



Land Use

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BOULDER COUNTY BOARD OF COUNTY COMMISSIONERS

**April 19, 2011 – 2:00 PM
Hearing Room, Third Floor
Boulder County Courthouse**

PUBLIC HEARING with PUBLIC TESTIMONY

STAFF: Abby Shannon Janusz, AICP

Docket DC-11-0001: SOLAR GARDENS AND COMMERCIAL SOLAR ENERGY SYSTEMS

Proposed Land Use Code text amendments to better facilitate statewide Solar Gardens legislation and to allow small to medium sized commercial scale solar energy power generation facilities. This docket will propose amendments to Art. 4-514(J) Small Solar Energy Systems and 4-514(E) Major Facility of a Public Utility; and will propose a new use classification for Medium Solar Energy Systems or Solar Gardens as a principal use.

Action Requested: Recommendation of approval following staff presentation and public hearing.

SUMMARY

At a Public Hearing on September 14, 2010, the Board of County Commissioners authorized staff pursue amendments to the Land Use Code to better facilitate larger solar arrays in unincorporated Boulder County in response to statewide Solar Gardens legislation. At that time, the Commissioners supported reviewing the size thresholds established for small solar arrays as a principal use and allowing medium-sized commercial facilities to be located in the County if appropriate locations could be identified.

DOCKET HISTORY

The Board of County Commissioners approved regulatory changes for small renewable energy systems (wind and solar) on June 16, 2009 (Docket DC-08-001). At that time, the Board requested a one-year review of the regulations so that staff and the Board could assess any needed changes. The one-year review was held on September 14, 2010. The Board authorized staff to pursue amendments to the code to better facilitate Solar Gardens and larger arrays.

PLANNING COMMISSION

The Planning Commission considered these text amendments at a public hearing on March 16, 2011. The draft presented to Planning Commission included a number of questions and options posed by staff. The version reviewed and discussed by Planning Commission is attached as Exhibit A. Following public testimony and discussion, Planning Commission voted to recommend approval of the proposed amendments, subject to several specified changes which will be further discussed in this analysis, below. Generally speaking, Planning Commission's recommendations were more favorable to solar energy generating facilities than staff's more conservative approach.

The staff recommendation contained in this report is not Planning Commission's recommendation. Staff discussed the Planning Commission recommendation at a staff meeting on March 30, 2011. This report discusses where the staff recommendation differs from the Planning Commission recommendation. We also raise some questions for the Board to consider during the public hearing.

PROJECT GOALS AND DRAFT REGULATIONS

There are three main goals of this docket:

1. To enable and better facilitate the siting of Solar Gardens as authorized by HB-10-1342.
2. To allow larger arrays in appropriate locations that meet the goals of the Comprehensive Plan and are sensitive to the history of land use policy in the county. These arrays would be larger than the Code's definition of "small" (Art. 4-514(J)), but smaller than the definition of "large" which is a Major Facility of a Public Utility (Art. 4-514(E)).
3. To make any changes to small and medium-sized facilities consistent with the Land Use Code definition of large energy generating facilities (Major Facility of a Public Utility, 4-514(E)).

Land Use staff recommends changes to the definition, size limitations, and additional provisions to the existing use classification in order to better facilitate Solar Gardens and to make a distinction between small, medium, and large systems. Proposed changes have been indicated in strikethrough (indicating it would be deleted) and underlining (indicating this language would be added).

Small Solar Gardens

The regulations approved in June 2009 (Small Solar Energy Systems – see Art. 4-514(J)) allow for Solar Gardens because they allow systems to capture energy on one parcel and send that energy to another parcel. The review process required is based on the land use impacts of the array as measured by square footage of area disturbed. Systems that will disturb less than 5,000 sq ft are allowed in all zone districts through the Site Plan Review process. While the potential capacity of a facility can vary greatly based on the orientation and efficiency of the panels, staff estimates that an array with 5,000 sq ft of site disturbance could generate between 55-83 KW.¹ Systems slightly larger (up to 7,500 sq ft of site disturbance) are permitted through the Special Review process in all zone districts. Staff estimates these arrays could be 83-125 KW.

The existing Small Solar Energy regulations allow larger solar arrays of unlimited size but only in the General Industrial (GI), Light Industrial (LI), or Commercial (C) zone districts. These systems must go through the Special Review process as well. Once a system reaches 50 MW in size, it would meet the definition of Power Plant and would be considered a Major Facility of a Public Utility. These facilities are permitted in all zone districts through the Areas and Activities of State Interest (or "1041," named for the Colorado legislation that authorized this review process for counties) regulations. Since the Small Solar Energy System regulations went into effect in June 2009, no applications for a system (as a principal use) have been received.

In 2010, the Colorado General Assembly approved HB 1342, which defined "Solar Gardens" as solar systems with 10 or more subscribers. The legislation puts Solar Gardens in two categories: up to 500 KW or up to 2 MW. The 500 KW or smaller systems would be eligible to receive a standard offer from the investor-owned utility to buy back the power at a standard rate. The larger systems would

¹ This estimate is based on ground-mounted solar arrays that applied to Land Use for the Site Plan Review Waiver process from June 30, 2009 to August 31, 2010. These smaller arrays generally disturbed 60-90 sq ft/KW.

need to enter into a competitive bidding process. The legislation only requires investor-owned utilities to purchase 6 MW of power every year for three years. No Solar Gardens have been established under this legislation just yet as the Public Utilities Commission is still in the rule-making process. Final PUC rules are expected circa June 2011. Part of the reason for moving this Land Use Code amendment docket forward at this time, is to be prepared so that county residents can take part in the PUC's program once it is established. Staff does not expect the PUC's rules to address land use impacts or authority, and is thus comfortable moving forward at this time. If we discover there are potential conflicts with these proposed regulations and the PUC's rules, staff would come back with amendments. If you are interested in the PUC rule-making process you can find additional information at the Public Utilities Commission website. The Proceeding Number is 10R-674E.

While our experience with smaller ground-mounted solar arrays has shown that they disturb 60-90 sq ft/KW, we do have one larger array in the county which disturbs approximately 240 sq ft/KW.² At the County Commissioners' regulations review public hearing on September 14, 2010, there was public testimony from a solar-industry professional stating that a 500 KW system would occupy approximately 3.5 acres while a 2 MW facility would occupy approximately 14 acres. Communication with another solar industry professional indicated 7-9 acres of land per MW are necessary for ground-mounted arrays.

The proposed amendments in this Docket would allow for slightly larger systems than we currently allow in all zone districts, and through shorter review processes.

Art 4-514(J) Small Solar Energy System or Solar Garden

1. Definition: A system composed of a solar energy collector which may include an energy storage facility, and components for the distribution of transformed energy, and which may be used for one or more users ~~on neighboring parcels.~~
2. Districts Permitted: By site plan review in all districts if the system will disturb less than ~~5,000 square feet~~ 1 acre of land. By limited impact special review in all districts if the system will disturb ~~5,000 square feet but not more than 7,500 square feet~~ 1 acre but less than 4 acres of land. By special review in GI, LI, and C if the system will disturb ~~7,500 square feet or more.~~
3. Parking Requirements: ~~None~~ To be determined through the review
4. Loading Requirements: None
5. Additional Provisions:
 - a. This use is required to be located on a building lot or an outlot platted for this purpose.
 - b. If necessary for the system's effectiveness, ground-mounted solar energy collectors may be located within the minimum lot line setbacks for the subject property zoning district and within any applicable major road supplemental setback without the need for a variance, provided that the solar energy collector is located no less than five feet from lot lines and no less than 15 feet from road rights-of-way.
 - c. Ground-mounted solar energy collectors may not be located within utility easements or ditch easements.
 - d. This use shall not have a significant adverse visual impact on the natural features or neighborhood character of the surrounding area and shall be located to minimize glare on adjacent properties and roadways.

² The City of Boulder array at their wastewater treatment plant near Walden Ponds is a 1 MW array that disturbs approximately 5.5 acres of land.

- e. Applications shall be reviewed according to the required review criteria with special consideration given to lands identified as Environmental Resources in the Boulder County Comprehensive Plan.
- f. Roof-mounted systems proposed as a principal use may be mounted on any legal structure, subject to review through the building permit process. Roof-mounted systems shall be mounted as flush as possible to the roof. In order to achieve proper solar orientation, panels may exceed the roofline by up to five feet or the maximum height of the zone district by up to five feet (whichever is more restrictive).

The first draft of these changes presented a variety of options including whether the review process should relate to site disturbance or capacity of the system. Planning Commission agreed (and staff concurs) that site disturbance is a more appropriate way to consider the land use impacts of a ground-mounted solar array. For the smallest solar gardens, staff and Planning Commission agree that systems up to one acre in size can be reviewed through the Site Plan Review (SPR) process. Staff and Planning Commission recommend slightly larger arrays, up to 4 acres in area, be reviewed through the Limited Impact Special Review process.

Planning Commission recommended adding a provision to allow slightly larger systems to be reviewed under these processes than would otherwise be allowed if the parcel had extreme or exceptional physical circumstances or if a larger site disturbance would reduce visual impacts. The approved Additional Provision (c) says, *“If necessary to reduce visual impact or to overcome exceptional or extraordinary physical circumstances of the subject property, the maximum acreage may be exceeded by no more than 50%.”* Their thought was that there may be situations where it is desirable or necessary to increase the area of site disturbance and they didn’t want to unnecessarily bump an application into a longer review process. While we appreciate Planning Commission’s desire to facilitate solar gardens, we felt this provision would be difficult to apply. The analysis necessary to determine whether this provision is being appropriately applied could only be determined through the review process.

Planning Commission suggested changing Additional Provision (d) to, *“This use shall be located to minimize glare on adjacent properties and roadways so as to reduce the adverse visual impact on the natural features or neighborhood character of the surrounding area.”* While this language seems to express a similar concept as the existing Additional Provision, staff believes the statements are, in fact, quite different. The existing statement requires the visual impacts of the proposal to not have a significant adverse impact whereas the Planning Commission’s suggested language requires *reduced* adverse visual impacts. Planning Commission’s language also seems to assume that glare on roadways and adjacent properties is the only adverse visual impact associated with these structures. As a result, staff proposes that this provision (d) remain as originally enacted in 2009.

Item (f) is proposed so that roof-mounted systems can be processed through the building permit process, even if they are not an accessory use. Staff suggests this amendment because the impact of roof-mounted systems is negligible – there is no additional site disturbance as a result of the system. The review process and the exception for tilted panels exceeding the roofline or zone district maximum height is consistent with the way the County already reviews and approves accessory roof-mounted solar energy systems.

Medium-Sized Solar Arrays

The current regulations (treating all such structures as the currently Code-defined “small” systems) allow for medium-large sized solar arrays (disturbing more than 7,500 square feet of land) through

the Special Use Review process, but in very limited locations (GI, LI, and C zone districts only). Staff proposes expanding this geographic limitation from the definition of “small” while creating a new use classification for medium-sized arrays. The proposed new use classification would be a Utility use (like Small Solar Energy Systems), and would bridge the gap between the currently defined Small Solar Energy Systems and Power Plants.

Medium Solar Energy System or Solar Garden

1. Definition: A system composed of a solar energy collector which may include an energy storage facility, and components for the distribution of transformed energy, and which may be used for one or more users.
2. Districts Permitted: By special review in GI, LI, C, A, F if the system will disturb 4 or more acres of land but do not meet the Land Use Code definition of Power Plant
3. Parking Requirements: To be determined through the review
4. Loading Requirements: None
5. Additional Provisions:
 - a. Medium solar energy systems in the Forestry zone district will be permitted only if the area used has been contaminated or damaged in the past making it unsuitable for agricultural, forestry, or residential uses. These areas may include former landfills, brownfields, Superfund sites, and the like.
 - b. Medium solar energy systems in the Agricultural zone district will be permitted only if the area is not designated as Significant Agricultural Lands of National or Statewide Importance by the Boulder County Comprehensive Plan and the area used is of marginal agricultural value.
 - c. This use is required to be located on a building lot or an outlot platted for this purpose.
 - d. This use cannot be located in Critical Wildlife Habitats designated by the Boulder County Comprehensive Plan.
 - e. Ground-mounted solar energy collectors may not be located within utility easements or ditch easements.
 - f. This use shall be located to minimize glare on adjacent properties and roadways so as to reduce the adverse visual impact on the natural features or neighborhood character of the surrounding area.
 - g. Roof-mounted systems proposed as a principal use may be mounted on any legal structure, subject to review through the building permit process. Roof-mounted systems shall be mounted as flush as possible to the roof. In order to achieve proper solar orientation, panels may exceed the roofline by up to five feet or the maximum height of the zone district by up to five feet (whichever is more restrictive).

The definition and many of the Additional Provisions are the same between Small and Medium facilities. The language proposed above allows medium-sized arrays to be located in the Forestry district in very limited circumstances. Our intent is to allow only lands with major environmental degradation to be eligible locations for larger solar arrays. Staff’s initial recommendation to Planning Commission recommended expanding staff’s initial recommendation to include “marginal” agricultural land as described in Additional Provision (b) above. The onus would be on the property owner to demonstrate why the land is “marginal.” It would be helpful for the Board to discuss the circumstances under which staff should consider agricultural land to be marginal. Is it land in the Agricultural zone without a designation of National, Statewide, or Local Importance in the Comprehensive Plan? Land without water rights? Land without topsoil? Should this provision be

changed back to staff's initial recommendation which would allow Medium-sized facilities on environmentally degraded land only?

There is language in each of the zone districts that allows Small Solar Energy Systems to not trigger Special Review for being a multiple principal use if it is proposed for a location with an existing use. Staff proposes making amendments to the Forestry, Agricultural, General Industrial, Light Industrial, and Commercial zone districts in the Additional Provisions to reflect that Medium arrays would also not be considered a multiple principal use. In addition, staff recommends changing the word "collectors" to "systems" in all zone districts to accurately reflect the use classification name. Examples of how the language will look in two zone districts are included below.

4-401 (F)(5) Forestry

Small Wind-Powered Energy Collectors Systems, Small Solar Energy Collectors Systems or Solar Gardens, and Medium Solar Energy Systems or Solar Gardens, can be approved on parcels with existing principal uses without Special Review approval, however, these uses shall be reviewed using the process and standards described in the Utility and Public Service Uses classification in this Code.

4-103 (F)(5) Rural Residential

Small Wind-Powered Energy Collectors Systems, Small Solar Energy Collectors Systems or Solar Gardens, and Medium Solar Energy Systems or Solar Gardens, can be approved on parcels with existing principal uses without Special Review approval, however, these uses shall be reviewed using the process and standards described in the Utility and Public Service Uses classification in this Code.

Large Solar Arrays

Very large solar arrays are already allowed as a Major Facility of a Public Utility. One of the uses included within this umbrella is "Power Plant" which is defined as, "An electrical energy generating facility with generating capacity of more than 50 megawatts and any appurtenant facilities" (Art. 18-185). The purpose of making changes to this use classification is to bring consistency between medium and large facilities. Staff is also suggesting changes to the use classification to limit where all Power Plants, regardless of fuel source, are located.

4-514 (E) Major Facility of a Public Utility

1. Definition: Any electric transmission lines, power plants, or substations of electric utilities; major gas regulator stations, transmission and gathering pipelines, and storage areas of utilities providing natural gas or petroleum derivatives; and their appurtenant facilities.
2. Districts Permitted: By review under the regulation of areas and activities of state interest, or special review and location and extent review in all districts. Power plants by review under the regulation of areas and activities of state interest in GI, LI, C, A, F
3. Parking Requirements: To be determined through the review
4. Loading Requirements: None
5. Additional Provisions:
 - a. This use is not required to be located on a building lot, nor comply with the minimum lot size requirement for the district in which it is located.
 - b. Power plants in the Agricultural or Forestry zone districts will be permitted only if the area used has been contaminated or damaged making it unsuitable for agricultural, forestry, or residential uses. These areas may include former landfills, brownfields, Superfund sites, and the like.
 - c. Power plants cannot be located on areas with the following Boulder County Comprehensive Plan designations: Significant Agricultural Lands of National or

Statewide Importance, Agricultural Lands of State Significance, and Critical Wildlife Habitats.

Each of the three use classifications proposed for amendment in this docket include Additional Provisions that call out certain Boulder County Comprehensive Plan designations. Small facilities require “special consideration” given to Environmental Resources. Medium and Major facilities prohibit the use in Critical Wildlife Habitats, and Significant Agricultural Lands of National and Statewide Importance. Are there are other designations where this use should be prohibited? Perhaps Natural Landmark Areas, Natural Communities, Rare Plant Areas, Environmental Conservation Areas, and Riparian Areas? Should the regulations prohibit this use on Conservation Easements? There is a larger policy question that also should be discussed: Should we call out certain areas as being “off-limits” for these types of developments or should we depend on the review criteria which calls on staff and the decision makers to only approve a project if the use will be in accordance with the Comprehensive Plan?

In addition to the proposed Land Use Code amendments presented in this report, staff recommends that the Board review these changes in three years. The purpose of the three-year review is to reevaluate the regulations contemporaneously with the end of the three-year initial period established by the recently enacted statewide Solar Gardens legislation.

TEXT AMENDMENT CRITERIA ANALYSIS

Article 16-100.B. contains the criteria for amending the text of the Land use Code. Staff finds that these criteria are met in the context of this Docket, as follows:

The existing text is in need of amendment:

Staff has identified the goals of this docket and the reasons why these amendments should be made.

The amendment is not contrary to the intent and purpose of this Code:

The amendments are not contrary to the Code.

The amendment is in accordance with the Boulder County Comprehensive Plan:

The proposed changes are in accordance and help implement the Comprehensive Plan. Enabling and encouraging renewable energy opportunities support the general goals of the Sustainability element, in particular.

REFERRALS AND PUBLIC INVOLVEMENT

These proposed changes were referred to the Parks and Open Space Department, the Transportation Department, the Land Use Building Division, and the County Attorneys. In addition, a draft of this staff report including staff recommended changes to the Land Use Code was sent to identified stakeholders, City of Boulder staff, and the Land Use Code listserv on March 3, 2011. While no formal referral responses have been submitted, Land Use staff worked closely with the Parks and Open Space Department, County Attorneys, and some of the identified stakeholders to develop and revise the staff-recommended language.

The Planning Commission-approved amendments were emailed to the listserv and posted to the webpage on March 21, 2011. No written comments have been received to date from the public regarding the Planning Commission recommendation. The Parks and Open Space Department has submitted referral comments regarding the proposal and they have been included in Exhibit B.

STAFF RECOMMENDATION

**STAFF RECOMMENDS THE BOARD OF COUNTY COMMISSIONERS APPROVE DOCKET DC-11-0001,
SOLAR GARDENS AND COMMERCIAL SOLAR ENERGY SYSTEMS.**

ATTACHMENTS

Exhibit A Planning Commission-Approved Draft

Exhibit B Public Comment Received