noise.* All proposed Utility-Scale AES and BESS must submit a noise mitigation plan containing:
 - a. Name and qualifications of the person who measured the decibel levels.
 - b. Equipment used.
 - c. Location of the noise measurements depicted on a scaled site plan.
 - d. Sound is measured at the property line of any receiving property.
 - e. A list of all sound sources that contribute to the overall sound emissions from the site and the following for each source:
 - (1) Peak sound levels, in decibels, emitted by each source; and,
 - (2) Sound levels, in decibels, for sound continuously emitted by each source for a duration exceeding thirty (30) minutes;
 - (3) The frequencies of the sound emissions from each source; and,
 - (4) A site diagram showing the location of each sound source.
 - f. A description of any and all methods, systems, devices or structures intended to be used to mitigate sound emissions, including technical specifications, descriptions of materials and/or engineering specifications.
 - g. A certification, signed by the preparer of the document, certifying the accuracy of the materials contained within the noise mitigation plan and that the plan will effectively reduce sound emissions to levels required by this Section.

the wind structure):

(1) Distributed Solar Energy System (DSES)

- i. DSES and associated accessory structures must meet the structure minimum set back requirements for the zoning district in which it is located.
- ii. No DSES is allowed to be placed in the front yard of any residentially zoned property.
- iii. Roof mounted DSES must not extend beyond the exterior perimeter of the building on which the system is mounted.

(2) Distributed Wind Energy System (DWES)

- i. DWES must meet a minimum of 1.1 times the height of the DWES structure to all property lines, overhead electrical lines, public right-of-way and other DWES.
- ii. No DWES is allowed to be placed in the front yard of any residentially zoned property.

e. *Height.* The following are height requirements for (In no way these requirements can infer exceptions to height requirements within any FAA, Ellsworth AFB, and/or Rapid City Regional Airport controlled airfield flight patterns - Imaginary surfaces are shown on Exhibits at the end of this Section):

(1) Distributed Solar Energy System (DSES)

- i. *Pitched-roof mounted systems.* For all roof-mounted systems, the elevation must show the highest finished slope of the solar collector and the slope of the finished roof surface on which it is mounted.

- (a) The panels ~~must be mounted no more than twelve (12) inches from the surface of the roof (mounting hardware) they are on, at any point,~~ and will not be extend beyond the roof ridge line and must meet Pennington County height restrictions for the zoning district.

- ii. *Flat-roof mounted systems.* a drawing shall be submitted showing the distance to the roof edge and any parapets on the building.
 - (a) The horizontal portion of mansard roofs, the panels may extend up to five (5) feet above the highest point of the roof, and shall meet Pennington County height restrictions for the zoning district.
- iii. *Ground-mounted systems.* Ground mounted DSES must not exceed ~~12~~ 15 feet in height above ground when at full tilt.

(2) Distributed Wind Energy System (DWES)

- i. The maximum height (any fraction of an acre will be rounded down to the closest whole number) is based on lot size as follows (total turbine height, excluding blades):
 - (a) 5 acres and below – 50 feet height
 - (b) 5 to 19 acres – 80 feet height
 - (c) 20 + acres – 100 feet height
- ii. The blade tip of any rotor shall, at its lowest point, have ground clearance of no less than 15 feet, as measured at the lowest point of the arc of the blades.

8. *Utility-Scale Alternative Energy Systems.*

- a. *Conditional Use Permit (CUP).* Utility-Scale Systems are permitted as a Conditional Use within an ~~agriculture,~~ Industrial Zoning ~~and-commercial~~ District in accordance with this Section and PCZO § 510.
- b. *Lot size.* Utility-Scale Systems must be located on a lot of not less than 40 acres.
- c. *Utility Notification.* Prior to application with the County, a Utility-Scale System project must provide documentation showing that the local utility company has been informed of the developer's intent to install an interconnected system.

- d. *Permits and Approvals.* In addition to a CUP, the Utility-Scale systems' owner or operator must obtain all necessary permits and approvals from the South Dakota Public Utilities Commission (PUC), Federal Energy Regulatory Commission (FERC), and/or any other applicable regulatory agencies prior to issuance of a Building Permit.
- e. *Obstruction Evaluation.* A Federal Aviation Administration (FAA) 7460-1, Notice of Proposed Construction or Alteration, must be submitted to the FAA. Determination must be made prior to Building Permit submittal.
- f. *Connection.* The location of a utilities' transmission line must be within 5 miles of the location of a systems project boundary.
 - (1) A system's project boundary is defined as the area that encapsulates alternative energy structures. There could be several noncontiguous project boundaries within one Utility-Scale system.
 - (2) Where feasible, feeder lines must be placed underground. Above ground connections may be approved depending on soil conditions, shape and topography of the site, distance to the connection, or other limiting conditions or requirements.
- g. *Building Permit.* Construction of Utility-Scale systems, accessory structures, and any modifications require an approved Commercial Building Permit prior to placement or replacement, as required in this Section and PCZO § 506.
- h. *Signage.* No Utility-Scale system structures shall be used to display permanent or temporary advertising, including signage, streamers, pennants, spinners, reflectors, banners, or similar materials.
 - (1) *Exception.* The manufacturer and equipment information, warning, or indication of ownership shall be allowed on any equipment of the USES, provided they comply with PCZO § 312.
- i. *Glint and Glare Assessment.* For USES, a glint and glare assessment must be conducted.
- j. *Shadow-Flicker Analysis.* For UWES, a shadow-flicker analysis

must be performed and include:

- (1) The duration and location of flicker potential for all receptors and road ways within a one-mile radius of each turbine within a project.
 - (2) A site map identifying the locations of shadow flicker that may be caused by the project and the expected durations of the flicker at these locations from sunrise to sunset over the course of a year.
 - (3) Flicker at any receptor shall not exceed 30 hours per year within the analysis area.
- k. *Setbacks.* The following setbacks are required (distance is measured from the base of the structure for wind structures and the edge of the panel for solar structures):
- (1) Accessory structures must meet the structure minimum set back requirements for the zoning district in which it is located.
 - (2) A buffer of at least 25 feet must be maintained within the required setback.
 - i. The buffer must consist of a fire break and act as a barrier to slow or stop fire movement.
 - (3) All Utility-Scale AES must be setback 1.5 miles from an incorporated municipal boundary, airport or air base. If the municipality, airport or air base has designated future land uses in the County via a comprehensive plan or other land use plan, the proposed system must not create a conflict with this plan.
 - (4) Utility-Scale Solar Energy System (USES)
 - i. USES panel structures must be setback 50 feet from all property lines.
 - ii. USES panel structures must be located at least 300 feet from an existing habitable dwelling.
 - iii. USES inverter and substation structure(s) must be setback 500 feet from a habitable dwelling(s).
 - iv. *Fencing.* A seven (7) foot security fence is required along the entire perimeter of USES system.
 - (5) Utility-Scale Wind Energy System (UWES) – distance must be measured from the exterior edge of the turbine

- base.
 - i. UWES must be located at least 2 times the total height of the structure, including rotor diameter to all property lines and all habitable dwellings.
 - ii. UWES must meet a minimum of 1.1 times the total height of the structure, including rotor diameter, to overhead electrical lines, public right-of-way, riparian corridors, identified wetlands, national or state parks, and other wind turbines.
- 1. *Height.* The following establish the maximum height requirements. Nothing in these requirements shall be construed to create an exception to, waive compliance with, or infer relief from any height limitations applicable within controlled airfield flight patterns regulated by the FAA, Ellsworth AFB, and/or Rapid City Regional Airport. Imaginary surfaces are depicted in the Exhibits at the end of this Section.
 - (1) Utility-Scale Solar Energy System (USES). Ground mounted USES must not exceed 25 feet in height above ground when at full tilt.
 - (2) Utility-Scale Wind Energy System (UWES). The turbine hub height must not exceed 330 feet.
- m. *Lot Coverage.* The maximum allowable lot coverage is 60 percent. The maximum allowable lot coverage is computed by calculating the total area covered by structures and impervious (paved) surfaces, including accessory structures.
 - (1) Development on lots which cause an increase in (exceeds) impervious area greater than 15%, shall be required to provide storm water treatment of the runoff generated by the first 0.5” of rainfall.
 - (2) Prior to any land disturbance, a Stormwater Permit may be required in accordance with PCZO § 507.
- n. *Access Roads.* All roads and approaches must be built to Ordinance 14 standards.
 - (1) Haul Road Agreements may be required by the impacted road authority at their discretion.
 - (2) Turnarounds shall meet Pennington County Fire Service minimum dimensions for emergency vehicle operations.
 - (3) Fire apparatus access roads and driveways shall not exceed 10 percent grade and dead-end access roads

exceeding 150 feet shall provide approved fire and emergency vehicle turnarounds.

- o. *Parking.* Parking requirements must be in accordance with PCZO § 310.

- p. *Emergency Response Plan (ERP).* The Utility-Scale owner or operator must submit an Emergency Response Plan to the Planning Department prior to any ground disturbance at the system's site detailing the planned response actions that will be taken by the operator, including any Battery Energy Storage Systems, in the event of an emergency situation. The Planning Department, Emergency Services and the Fire Administrator will review the plan and provide any necessary comments and/or updates needed. The ERP must be reviewed and approved by the review entities prior to submission of a Building Permit.
 - (1) Plans shall include current 24-hour duty officer contact information, site mapping, access routes, and building layouts.
 - (2) Copies of emergency response plans and annual updates shall be provided to the responsible Fire Department, Ambulance Service, Emergency Services Communications Center, and the County Fire Office.

- q. *Decommissioning, Abandonment, and Site Restoration Plan.* The Utility- Scale owner or operator must submit a decommissioning plan at the time of application that describes the following:
 - (1) The anticipated life of the Utility-Scale system.
 - (2) The anticipated manner in which the facility will be decommissioned, including plans to recycle components and dispose of any hazardous materials.
 - i. For UWES, manner in which turbines are disassembled must be in the same manner as installed.
 - (3) The anticipated site restoration activities. Restoration activities shall include, but not be limited to, the following:
 - i. Removal of all equipment, power lines, and footings to a minimum depth of fifteen (15) feet.

- ii. Soil in project area shall be de-compacted and seeded.
 - (a) The site must be returned to the background native vegetation utilizing a minimum of six inches of topsoil.
 - iii. For any part of the system on leased property, the plan may incorporate agreements with the landowner regarding leaving access roads, fences, gates or repurposed buildings in place or regarding restoration of agricultural crops or forest resource land. Any use of remaining structures must be in conformance with the regulations in effect at that time.
- (4) The estimated decommissioning costs in current dollars. Cost considerations must include the following:
- i. The applicant shall provide the basis for estimates of net costs for decommissioning the site, to include any associated material transportation costs.
 - ii. Removal of any hazardous materials at the facility.
 - iii. Salvage value shall not be included in the cost estimate.
 - iv. The cost basis shall include a mechanism for calculating adjusted costs over the life of the project.
 - v. The method for ensuring that funds will be available for decommissioning and restoration of the site.
 - vi. Anticipated timeline to complete decommissioning activities and site restoration.
 - vii. Where possible, recycling is encouraged in lieu of disposal.
- r. *Performance Agreement and Proof of Financial Surety.* At the time of permitting, the Utility-Scale energy system owner or operator must provide a Performance Agreement and accompanying financial surety instrument to cover the cost of decommissioning in accordance with the following:
- (1) Decommissioning funds shall be an amount equal to the total costs for decommissioning the site, plus a twenty

- percent (20%) contingency.
- (2) Decommissioning funds shall be maintained in the form of a performance bond, surety bond, bank letter of credit, stable parent company guarantee, or other form of financial assurance as approved by the Board of Commissioners.
 - (3) Any financial document evidencing the maintenance of the decommissioning funds shall include provisions for releasing the funds to the County in the event decommissioning is not completed within the anticipated timeline or to the extent approved by the County provided in § 317(C)(8)(q).
 - (4) The total estimated decommissioning funds shall be provided, by any of the means listed above, prior to any ground disturbance, grading or construction activity on the site.
 - (5) Financial surety must be maintained for the life of the system.
 - (6) Proof of recertification of the financial surety instrument must be submitted to the County every five (5) years.
 - i. The Utility-Scale energy system owner or operator must retain an independent Licensed South Dakota Engineer to re- estimate the total cost of decommissioning and attest that the value of the financial surety instrument is appropriate.
 - ii. The re-estimated decommissioning costs must be filed with the County and incorporate any new industry information learned since the last cost determination.
 - iii. The required amount of the decommissioning fund must match the re-estimated cost of decommissioning, plus a twenty percent (20%) contingency.
 - iv. Within ninety (90) days of filing the re-estimation report with the County, the facility owner or operator must cause the fund balance of the financial surety instrument to be adjusted to ensure that it matches the re-estimated decommissioning cost.
 - (7) Failure to abide by the provisions of 317(C)(8)(r) may constitute grounds for revocation as set forth in 317(H).

- s. *Commencement of Site Decommissioning.* Decommissioning of the site shall commence at the time identified in the project decommissioning plan or performance agreement, or when the facility is determined to have been abandoned.
 - (1) Decommissioning shall be completed in accordance with the approved decommissioning plan.
 - (2) The Utility-Scale energy system owner or operator must notify the County within 90 days both when the project is discontinued and when decommissioning is complete.
 - (3) Third-party verification, as well as County verification of completed decommissioning will be required before the financial surety may be released.
 - (4) The Utility-Scale energy system will be considered abandoned in the following circumstances:
 - i. Upon termination or expiration of the utility scale system leases/easements.
 - ii. After one year without production, storage of energy, or use as a backup facility.
 - iii. Exceptions may be made for:
 - (a) A natural event that has occurred or is occurring, which will prevent the facility from resuming operation within 12 months.
 - (b) If the facility is in the process of being repowered.
 - (c) A situation in which the Utility-Scale energy system owner or operator can provide evidence to the Board of Commissioners, that the system's period of continuous inactivity is due to circumstances beyond owner or operator's control and that the facility has not been abandoned.

9. *Battery Energy Storage Systems (BESS).*

- a. *Accessory Use.* Battery Energy Storage Systems (BESS) are permitted as an accessory use to a utility-scale solar energy system within an Industrial Zoning District.
- b. *Principal Use.* A BESS may be permitted as a principal use within an Industrial Zoning District upon approval of a

Conditional Use Permit, in accordance with this Section and PCZO § 510.

- c. *Submittal Requirements.* An application for a BESS shall include, at a minimum, the following:
- (1) *Engineered Plans.* To be completed by a South Dakota Licensed Professional Engineer, and include the following:
- i. Certification that the BESS layout, associated components, and electrical interconnection methods, including all disconnects and overcurrent protection devices are National Electrical Code-compliant.
 - ii. Certification that the BESS shall comply with the most recent edition of NFPA 855 in effect at the time of application. All components shall be listed by a Nationally Recognized Testing Laboratory (NRTL) in accordance with UL 9540. Where applicable, systems shall also comply with UL 9540A testing requirements.
 - iii. Certification that all BESS and associated equipment is listed by a Nationally Recognized Testing Laboratory to UL 9540 or an approved equivalent. Subcomponents shall comply with applicable standards, including:
 - (a) UL 1973 – Batteries for Stationary Applications;
 - (b) UL 1642 – Lithium Batteries;
 - (c) UL 1741 or UL 62109 – Inverters and Power Converters; and,
 - (d) Applicable electrical, building, and fire codes.

As an alternative, field evaluation by an approved testing laboratory demonstrating compliance with UL 9540 (or equivalent) and applicable codes may be accepted.
 - iv. Certification that electrical equipment shall be housed in weatherproof enclosures marked with an appropriate environmental rating for the conditions of exposure, in compliance with NFPA 70.
 - v. Certification that all BESS and associated equipment is listed by a Nationally Recognized Testing Laboratory to UL 9540 or an approved

equivalent. Subcomponents shall comply with applicable standards, including:

- (2) *Installer and Operator Information.*
The name, address, and contact information of the proposed or potential system installer, and the owner and/or operator of the BESS. Final installer information shall be submitted prior to issuance of a building permit.
- (3) *Applicant and Property Owner Information.*
The name, address, telephone number, and signature of the project applicant, as well as all property owners, demonstrating consent to the application and use of the property for the BESS.
- (4) *Fire Safety Compliance Plan.*
A plan demonstrating compliance of the system and its associated controls and safety systems with the Uniform Code, to include fire suppression and containment systems.
- (5) *Operation and Maintenance Procedures.*
Documentation outlining proposed maintenance procedures, property upkeep, and system design, construction, installation, testing, and commissioning, in accordance with the Uniform Code.
- (6) *Emergency Response Plan (ERP).*
A copy of the approved Emergency Response Plan shall be provided to the system owner, Fire Administrator, and South Dakota fire code official, and maintained at an approved on-site location accessible to personnel and emergency responders. The plan shall include:
 - i. Procedures for safe shutdown, de-energization, isolation, and restart of the system under emergency conditions.
 - ii. Procedures for inspection and testing of alarms, interlocks, and controls.
 - iii. Procedures for responding to system alerts indicating potentially hazardous conditions, including equipment shutdown, notification of service personnel, and coordination with fire department personnel.

- iv. Plans shall include current 24-hour duty officer contact information, site mapping, access routes, and building layouts.
 - v. Copies of emergency response plans and annual updates shall be provided to the responsible Fire Department, Ambulance Service, Emergency Services Communications Center, and the County Fire Office.
- (7) *Pre-fire Response Plan (PFRP)*: The PFRP shall include:
- i. Procedures for safe shutdown, de-energization, isolation, and restart of the system under emergency conditions.
 - ii. A description of all on-site equipment and systems to be provided to prevent or handle fire emergencies;
 - iii. A description of all contingency plans to be implemented in response to the occurrence of a fire emergency, including evacuation control measures and notification measures;
 - iv. The results of a toxic and flammable gas plume dispersion analysis for the anticipated BESS equipment in a severe fire emergency scenario to assess potential impacts on surrounding areas.
 - v. A commitment to conduct, or provide funding to conduct, site-specific training drills with emergency responders before commencing operation, and at least once per year while the facility is in operation, at the expense of the project owner. Training should familiarize the applicable first responders with the project, hazards, procedures, and current best practices.
 - vi. A commitment to review and update the PFRP with the applicable fire department, first responders, and county emergency managers at least once every 3 years.
 - vii. An analysis of whether plans to be implemented in response to a fire emergency can be fulfilled by existing local emergency response capacity. The analysis should include identification of any specific equipment or training deficiencies in local emergency response capacity and recommendations for measures to mitigate deficiencies.

- viii. Other information the applicant finds relevant.
- (8) *Statement of Public Benefits.*
For Tier 2 BESS, a statement explaining the expected public benefits of the proposed BESS.
- d. *Setbacks.* Setback distances shall be measured from the nearest edge of any required perimeter fencing.
- (1) Tier 1 BESS. Tier 1 (small-scale) BESS shall comply with the setback requirements applicable to the Industrial Zoning District.
 - (2) Tier 2 BESS. Tier 2 BESS shall comply with the following minimum setbacks:
 - i. Five hundred (500) feet from any dwelling, residentially zoned lot or community building;
 - ii. One hundred (100) feet from any public road right-of-way;
 - iii. One hundred (100) feet from any side or rear property line.
- e. *Height.* BESS installations shall comply with the height requirements of the Industrial Zoning District.
- f. *Screening and Visibility.*
BESS shall be screened, to the extent reasonably practicable, to minimize visibility from adjacent properties through the use of architectural features, berms, landscaping, or other methods compatible with the character of the surrounding area. Screening shall not interfere with required ventilation or exhaust systems.
- g. *Site Access and Maintenance.*
BESS facilities shall be maintained in good working order in accordance with industry standards. Site access, including snow removal, shall be maintained at a level acceptable to emergency responders.
- h. *Repair, Augmentation, and Repowering.*
In addition to repairing or replacing BESS components to maintain the system, a BESS may at any time be augmented or repowered without the need to submit a new site plan so long as the augmentation or repowering is within the same footprint (e.g., same dedicated use building or on footings/foundations in the same location) as the original permit and there is no significant change in the battery chemistry (e.g., a change from one lithium-ion battery type, such as Lithium Iron Phosphate, to

another, such as Nickel Manganese Cobalt). When a BESS is anticipated to be augmented, the applicant shall submit an augmentation plan as part of the site plan application.

(1) A proposal to change the project footprint or a significant change in battery chemistry shall be considered a new Conditional Use Permit and will be subject to the same review and approval processes for new applications under this Section.

i. *Decommissioning.* A Decommissioning Plan is required for any BESS at the time of application.

(1) The Decommissioning Plan shall include the specifications laid out in this Section and the requirements for Decommissioning Plans outlined in NFPA 855.65

(2) An update of the Decommissioning Plan, including a review of the amount of the financial security based on inflation and the current removal costs [not to include salvage value], shall be completed every 5 years, for the duration of commercial operations, and approved by the Board of Commissioners. The amount shall be calculated by a mutually-agreed-upon third party with expertise in decommissioning, hired by the BESS system owner.

(3) A BESS owner may at any time:

i. Proceed with the approved Decommissioning Plan and remove the system as indicated after prior notification to the County, or

ii. Amend the Decommissioning Plan with Board of Commissioners approval and proceed according to the revised plan after prior notification of the County.

(4) A BESS that has not stored electrical energy for 12 consecutive months shall prompt a revocation hearing. Decommissioning a BESS, in accordance with an approved Decommissioning Plan, must be completed within 12 months after abandonment.

j. *Decommissioning Plan.* The Decommissioning Plan shall, in addition to requirements for Decommissioning Plans in NFPA 855, include:

- (1) A narrative description of the activities to be accomplished for removing the BESS from service, including who will perform that activity and at what point in time, for complete physical removal of all BESS components, structures, equipment, security barriers, and transmission lines from the site. The description shall also include hazardous material use and removal from the site based upon what is known at the time the application is filed;
 - (2) A description of which above-grade and below-grade improvements will be removed, retained, or restored for viable use of the property consistent with the industrial zoning district;
 - (3) A listing of any contingencies for removing an intact operational BESS, and for removing a BESS that has been damaged by a fire or other event;
 - (4) The projected decommissioning costs for BESS removal and site restoration [not to include salvage value] and how said estimate was determined by a mutually-agreed-upon third party with expertise in decommissioning, hired by the applicant;
 - (5) The method of ensuring that funds totaling 120 percent of projected costs will be available for site decommissioning and restoration (in the form of surety bond, irrevocable letter of credit, or cash deposit);
 - (6) The method by which the decommissioning cost will be kept current including in the case of a change of ownership or operational authority.
- k. *Post-Approval Documentation.* Any Conditional Use Permit for any BESS shall be conditioned upon the submission of the following documents:
- (1) *Pre-Construction Documents.* Prior to the commencement of construction activities, the following documents shall be prepared and/or updated in compliance with NFPA 855 and developed in consultation with the Fire Administrator. These shall be submitted to the County. Copies of all Pre-Construction Documents shall be maintained at an approved on-site location accessible to facility personnel, the local fire department, and emergency responders.
 - i. *Final Equipment Specification Sheet.* Documenting the final battery energy storage

- system components, inverters, and associated electrical equipment.
 - ii. *Contact Information.* Name, address, and contact information of the system installer and the owner and/or operator of the battery energy storage system.
 - iii. *Amended ERP and PFRP (if applicable).* Changes to the design, type, manufacturer, etc. of BESS facilities or equipment after site plan approval must be analyzed to determine if changes are necessary to the ERP or PFRP. Additional consultation with the Fire Administrator, first responders, and county emergency managers is required for amended plans.
 - iv. *Commissioning Plan.* A Commissioning Plan as outlined in NFPA 855.72 and this Section.
 - v. *Hazard Mitigation Analysis (HMA).* A Hazard Mitigation Analysis as outlined in NFPA 855.73.
- l. *Post-Construction Reporting.* Prior to the commencement of commercial operations, the following documents shall be prepared and/or updated in compliance with NFPA 855 and developed in consultation with the Fire Administrator. These shall be submitted to the County prior to final inspection and approval by the Planning Department and Fire Administrator. Copies of all Post-Construction Reporting shall be maintained at an approved on-site location accessible to facility personnel, the local fire department, and emergency responders.
 - (1) Amendments or updates to any Pre-Construction Documents.
 - (2) Commissioning Report. A Commissioning Report as outlined in NFPA 855.74.
 - (3) *Emergency Response Plan.* An Emergency Response Plan as outlined in NFPA 855.75.
- m. *Post-Construction Sound Survey.* Documentation of sound pressure level measurements shall be provided to the Planning Department by a third-party qualified professional selected by the Board of Commissioners and at the expense of the BESS system owner within 6 months of the commencement of the operation of the project. The study will be designed to verify compliance with sound standards applicable to this ordinance. Tier 1 BESS are exempt from this requirement.

10. *Additional Submittal Requirements for Utility-Scale and BESS.* The following are required for submission to the Planning Department:
 - a. An application on a form provided by the Planning Department.
 - b. A fee in accordance with PCZO § 511.
 - c. A narrative describing the proposed system including an overview of the system.
 - d. A site plan showing the proposed location and dimensions of all equipment, existing and proposed structures, screening, fencing, property lines, access roads, turnout locations, ancillary equipment, and the location of any habitable residence, church, school, or government building within one half mile (2,640 feet) of the site boundary.
 - e. Any plans, assessments, approvals, or reports that are required in PCZO § 317(C).
 - f. Lease agreements if the property owner and energy system owner/operator of the system are not the same.
 - g. Interconnection Agreement, if available or proof of notification to the utility.
 - h. Any other relevant studies, reports, certifications, and approvals as may be reasonably requested by Pennington County to ensure compliance with this Section.
 - i. Signature of the property owner(s) and the owner or operator of the system (if different than the property owner).

D. *Notice for Utility-Scale and BESS.*

1. *Sign.* Upon submittal of a complete application and payment of application fee, the Planning Department shall provide the applicant a sign to inform the public of the Conditional Use Permit application. The applicant shall post the sign on the property at least 30 days prior to public hearing on the application before the Planning Commission.
2. *Property Owners.* The applicant must also notify all property owners (including recorded Contract for Deed buyers) of land located within 1.0 mile, inclusive of any right-of-way, of the outer boundaries of the subject property of the pending CUP application. Based upon Department of Equalization records, the Planning Department will determine and provide a list of property owners within 1.0 mile. Notice must be by registered or certified mail at least 30 days prior to the public hearing on the application. The applicant must use “Notice of Hearing” letters provided by the Planning Department.
3. *Additional Notice.* The applicant must notify the United States Ellsworth Air Force Base, Rapid City Regional Airport and any other affected airstrip/airports within 5 miles of the project boundary and any applicable Conservation Districts by registered or certified mail at least

30 days prior to the public hearing. The applicant must use “Notice of Hearing” letters provided by the Planning Department.

E. *Public Hearings for Utility-Scale and BESS.*

1. *Planning Commission.* Notice of time and place of hearing shall be given at least 30 days in advance by publication in the legal newspapers of the County. The decision of the Planning Commission shall be a recommendation to the Board of Commissioners (hereinafter “Board”). The Planning Commission may recommend approval, approval with conditions or denial of the application.
2. *Board of Commissioners.* After receiving the recommendation of the Planning Commission, the Board shall hold a public hearing on the application. Notice of time and place of hearing shall be given at least 30 days in advance by publication in the legal newspapers of the County. The Board may approve, approve with conditions or deny the application.

F. *Review of Utility-Scale and BESS.*

1. *Power-to-Review.* The Board has the authority to review a Conditional Use Permit for a Utility-Scale Alternative Energy and Battery Energy Storage System to ensure compliance with the PCZO, any conditions imposed, and state law.
2. *Procedure.* A Conditional Use Permit for a Utility-Scale Alternative Energy and Battery Energy Storage System are subject to review by the Board for compliance with conditions of approval. A review may occur as a condition of approval, at the request of the Board, or upon an evidence-based, substantiated complaint. At the conclusion of the review, the Board may (1) approve the Conditional Use under the conditions already imposed; (2) approve the Conditional Use with additional conditions, subject to another review; (3) schedule another review; or (4) schedule a revocation hearing in accordance with subsection (H) of this Ordinance.
3. Upon change in ownership.

G. *Revocation.* Any Conditional Use approved under the provisions of this Section must be established and conducted in conformity with the conditions of approval of the Permit. Failure to comply with conditions of approval is cause for revocation of the Permit.

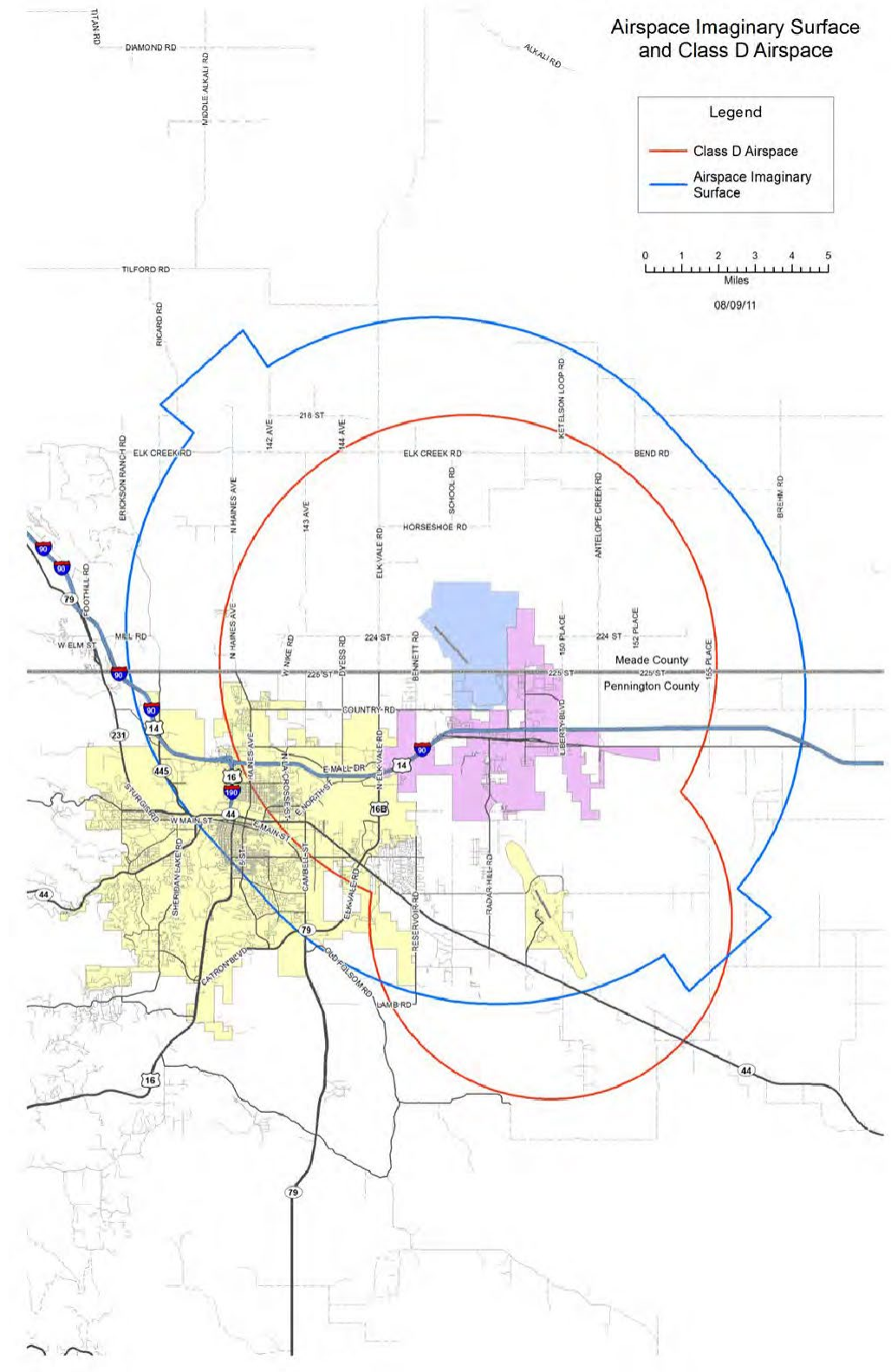
1. The Planning Director may schedule a revocation hearing before the Board if:

- a. the owner or applicant has failed repeatedly to comply with the conditions of the approved Permit; or,
 - b. the continued Conditional Use is a threat to public health, safety, or general welfare.
 - c. Findings of Fact entered into the record.
 - d. the owner fails to notify Pennington County of a change in ownership.
2. Notice of time and place of hearing shall be given, in writing, to the permit holder at least 30 days in advance of hearing. Surrounding property owners must also be given written notice of the hearing as provided under PCZO § 317(G)(2) In addition, notice of time and place of the hearing shall be published.
- H. *Appeals.* The Board is the approving authority for Utility-Scale Alternative Energy and BESS. The Board's decision on a Conditional Use Permit application is subject to review pursuant to SDCL 11-2-61.1 and amendments thereto.
- I. *Failure to Commence.* Failure of an owner or operator to take substantial steps to commence construction within two years of issuance of the Conditional Use Permit, shall terminate the Permit.
1. *Substantial step* is defined as action which demonstrates reasonable effort to commence operation, including, but not limited to, surveying, site plan development, and obtaining utility approvals.
- K. *Ownership Change.* If the owner of a Utility-Scale AES or BESS changes or the owner of the property changes, the Conditional Use Permit shall remain in effect, provided that the successor owner or operator assumes in writing all of the obligations of the Conditional Use Permit, site plan approval, and decommissioning plan. A new owner or operator of a Utility-Scale AES or BESS shall notify Pennington County of such change in ownership or operator within 60 days of the ownership change. A new owner or operator must provide such notification to Pennington County in writing. The Conditional Use Permit and all other local approvals could be revoked if a new owner or operator fails to provide written notification to the Pennington County in the required timeframe.
1. Reinstatement of a revoked Conditional Use Permit will be subject to the same review and approval processes for new applications under this Section.

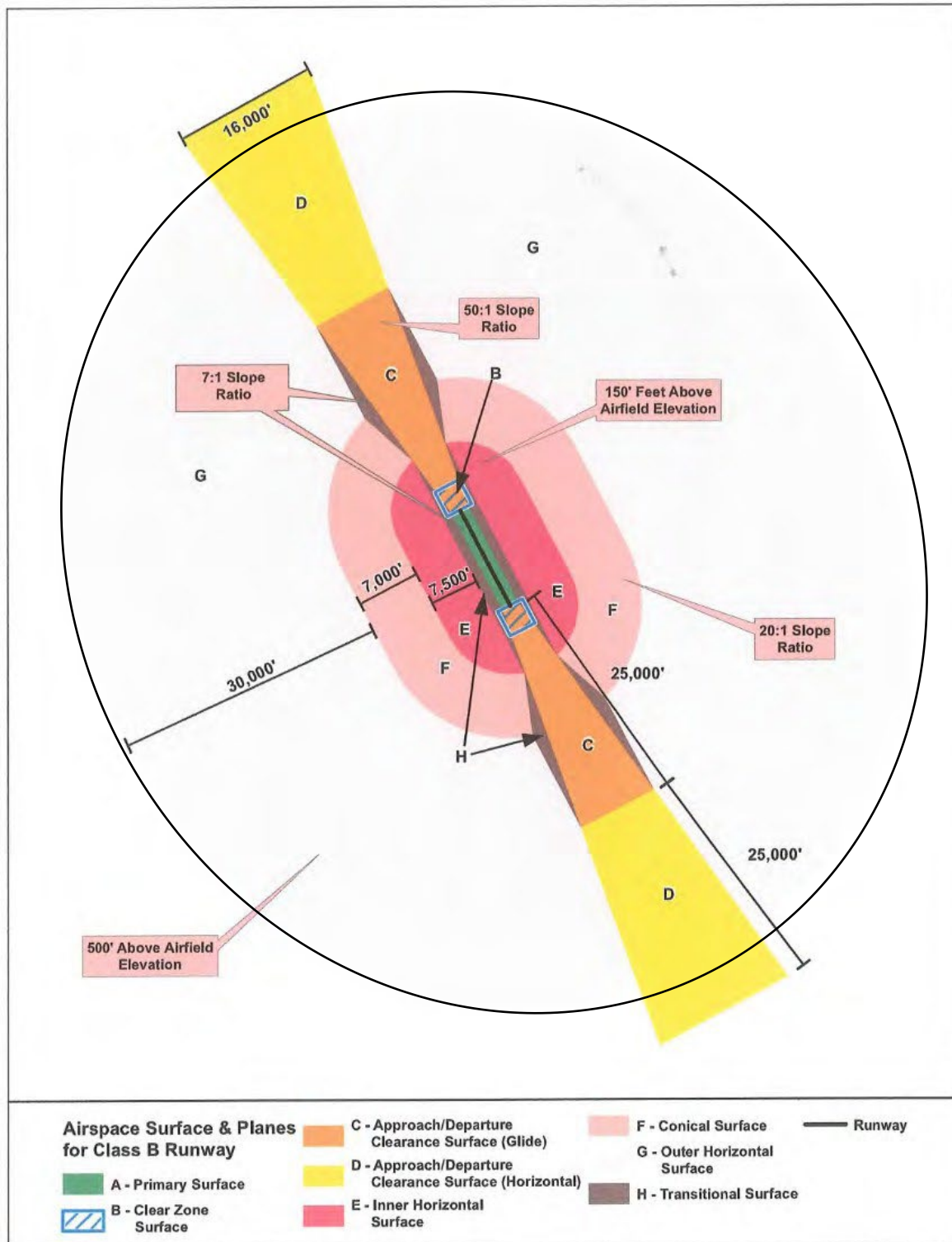
	Distributed SES	Utility SES	Distributed WES	Utility WES
Setbacks				
Property Line	Zoning District Setback	50 feet	1.1 times height	2 times height
Overhead Electrical Line	n/a	n/a	1.1 times height	1.1 times height
Public ROW	25 feet	50 feet	1.1 times height	1.1 times height
Other Systems	n/a	n/a	1.1 times height	1.1 times height
Buffer	n/a	25 feet	n/a	n/a
Incorporated Municipality	n/a	1.5 miles ¹	n/a	1.5 miles ¹
Airports, Air base	n/a	1.5 miles ¹	n/a	1.5 miles ¹
Existing Habitable Dwelling	n/a	300 feet	n/a	2 times height
Riparian Corridor	n/a	n/a	n/a	1.1 times height
Wetlands	n/a	n/a	n/a	1.1 times height
Parks	n/a	n/a	n/a	1.1 times height
Lot Coverage	n/a	60%	n/a	60%
Height	Ground mounted- ±2 15 feet Roof mounted- roof + SES = 35 feet	25 feet at full tilt	Ground clearance of 15 feet	330 feet at hub
<i>5 acres and below</i>	n/a	n/a	<i>50 feet</i>	n/a
<i>5 to 19 acres</i>	n/a	n/a	<i>80 feet</i>	n/a
<i>20+ acres</i>	n/a	n/a	<i>100 feet</i>	n/a
Zoning	ALL	AG, C , I	ALL	AG, C , I

¹ - If the municipality, airport or air base has designated future land uses in the County via a comprehensive plan or other land use plan, the proposed system must not create a conflict with this plan.

EXHIBIT



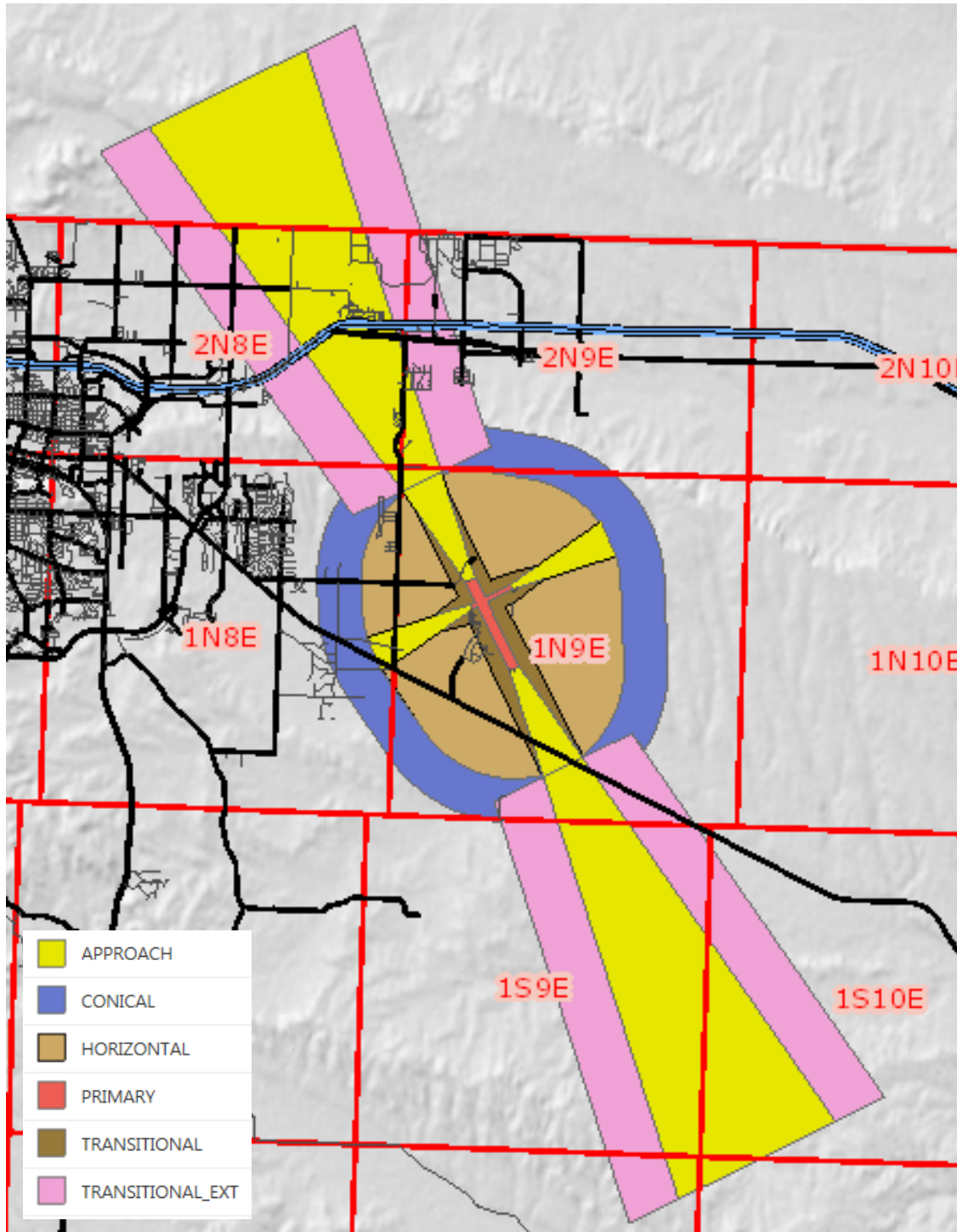
EXHIBIT



Source of Airspace & Planes: Federal Aviation Administration Regulation Part 77, Subpart C.

EXHIBIT

Part 77 – Obstructions to
Navigation Rapid City Regional
Airport



Summary of Proposed Changes to Pennington County Ordinance Section 317

Major Overall Changes

- Expanded ordinance regulating Solar Energy Systems (SES), Wind Energy Systems (WES), and Battery Energy Storage Systems (BESS).
- Added detailed definitions, operational standards, permitting requirements, emergency planning, and decommissioning standards.
- Introduced comprehensive regulations for utility-scale renewable energy projects and standalone battery storage facilities.

Key New Definitions Added

Added technical definitions including:

- Battery Energy Storage System (BESS)
- Tier 1 and Tier 2 BESS classifications
- Glint and glare
- Dedicated-use building
- Distributed vs. Utility-scale systems
- FAA and airspace-related terminology

General Requirements

- Utility-scale AES and BESS projects must submit noise mitigation plans and emergency response plans.
- Established maximum sound level of 55 dBA near habitable dwellings.
- Lighting must minimize glare and nuisance impacts.
- Systems must comply with floodplain and FCC/FAA regulations.

Distributed Solar & Wind System Changes

- Ground-mounted solar height increased from 12 feet to 15 feet.
- Solar systems prohibited in residential front yards.
- Wind height limits based on parcel size:
 - ≤5 acres: 50 feet
 - 5–19 acres: 80 feet
 - 20+ acres: 100 feet

Utility-Scale Solar & Wind Changes

- Utility-scale systems allowed only through Conditional Use Permit (CUP).
- Minimum lot size: 40 acres.
- New setbacks from municipalities, airports, homes, roads, and environmental features.
- Required glint/glare studies and shadow-flicker analysis.

Battery Energy Storage System (BESS) Regulations

- Entirely new section added regulating BESS.
- Tiered requirements for Tier 1 and Tier 2 systems.
- Fire safety, NFPA 855, UL 9540, and hazard mitigation requirements added.
- Emergency response coordination and sound studies required.

Decommissioning & Financial Assurance

- Mandatory decommissioning plans and restoration requirements.
- Financial surety required at 120% of projected decommissioning costs.
- Financial reviews required every 5 years.

Additional STAFF Recommended Setbacks & Standards

Distributed Solar Energy Systems (DSES)

- Ground-mounted height: 15 feet
- Roof-mounted systems: Up to 50 feet total height
- Minimum lot size: 1 acre
- Ground clearance: 2 feet

Distributed Wind Energy Systems (DWES)

- Property lines: 1.1x turbine height
- Existing dwellings: 1.5x turbine height
- Electrical lines/public ROW/other systems: 1.1x height
- Communication facilities: 1.1x height
- Ground clearance: 15 feet

Utility-Scale Solar Energy Systems (USES)

- Property lines: 50 feet
- Dwellings: 300 feet
- Inverters/substations: 500 feet from dwellings
- Additional 25-foot firebreak buffer
- Airports/air bases: 1.5 miles
- Residential lots: 150 feet
- Riparian corridors/wetlands/parks/recreation areas: 100 feet
- Lot size: 40 acres
- Lot coverage: 60%
- Maximum height: 25 feet

Battery Energy Storage Systems (BESS)

- Property lines/public ROW/substations: 150 feet
- Dwellings/residential lots: 500 feet
- Between storage units: 25 feet
- Buffer: Additional 25 feet
- Airports/air bases: 1.5 miles
- Wetlands/riparian corridors/parks: 500 feet
- Maximum height: 35 feet

Utility-Scale Wind Energy Systems (UWES)

- Property lines: 3x total height
- Existing dwellings: 4x total height
- Electrical lines/public ROW/other systems: 1.5x height

- Communication facilities/substations: 1.5x height
- Additional 25-foot buffer
- Airports/air bases: 1.5 miles
- Maximum hub height: 330 feet

Distributed Solar

Setbacks	Existing Ordinance	Committee Recommendation	Public Comment	STAFF COMMENT	
Property Line	Zoning District Setback	Zoning District Setback	No proposed changes	Zoning District Setback	
Overhead Electrical Line	n/a	n/a		25 feet	
Electrical Substations	n/a	n/a		n/a	
Public ROW	25 feet	25 feet		25 feet	
Other Systems	n/a	n/a		n/a	
Communication Facilities	n/a	n/a		n/a	
Buffer	n/a	n/a		no requirement	
Incorporated Municipality	n/a	n/a		n/a	
Airports, Air base	FAA review	FAA review		FAA Review	
Existing Habitable Dwelling	n/a	n/a		n/a	
Riparian Corridor	n/a	n/a		n/a	
Wetlands	n/a	n/a		n/a	
Parks	n/a	n/a		n/a	
Minimum Lot Size	n/a	n/a		n/a	
Lot Coverage	n/a	n/a		n/a	
Height (at maximum tilt)	Ground mounted - 20 feet	Ground mounted - 12 feet		Ground mounted - 15 feet	Ground mounted - 15 feet
	Roof mounted-roof + SES = 35 feet	Roof mounted-roof + SES = 35 feet		Roof mounted-roof + SES = 35 feet + 15 feet = 50 feet	Roof mounted-roof + SES = 35 feet + 15 feet = 50 feet
Ground Clearance	n/a	n/a	No proposed changes	2 feet	
<i>5 acres and below</i>	n/a	n/a		n/a	
<i>5 to 19 acres</i>	n/a	n/a		n/a	
<i>20+ acres</i>	n/a	n/a		n/a	
Zoning	ALL	ALL		ALL	

Distributed Wind

Setbacks	Existing Ordinance	Committee Recommendation	Public Comment	STAFF COMMENT
Property Line	1.1 times height	1.1 times height	No proposed changes	1.5 times height
Overhead Electrical Line	1.1 times height	1.1 times height		1.1 times height
Electrial Substations	1.1 times height			1.1 times height
Public ROW	1.1 times height	1.1 times height		1.1 times height
Other Systems	1.1 times height	1.1 times height		1.1 times height
Communication Facilities	1.1 times height	n/a		1.1 times height
Buffer	n/a	n/a		n/a
Incorporated Municipality	n/a	n/a		n/a
Airports, Air base	FAA Review	FAA Review		FAA Review
Existing Habitable Dwelling	1.1 times height (off-site)	n/a		1.5 times height
Riparian Corridor	n/a	n/a		n/a
Wetlands	n/a	n/a		n/a
Parks	n/a	n/a		n/a
Minimum Lot Size	0.5 acre	n/a		1 acre
Lot Coverage	n/a	n/a		n/a
Height	n/a	100		100
Ground Clearance	12 feet	15 feet		15 feet
<i>5 acres and below</i>	n/a	<i>50 feet</i>		<i>50 feet</i>
<i>5 to 19 acres</i>	n/a	<i>80 feet</i>		<i>80 feet</i>
<i>20+ acres</i>	n/a	<i>100 feet</i>		<i>100 feet</i>
Zoning	ALL - CUP for 1.5 acres or more but less than 20 acres	ALL	ALL	

Utility-Scale Solar				
Setbacks	Existing Ordinance	Committee Recommendation	Public Comment	STAFF COMMENT
Property Line	25 feet or 1.5 times height	50 feet	1,000 ft	50 feet
Overhead Electrical Line	n/a	n/a	Line Owners Determine	n/a
Electrial Substations	n/a	n/a	1,500 ft from property line	n/a
Public ROW	25 feet or 1.5 times height	50 feet	1,000 ft	50 feet
Other Systems	n/a	n/a	0.5 mile	n/a
Communication Facilities	n/a	n/a	1,000 ft	n/a
Buffer	n/a	Additional 25 feet	50 feet	Additional 25 feet
Incorporated Municipality	n/a	1.5 miles	5 miles (add schools)	1.5 miles
Airports, Air base	FAA Review	FAA Determination	FAA Determination	FAA Determination
	Prohibited in Imaginary Airspace	1.5 miles	1.5 miles	1.5 miles
Existing Habitable Dwelling	100 feet	300 feet 500 feet for inverters and substations	1,000 feet 2,000 feet for inverters	300 feet 500 feet for inverters and substations
Residential Zoned Lots	100 feet	n/a	1,000 feet	150 feet
Riparian Corridor	n/a	n/a	2,000 feet	100 feet
Wetlands	n/a	n/a	2,000 feet	100 feet
Recreation Areas	n/a	n/a	5 miles	100 feet
Parks	n/a	n/a	10 miles for Fed and State	100 feet
Transmission Line	n/a	within 5 miles	within 5 miles	remove due to change in zoning to only allow in Industrial
Minimum Lot Size	40 acres (CSP), 5 Acres (PV)	40 acres	Min 40 acres 1,500 acres Max	40 acres
Lot Coverage	n/a	60%	60%	60%
Height (at maximum tilt)	35 feet	25 feet	25 feet	25 feet
Ground Clearance	n/a	n/a	n/a	2 feet
Zoning	CUP in AG, C, I	CUP in AG, C, I	CUP in I	CUP in I

Battery Energy Storage System (BESS)				
Setbacks	Existing Ordinance	Committee Recommendation	Public Comment	STAFF COMMENT
Property Line	n/a	n/a	2,000 ft	150 feet
Overhead Electrical Line	n/a	n/a	Line owners determine	n/a
Electrical Substations	n/a	n/a	2000 ft from property line	n/a
Public ROW	n/a	n/a	1,000 ft	150 feet
Between Other Batteries in System	n/a	n/a	250 feet between storage units for fire protection	25 feet
Distance from ventilated protective walls	n/a	n/a		10 feet
Communication Facilities	n/a	n/a	2,000 ft	500 feet
Buffer	n/a	n/a	2,000 feet	Additional 25 feet
Incorporated Municipality/ Schools	n/a	n/a	Add schools, 5 miles	1.5 miles
Airports, Air base	n/a	n/a	FAA Determination	FAA Determination
	n/a	n/a		
Existing Habitable Dwelling	n/a	n/a	Min 1 mile for protection from toxic fumes during fires	500 feet
Residential Zoned Lots	n/a	n/a	1 mile	500 feet
Riparian Corridor	n/a	n/a	2,000 ft	500 feet
Wetlands	n/a	n/a	2,000 feet	500 feet
Recreation Areas	n/a	n/a	5 miles	500 feet
Parks	n/a	n/a	10 miles	500 feet
Transmission Line	n/a	n/a	Within 5 miles	n/a
Lot Size	n/a	n/a	Max 10 acres	Min 40 acres
Lot Coverage	n/a	n/a	60%	60%
Height	n/a	n/a	n/a	35 feet
Zoning	n/a	n/a	CUP in I	CUP in I

Utility-Scale Wind

Setbacks	Existing Ordinance	Committee Recommendation	Public Comment	STAFF COMMENT
Property Line	25 feet or 1.5 times height	2 times height	1.2 miles (per US DOT)	3 times height
Overhead Electrical Line	25 feet or 1.5 times height	1.1 times height	1.5 times	1.5 times height
Electrial Substations	25 feet or 1.5 times height	1.1 times height	1,500 feet from property line	1.5 times height
Public ROW	25 feet or 1.5 times height	1.1 times height	1.2 miles (per US DOT)	1.5 times height
Other Systems	per manufacturer	1.1 times height	1.2 miles	1.5 times height
Communication Facilities	25 feet or 1.5 times height	n/a	1.2 miles	1.5 times height
Buffer	n/a	Additional 25 feet	50 feet	Additional 25 feet
Incorporated Municipality	1 mile	1.5 miles	5 miles (add schools)	1.5 miles
Airports, Air base	3 miles	FAA Determination	FAA Determination	FAA Determination
	Prohibited in Imaginary Airspace	1.5 miles	1.5 miles	1.5 miles
Existing Habitable Dwelling	25 feet or 1.5 times height	2 times height	1.2 miles (per US DOT)	4 times height
Residential Zoned Lots	n/a	n/a	1.2 miles	3 times height
Riparian Corridor	n/a	1.1 times height	5 times height	1.5 times height
Wetlands	n/a	1.1 times height	5 times height	1.5 times height
Recreation Areas	300 yards	n/a	5 miles	1.5 times height
Parks	1 mile	1.1 times height	10 miles for Fed and State	1.5 times height
Transmission Line	n/a	within 5 miles	within 5 miles	remove due to change in zoning to only allow in Industrial
Minimum Lot Size	40 acres	40 acres	Max 750 acres	40 acres
Lot Coverage	n/a	60%	60%	60%
Height	Minimum blade tip height of 25 feet above	330 feet max (at hub)	330 feet max (at hub)	330 feet max (at hub)
Ground Clearance	25 feet	n/a	Blade 25 feet	n/a
Zoning	CUP in AG, C, I	CUP in AG, C, I	CUP in I	CUP in I

7-1-2025 **DRAFT-2**

To:

Jason Theunissen, CFM, CISEC-IT, ICC Building Inspector
Assistant Director
Pennington County Planning and Zoning

CC:

Brittney Molitor, Director:
Pennington County Planning and Zoning

Scott Guffey
Director
Pennington County Natural Resources

From:

Jerome Harvey, Administrator, Pennington County Fire Service.

Reference: Section 317, Alternative Energy Systems, 6/12/2025

County Fire, comments and recommendations.

Letter “C” #8 “Utility-Scale Systems”

❖ **“J”** Setbacks: for *“Utility-Scale Systems”*

❖ Fire break/fire guard/fuel breaks

Guidance Documents:

United States Department of Agriculture/ Natural Resources Conservation Service.

1. “Conservation Practice Standard”, “Fire Break Code: 394” (394-CPS-1) NRCS, SD April 2023 (<https://www.nrcs.usda.gov/resources/guides-and-instructions/firebreak-ft-394-conservation-practice-standard>)
2. “South Dakota (SD) Guidance Document (GD)” “Fuel Break 383” Specification 383-1 April 2023, NRCS, SD
3. Oklahoma State University Extension Service: Fire Breaks for Prescribed Burning March 2017 ID: NREM-2890 by John R. Weir, Terrence G. Bidwell, Russell Stevens, John Mustain
4. Western Fire Chiefs Association: <https://wfca.com/wildfire-articles/how-are-firebreaks-used-to-manage-wildfires/>

Definitions:

- Fire break/Fire guard: A permanent or temporary barrier of ground cleared to bare soil or non-flammable materials meant to stop or significantly reduce the spread of fire.
- Fuel Breaks: A strip or appropriately sized block of land on which the vegetation, debris, and litter have been reduced and/or modified to control or diminish the spread of fire.

For the purposes of Letter “C” #8 “Utility-Scale Systems”, as long as the system is active and in use and not decommissioned and removed, the fire break/fireguard/fuel breaks must remain in service with annual and as needed maintenance.

- Erosion and weed prevention and control methods must be reviewed by Pennington County Natural Resources.

Noxious Weed Control and Management Plan

In accordance with SDCL 38-22-16.2 and SDCL 38-22-23.10

State law requires landowners to control state- and locally-declared noxious weeds on their property. The following guidelines are established to control and minimize the spread of such weeds within Pennington County.

1. Movement of Materials

All gravel, timber, hay, topsoil, or other earthen materials removed from or added to the property must be free of noxious weed plant material and/or seeds. (SDCL 38-22-33)

2. Equipment Sanitation

Any equipment used to disturb soil or vegetation on the property must be thoroughly cleaned of soil, plant material, and debris before entering or leaving the property. (SDCL 38-22-13)

3. Reclamation of Disturbed Ground

Any disturbed ground must be re-seeded with a native or ornamental lawn grass mix and trees. All proposed seed mixes or tree plantings must be reviewed and approved by Pennington County Natural Resources prior to planting. (SDCL 38-22-23.10)

4. Integrated Weed Management

An integrated noxious weed control plan must be implemented to manage existing infestations and prevent spread to neighboring properties. For guidance on proper management practices for specific weeds, landowners should consult Pennington County Natural Resources. (SDCL 38-22-16.2, SDCL 38-22-23.10)

East of the Black Hills Forest Fire Protection District Boundary.

- Fire break/Fire guard

- A fire break/fire guard of a minimum of 25 feet in width is sufficient. The purpose of the fire break/fire guard is stop or significantly reduce the spread of wildfire from excessive biomass accumulations and allowing fire suppression resources access and a place or point to “anchor” additional containment lines.
- A fire break/fire guard is constructed to mineral soil or equivalent (gravel/stone et-al) fire-resistant, nonflammable materials, bare ground, or a combination of these.
- Locate firebreaks/fireguards to minimize risk or unwanted damage to resources and infrastructure from fire and heat. Use natural features or anchor points such as streams, lakes, ponds, rock cliffs, roads, field borders, skid trails, landings, drainage canals, railroads, utility right-of-way, cultivated land, or other areas to augment firebreaks for greater efficacy.
- Locate firebreaks/fireguards on the contour, where practicable, to minimize risk of soil erosion. Install firebreaks in a manner that supports vehicle and equipment access, including fire suppression equipment.
- Locate firebreaks/fireguards with consideration for infrastructure or egress protection.

- When possible, use natural firebreaks/fireguard that utilize existing terrain features. Any terrain feature, such as cropland, rivers, roads, rock outcrops or other areas devoid of fuels can serve as a firebreak.
 - Install erosion control measures and water bars to prevent sediment from leaving the site
 - Both natural and man-made features of firebreaks/fire guards should be augmented with the development and ongoing maintenance of a fuel break.
 - The width of the firebreak/fireguard cannot be offset by the use of the fuel break.
 - Use caution when incorporating overhead electric line rights-of-way into the firebreak design or layout. Electric lines can be hazardous in heavy smoke because carbon in the smoke may conduct electricity, causing a discharge similar to lightning.
- Fuel breaks
 - Fuel breaks are used to change fire behavior. Fuel breaks and firebreaks shall be used in conjunction with each other
 - Fuel breaks shall conform to Specifications from South Dakota (SD) Guidance Document (GD) "Fuel Break 383" Specification 383-1 April 2023, NRCS, SD. Page 383-2 Item 3, 4, 5, 6. Under Item 6 the level of protection shall use "Survivable Space" distances to include the use of Figure 1 "e." recommended defensible and survivable space distances.
 - Guidance under pages 383-3, -4-5-6 shall also be followed.

OPERATION AND MAINTENANCE of Fire Breaks/Fireguards and Fuel Breaks.

- The fire break/fire guard/fuel break shall be inspected and maintained on an annual and as needed basis.

Monitor and manage vegetative fuels to avoid a buildup of excess litter and to control weeds. Monitor and manage surface and canopy fuels to maintain desired fire behavior. Inspect all firebreaks for flammable materials, such as dead limbs or blown down trees, and remove them from the firebreak.

Fire Breaks/Fireguards and Fuel Breaks shall be inspected at least annually and rework bare ground firebreaks/fireguards as necessary to keep them clear of flammable vegetation. Stabilize bare ground firebreaks that are no longer needed.

Repair erosion control measures as necessary to ensure proper function. Control access by vehicles or people to prevent damage.

➤ Note fuel breaks and extreme fire weather conditions:

Fuel breaks aid firefighters by slowing fire spread under normal burning conditions. However, under extreme conditions, even properly designed fuel breaks stand little chance of arresting a large fire, regardless of firefighting efforts.

High intensity wildfire often produces fire-brands, promoting rapid fire growth and spread through spotting ahead of the main fire, often crossing fuel breaks. These types of large fires may continue until there is a major change in weather conditions, topography, or fuel type.

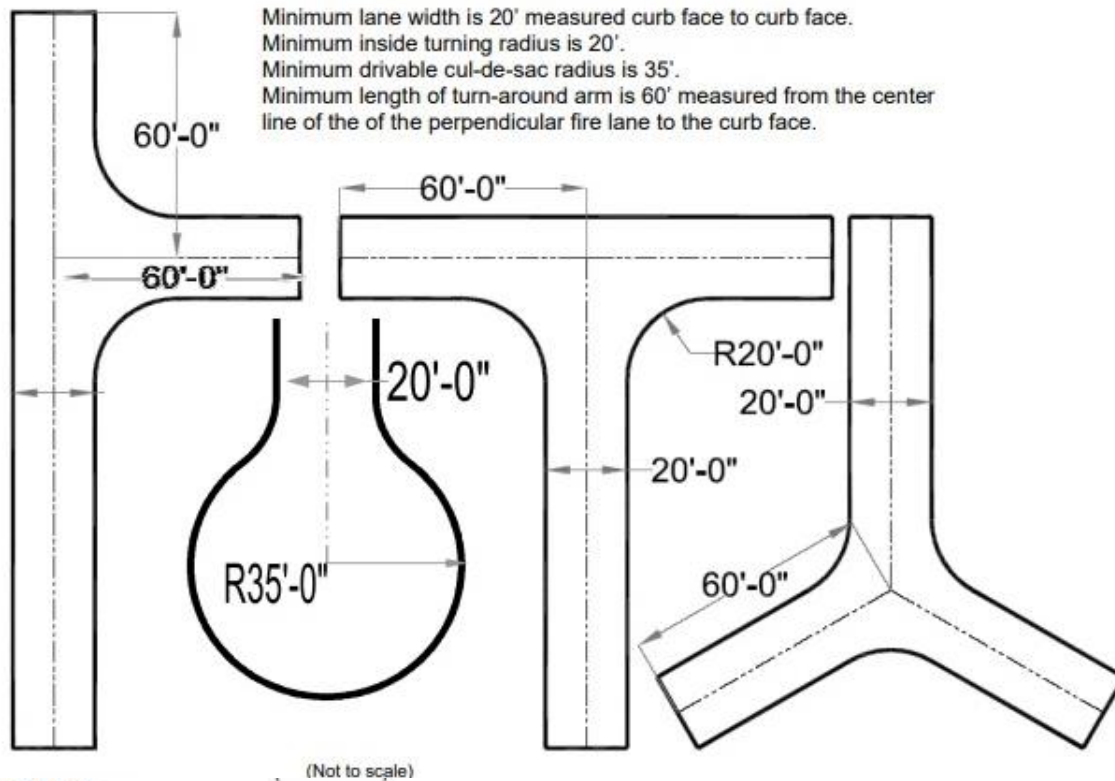
❖ **West of the Black Hills Forest Fire Protection District Boundary.**

- Fire break/Fire guard/Fuel Breaks: shall be constructed and maintained with guidance from South Dakota Wildland Fire and the United States Forest Service

- ❖ **“M”** Access Roads, must include Fire & Emergency Vehicles Turn-Arounds

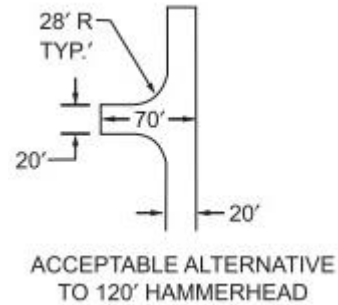
Pennington County Fire Service

Examples for Planning and Zoning of Approved Fire & Emergency Vehicles Turn-Arounds Minimum Dimension



NOTES:

1. For hammer-head and "T" configurations, measurements are from the face of the curb to the centerline of fire lane width. Where the fire lane exceeds 20 feet in width, measurement is from the end of the turn-around arm to 10 feet across the fire lane.
2. For "Y" configurations, measurements are from the face of the curb at the end of the turn-around arm to the point of intersection as measured along the centerlines of the arms.
3. For cul-de-sac configurations, radius measurement is from the face of the curb to the center of the cul-de-sac.



Grade.

IFC: (international Fire Code) Fire apparatus access roads and driveways shall not exceed 10 percent in grade.

Dead-end fire apparatus access roads and drive ways in excess of 150 feet (45 720 mm) shall be provided with width and turnaround provisions in accordance with examples of Fire and Emergency Vehicle Turn-Arounds.

****Anything greater then 10% will hinder access of not only fire apparattus, but also Ambulances and other similar emergency vehicles.

++++Rapid City allows up to 15% with Wildfire Fuel Mitigation plan implemented and in place, and residential Sprinkler System in Place (NFPA 13D).

- ❖ **“O”** Emergency Response Plans: Copies to include annual updates must be provide to the responsible Fire Department, Ambulance Service, Emergency Service Communications Center and the County Fire Office.
 - Include updated pertinent site information to include a 24-7 “duty officer” phone number in a format suitable for use by the Emergency Services Communications Center and their alarm monitoring
 - Site Mapping
 - provide and update as needed a site map. The map shall use the site address and numbering system, to include building blue prints / layouts and other pertinent information. Owner will need to provide this in formats suitable for use by the Emergency Services Communications Center (ESCC) and mobile devices.

Jason, what about onsite water supply?

IE: onsite water supply for emergency and other purposes of at least one cistern of 5,000 gallons. Cisterns at this site should be marked as an emergency water supply (non-potable), not allow every day human access and be equipped with a Dry Hydrant to allow drafting access to cisterns.

Access should be with an all-weather road to the cisterns and pad for structural fire apparatus to access and draft. Location of cisterns to be determined with concurrence of County Fire and the responsible Fire Department. Dry hydrant and related information will be supplied by County Fire.