

To: Board of County Commissioners
Penny Post oak Ferguson, County Manager

From: Jay C. Leipzig, AICP, CEcD, Director, Planning Department
Sean Pendley, AICP, Deputy Director, Planning Department
Karen Miller, Senior Planner, Planning Department

Date: April 4, 2022

Re: Solar Facilities – Proposed amendments to the Comprehensive Plan and Zoning Regulations and adoption by reference of Two Published Standards

ISSUE: Resolution Nos. 003-22 and 004-22. Hold a public hearing and consider adopting Resolution No. 003-22 amending the Rural Comprehensive Plan and Resolution No. 004-22, amending the Johnson County Zoning and Subdivision Regulations for the purpose of regulating Solar Facilities, including Utility-Scale Solar Facilities, within unincorporated Johnson County, and the adoption and incorporation by reference of two published safety standards regarding Battery Energy Storage Facilities that are associated with Solar Facilities.

SUGGESTED MOTIONS:

Alternative 1: *Approving amendments and standards as recommended by the Planning Commission.*

I move that the Board adopt Resolution No. 003-22 which approves certain amendments to the County's comprehensive plan, and Resolution No. 004-22 which approves certain amendments to the zoning regulations including the adoption and incorporation by reference of two published safety standards for Battery Energy Storage Facilities, for the purpose of regulating Solar Facilities, including but not limited to Utility-Scale Solar Facilities, within unincorporated Johnson County, as set forth within the Resolutions.

Alternative 2: *Returning amendments and standards to the Planning Commission for further consideration.*

I move that the Board remand to the Planning Commission the proposed amendments to the County's comprehensive plan, and the zoning regulations including the two published standards regarding battery energy storage facilities, for the purpose of the Planning Commission to further meet and to reconsider and discuss by May 24, 2022, the following suggested modifications:

- a) clarification regarding how off-site street maintenance and repair will be required of the applicant and administered by county staff;
- b) clarification that battery energy storage facilities are an allowed use in association with medium-scale solar facilities;
- c) the addition of a performance standard related to battery energy storage facility uses associated with medium-scale and utility-scale solar facilities requiring the solar facility applicant to supply specialized fire safety equipment or other protections, if necessary for such use, for the purpose of upholding the public health, safety and welfare; and

- d) other additional suggested clarifications, modifications, or corrections related to these amendments as may be recommended by county planning staff.

SAMPLE MOTION TO AMEND:

If the Board requests to remand the proposed amendments to the Planning Commission, the Board needs to include specific areas of the regulations to be considered for modifications. Below is a sample motion to amend to include specific items for the Planning Commission to consider in their review of the amendments.

I move the Board to add paragraph _____ (next alphabetic letter) for the Planning Commission to consider modifications to specific regulations, including _____ (item(s) to be reviewed) for the reasons indicated within the verbatim transcript of the proceedings of the BOCC special meeting on April 4, 2022.

Note: To allow for sufficient time for the entire transcript of the Board special meeting of April 4, 2022, to be transcribed verbatim, the Planning Commission will not be able to convene until May 10, 2022, which may be a special meeting.

BACKGROUND:

In order to plan for present and future energy needs while appropriately identifying and managing the unique impacts of Utility-Scale Solar Facilities (USSFs), the Planning Commission has thoroughly studied the topic of Solar Facilities and has recommended amendments to the comprehensive plan and the zoning regulations for the regulation of Solar Facilities for the Board's consideration.

Over the course of a year and 9 public meetings (7 of which entertained public comment including city comment) and a public hearing, the Planning Commission with the assistance of a consultant, The Berkley Group, worked to identify USSF characteristics (i.e. large scale, wide geographic distribution, and long life spans) and the corresponding impacts on, among other things, future city development, rural character and open space, and the environment. Once land use policies were established, the Planning Commission drafted zoning regulations to appropriately control and manage these important priorities.

As indicated in the draft comprehensive plan amendments, USSFs can be an appropriate use within the county if properly managed. However, because these facilities pose unique challenges to the unincorporated areas and adjacent cities, county staff addressed drafting regulations with caution and with a desire for moderation, lest the unincorporated areas become inundated with this single use. In keeping with this philosophy, staff's initial recommendations were conservative and meant as a starting point for discussion. As a result, there was significant input and several adjustments in the intervening meetings between the first drafts and the Planning Commission's final recommendation. (See "Table Tracking Planning Commission Discussion", attached, for a summary of changes.)

Upon completion of the draft amendments, the Planning Commission held a public hearing on November 16, 2021, for the purpose of considering public comment and recommended

amendments to the BOCC on December 14, 2021. Upon receipt of the Planning Commission's recommendations, the BOCC studied the draft amendments with Planning staff during a Committee of the Whole (COW) on February 24, 2022 and set a public hearing to further consider the matter.

The following is a brief description of the comprehensive plan and zoning regulation amendments and the two published safety standards as recommended by the Planning Commission.

COMPREHENSIVE PLAN AMENDMENTS – Setting County Solar Goals and Policies

The following are highlights of the draft Johnson County comprehensive plan amendments regarding Utility-Scale Solar Facilities:

Goal: *Utility-Scale Solar Facilities bring with them unique impacts to surrounding areas and can be an appropriate use within the county if associated land use considerations are properly identified and managed. With these draft amendments, the County is endeavoring to proceed with caution to avoid inundation by a single use.*

Unique Impacts Identified:

- Large scale & wide geographic distribution
- Intense site coverage
- Long life spans
- Future city development
- Rural character, open space, aesthetics
- Wildlife, stormwater & the environment

Selected Draft Policies relating to City Development:

1. **Provide for future city growth and development.**
 - a. Adopt permit term limits that do not exceed a prudent planning period.
 - b. Protect land areas for future development in general, and in particular, within 2 miles of the city fringe development areas.
 - c. Coordinate with cities on their land use plans, street plans and other infrastructure plans.
 - d. Adopt performance standards to control impacts affecting future city growth and development.
2. **Protect the unincorporated area from being inundated by this single use.**
 - a. Adopt size and geographic extent restrictions and distance limitations, plus site coverage limits.
 - b. Restrict site coverage to promote and protect stormwater concerns.
3. **Promote the county's rural character and open spaces.**
 - a. Adopt performance standards to control impacts affecting rural character and open space, including but not limited to requirements related to:
 - setbacks and screening to protect views from roads and abutting properties;

- ground cover consisting of prairie grasses, forbs and pollinators to protect disturbed areas;
- wildlife corridors;
- Project Area limitations to control the overall scale of the solar facility;
- height, noise and lighting to maintain a rural and not an urban character; and
- a decommissioning and reclamation plan to ensure that solar facility equipment is properly removed from the Project Area and disturbed areas reseeded.

ZONING REGULATION AMENDMENTS – Implementing County Solar Goals and Policies

The following are highlights of draft Utility-Scale Solar Facility Development Standards that would be required as part of a conditional use permit designed to uphold new comprehensive plan policies relating to Solar Facilities:

1. Term: Up to 20 years.

- The typical planning period (e.g. the life of a comprehensive plan) is 20 years, which is the interval of time in which cities and counties tend to project land uses into the future and in which they tend to predict their growth.
- CUP terms coordinate with the city buffer recommendation and are intended to accommodate future growth while ensuring that this type of development is compatible with the development patterns of the fringe cities.
- Industry leases tend to run for 25 or 30 years, which has been alleged to impact financing.

2. Maximum Project Area: 1,000 acres (1.6 sq. mi.).

- The current draft regulations allow the solar facility to be a collection of noncontiguous parcels which are separated by not more than ½-mile.
- A maximum area of 1,000 acres is more in line with early versions of USSF projects in other jurisdictions. However, it is anticipated that projects exceeding 1,000 acres will be the future trend for USSFs.

3. Distance from other Solar Facilities: At least 2 miles.

- To avoid concentrations of solar facilities in close proximity to one another, a minimum distance of 2 miles is recommended between different USSFs.

4. Distance from Cities: Greater than 2 miles. Excludes city “islands” that are less than 80 acres in size. Waiver available, upon review and approval by the BOCC with findings that the waiver does not conflict with planned uses for the subject area.

- The draft regulations include a minimum distance requirement from cities to accommodate future growth. Some of the cities are requesting specific buffers to match their future growth areas:
 - Edgerton requests 3 miles,
 - Gardner requests 2 miles, and

- Overland Park requests applying regulation on a watershed basis (which is the extent of a sewer district) and requests omission of USSFs from the Blue River watershed, which is their future sewer and growth area.

5. Development Ratio: Photovoltaic (PV) Panel Coverage/Project Area up to 70%.

- The intent for this maximum area requirement is to limit the area for solar panel use in relation to the total Project Area.
- One of the primary purposes of the coverage requirement is to support stormwater management and preservation of existing vegetation.
- The consultant engaged by the County, Berkley Group, recommends the 70% coverage requirement and does not recommend higher (e.g. 80% or 90%) coverage ratios in order to, among other reasons, avoid difficulties controlling stormwater.

6. Setbacks: Photovoltaic panels and fencing at least 50 ft. from Project Boundary or Official Street Line and at least 250 ft. from existing dwellings. Waiver available upon review and approval by the BOCC.

- This requirement is intended to work in combination with screening, coverage ratio and fencing requirements.
- 50 ft. is the required distance of structures from roads in the Rural District, which includes buildings for agricultural purposes.
- Setback requirements have multiple purposes:
 - Provide open space that upholds rural character or contributes to the character of a neighborhood.
 - Provide buffering between sensitive areas or structures such as dwellings and other views or activities.
 - Provide areas in which to locate utilities such as water, gas, neighborhood sewer, and telephone lines.
- Several property owners have pointed out that they anticipate that their property will be surrounded on several sides by a potential USSF. This issue can be intensified by land fragmentation, which occurs when a single solar facility consists of multiple spatially separated parcels. Additional setback requirements have been recommended to address this situation.

7. Screening: Roads, residential zoning and existing dwellings screened from view of photovoltaic panels, equipment and storage. Waiver available upon review and approval by the BOCC.

- The draft requires views from abutting roads, parcels with residential zoning and existing dwellings to be screened using a combination of existing vegetation, landscaping and fencing.

8. Battery Energy Storage Facilities:

- The draft includes locational criteria; construction, maintenance, operation and inspection requirements; a requirement to follow adopted codes; and an

additional two adopted standards to supplement the County's building, fire and electric codes (which are discussed below). Adoption of these two standards requires a public hearing in front of the Board.

9. Decommissioning and Reclamation:

- A decommissioning and reclamation plan prepared by a professional engineer and surety are required.

Other Regulations: The proposed zoning regulation amendments also update Small-Scale Solar Facilities (less than 1 acre) and create a new conditional use permit to allow Medium-Scale Solar Facilities (between 1 and 10 acres).

A copy of the recommended amendments are attached in their entirety.

TWO PUBLISHED STANDARDS -- Supplementing the County-Adopted 2018 Building, Fire and Electrical Codes regarding Battery Energy Storage Facilities

Please note the following:

- *The draft regulations allow Battery Energy Storage if associated with Solar Facilities and NOT as a stand-alone use and*
- *The proposed action will incorporate by reference the two safety standards into the special development and performance standards for utility-scale and medium-scale solar facilities, within Article 23, Section 6(B)(14) of the Zoning Regulations (and, at this time, will not be located within the building codes).*

The proposed zoning regulations would allow utility-scale and medium-scale solar facilities with an approved conditional use permit that meets certain requirements. As drafted, it was intended that a conditional use permit for both utility-scale and medium scale solar facilities may include associated battery energy storage facilities (BESFs). However, BESFs are not allowed as a stand-alone use.

Two recent standards have been created and published by the National Fire Protection Association (NFPA) and also Underwriters Laboratories (UL) to provide 1) requirements for installing BESFs and mitigating the hazards associated with them and 2) fire and explosion protection necessary for the installation of a Battery Energy Storage System (BESS). (These standards were not included in adoption of the county's 2018 building, fire and electrical codes.) These standards include requirements for, among other things, emergency responder training; creation of an emergency response plan; fire department access roads; annual inspections; and a Battery Management System that monitors battery voltages and temperatures, container temperature and humidity, off-gassing of combustible gas, fire, ground fault and DC surge, and is capable of shutting down the system in order to avoid thermal runaway.

Planning, Codes and Fire District staff met early in the process of drafting solar regulations, at which time fire personnel did not indicate issues with associated BESFs as long as projects adhered to codes and standards. Recently, Codes staff has provided a summary of pertinent issues and standards for further discussion and continued coordination with the County fire

districts. (See “Key Fire and Life Safety Considerations for Battery Energy Storage” and “National Fire Protection Association (NFPA) Fact Sheet”, attached.)

One purpose of the BOCC public hearing is to consider adopting by reference the two standards into our zoning regulations for Codes Department use and enforcement. Codes staff would apply these standards while reviewing a BESF prior to construction and after adoption of the required conditional use permit.

The published standards under consideration are as follows:

National Fire Protection Association (NFPA) 855, *Standard for the Installation of Stationary Energy Storage Systems*, 2020 Edition; and

Underwriters Laboratories (UL) 9540A Ed. 4-2019, *Standard for Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage System*.

EVALUATION OF POSSIBLE HAZARDS – Information from Dr. Parkinson, County’s Expert

In response to questions asked during the Committee of the Whole relating to materials associated with solar facilities, assistance from an expert in photoelectrochemistry, Dr. Bruce Parkinson, has been retained by the Planning Department. Dr. Parkinson has written a report that includes a general evaluation of the materials used at solar facilities and associated environmental hazards, if any. More specifically, this report will provide a written overview of the following issues:

- Materials associated with solar facilities and degree of hazard, including the types of:
 - Photovoltaic (PV) panels;
 - Racking systems (posts); and
 - Battery energy storage facilities;
- Fires and their fumes (i.e., seasonal grass fire overtaking the site and involving photovoltaic panels and battery energy storage facilities);
- Explosions (i.e., thermal runaway involving a battery energy storage facility - fumes involved and hazards to first responders); and
- Leaching (i.e., zinc from galvanized posts or hazardous material from photovoltaic panels).

Additionally, at the Board’s public hearing, Dr. Parkinson will provide a verbal summary of the above information and answer questions from county commissioners. (See “Evaluation of Materials Used at Solar Facilities” and “Dr. Parkinson’s Professional Information”, attached.)

TAX IMPLICATIONS

County staff has reviewed the information available and have concluded that regarding solar facilities: 1) both real estate and equipment taxes are exempt for a 10 year period, but 2) sales taxes are not exempt.

OTHER INFORMATION

Other attached supplemental information not previously mentioned in this briefing sheet include: 1) a “question and answer” sheet with responses from the Kansas Corporation Commission (“Questions and Answers from the KCC”, attached), 2) a summary of public support and opposition of solar facilities compiled by Planning staff (“Pros and Cons from Written Public Comment”, attached), and 3) research identifying similarly-sized solar facilities within counties of comparable size or population compiled by the County’s consultant, The Berkley Group (“Similarly-Sized Facilities in Urbanizing Counties”, attached).

ALTERNATIVES:

At this stage of the proceedings, as required by applicable state law, the BOCC’s options are limited to either approval of the proposed amendments as recommended by the Planning Commission, or remanding the matter back to the Planning Commission for reconsideration. If the BOCC desires to remand this matter to the Planning Commission for reconsideration, then it requires a majority vote of those commissioners present to do so. Furthermore, it is incumbent upon the BOCC to state for the record why the BOCC either disapproves of the Planning Commission’s recommendation, or recommends suggested revisions thereto. Upon return of the matter to the BOCC a second time, the BOCC is then free to take whatever action they deem necessary or advisable regarding the matter.

1. Approve as recommended by the Planning Commission.
2. If in disagreement with or desire to suggest modifications to the recommendation of the Planning Commission or to allow further clarification of the proposed amendments, return the item with reasons or with suggested modifications.
3. Defer action for further study.

RECOMMENDATIONS:

Planning Commission: The Planning Commission recommends approval of certain proposed amendments and published standards regarding Solar Facilities. (Vote: 7-1-1 with Jim Neese, Michael Levin, Mark Huggins, George Lund, Kelley Rast, Dave Johns, and Randall Downing voting in favor of the motion; Roger Mason voting against; and Lindsay Grise abstaining. Chris Iliff and Randy Hutchins were absent. The meeting date was December 14, 2021.)

Planning Staff: Upon further review of the proposed amendments, Planning staff has identified: 1) suggested clarifications regarding how off-site street maintenance and repair will be required of the applicant and administered by county planning staff, 2) the need for a clarification that battery energy storage facilities are an allowed use in association with medium-scale solar facilities; 3) the addition of a performance standard related to battery energy storage facility uses associated with medium-scale and utility-scale solar facilities requiring the solar

facility applicant to supply specialized fire safety equipment or other protections, if necessary for such use, for the purpose of upholding the public health, safety and welfare; and 4) miscellaneous other textual revisions for purpose of clarification or as otherwise deemed advisable by the county planning staff. **In response to these four issues, staff recommends returning the comprehensive plan and zoning regulation amendments and the associated published standards to the Planning Commission for further reconsideration, which may also include further consideration of items identified during the Board's public hearing on the matter.**

LEGAL REVIEW: The Legal Department has reviewed and approved as to form.

ATTACHMENTS:

Documents

Amendments recommended by the Planning Commission on December, 14, 2021

BOCC Resolution No. 003-22

BOCC Resolution No. 004-22

Planning Commission Minutes, November 16, 2021, Planning Commission Public Hearing

Planning Commission Minutes, December 14, 2021, Planning Commission Recommendation

Planning Commission Resolution No. PC 21-1

Supplemental Information

Table Tracking Planning Commission Discussion, compiled by Planning staff

Key Fire and Life Safety Considerations for Battery Energy Storage, written by Codes staff

National Fire Protection Association (NFPA) Fact Sheet

Evaluation of Materials Used at Solar Facilities, written by Dr. Bruce Parkinson (retained by Planning staff)

Dr. Parkinson's Professional Information

Questions and Answers from the KCC, information requested by Planning staff

Pros and Cons from Written Public Comment, compiled by Planning staff

Similarly Sized Facilities in Urbanizing Counties, Compiled by The Berkley Group, information requested by Planning staff

Staff Power Point Presentation, April 4, 2022

The Record of the Proceedings, including Public Comments, can be found at <https://www.jocogov.org/solar> which is the County's web page dedicated to the consideration of solar facilities.