

Land Use Code Update DC-18-0002: Solar Energy Systems Planning Commission Study Session Discussion Item Only

July 23, 2018



Staff Presentation

I.	Solar 101
II.	Objectives
III.	Background
IV.	Changes Considered
V.	Significant Agricultural Lands
VI.	Case Studies
VII.	Planning Commission Discussion



	Text Amendment Process
May 10, 2018	BOCC Authorized Staff to Pursue solar- related text Amendments to the Land Use Code
February through July	Interviews with industry and stake-holders, research on Agriculture and solar colocation and example codes, inter-departmental conversations.
Today, July 23, 2018	Planning Commission Study Session: Discussion on Highlighted topics and focus questions
End of July	Finalize Draft Code Amendments and Send external Referrals
August	Review and integrate public comment as needed
August 15 th , 2018	Planning Commission Text Amendment DC-18-0002 for recommendation to the Board
Later	BOCC Public Hearing for Text Amendment DC-18-0002



The Planning Dilemma

How do we balance the need for renewable energy while preserving the rural character, agricultural lands, and natural environment?



Focus Questions

- Allow solar over 100+kw (0.5 acres) on Significant Agricultural Lands?
- Revise restrictions on solar development Forestry and Agricultural zoning district?
- Open up more zoning districts to solar development over 2.5 acres (500kW)?

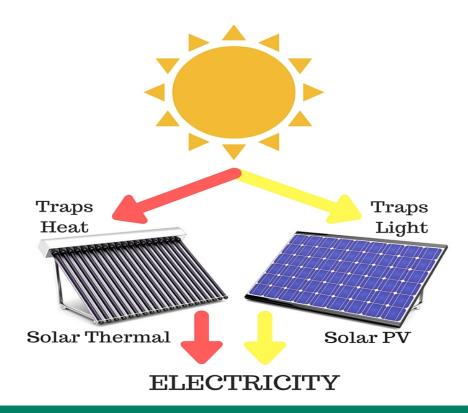


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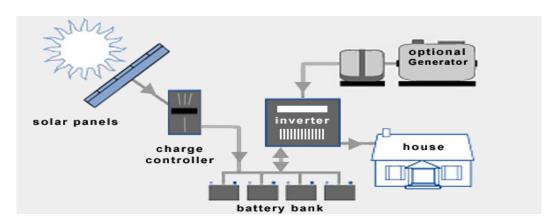


Photo-voltaic vs. Solar Thermal





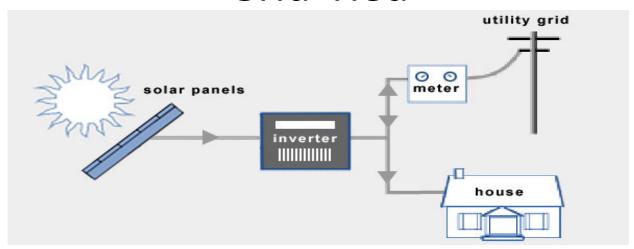
Off- Grid



- No connection to the grid, all energy stored or consumed on-site.
- Inverters transform energy from DC to AC and moderates current and voltage.



Grid-Tied

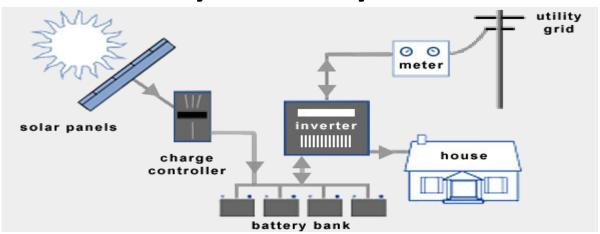


- grid-tie inverters, synchronize the phase and frequency of the current to fit the utility grid (nominally 60Hz).
- The output voltage is also adjusted slightly

Energy Informative, http://energyinformative.org/wp-content/uploads/2012/05/grid-tied-solar-system.png



Hybrid System



- Grid-tied with back-up batteries
- Could be a grid-tied system with a Plug-in electric vehicle



Grid-Tied Systems

- Energy Companies have to balance the amount of energy entering the grid with the demand
- In general, energy companies will not allow residential properties or accessory systems to install systems greater than 120% of their on-site demand
- Non-cooperatives Regulated by PUC



Accessory vs. Principal

Accessory

Produces energy to support onsite needs

Principal

Produces energy for distribution

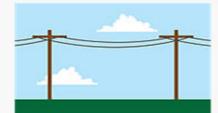




Consumer finances community solar garden and receives credit for energy produced.



Community solar garden, operated by a consumer-owned entity, utility, or third party, produces clean, solar energy.



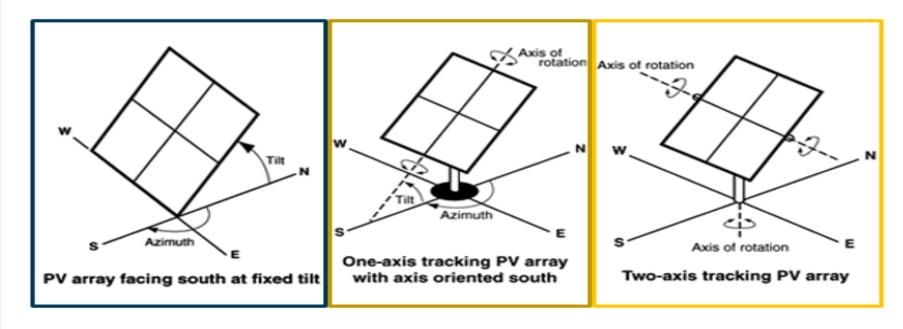
Local utility purchases energy produced by the community solar garden and credits consumers' energy bill.



https://goo.gl/images/1basCz



Fixed Tilt vs Tracker





Fixed Tilt





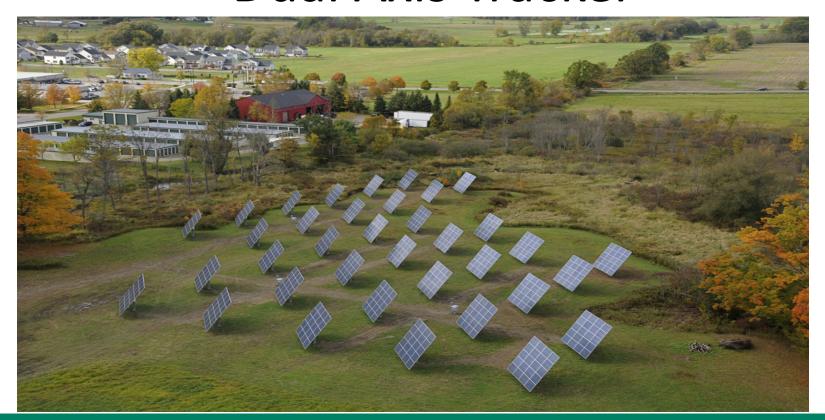


Single Axis Tracker





Dual Axis Tracker





Parking Solar Canopy







New Jersey Future, https://www.njfuture.org/2012/05/18/solar-testimony/



Building Integrated



Inhabitat, https://goo.gl/images/4xmu2A











U.S. Tile, https://goo.gl/images/Qe6mHw



Photovoltaic Glass



Onyx Solar, https://goo.gl/images/6Vh76R



Solar Awnings

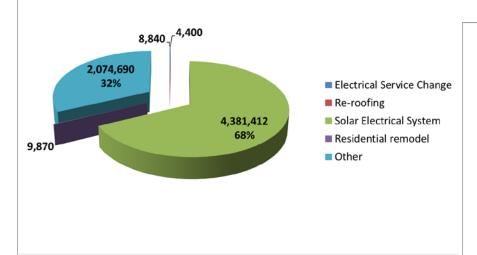


Solar Power and Light, https://goo.gl/images/tU3hwi

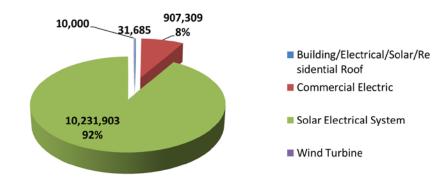




Electrical Permits Issued (Watts) 2000-2012



Electrical Permits Issued (Watts) 2012-2018





Solar Installations in Boulder County



1600 S 66th Street

- 173 acre parcel
- ~1 MW
- 3.5 acres Disturbance
- 2% lot coverage
- Permitted as Special use 2013
- Adjacent to Landfill site







1600 S 66th Street

~1 MW

3.5 acres Disturbance

173 acre parcel, 2% coverage



2011







1600 S 66th St

View from 66th St.







63rd St and Diagonal-City of Boulder Water Treatment Facility

- Built spring 2018
- 1.3 MW (visible from Diagonal)









CU Boulder- Foothills Parkway

- Built 2013
- 500 kW
- 2.5 acres





1803 S Foothills

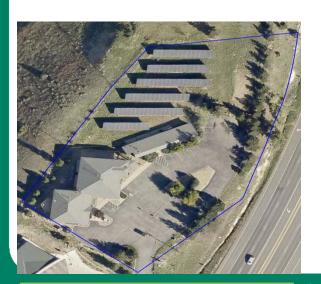
- 1.87 acre parcel
- Zoning: Business
- 84.6kW
- 0.3 acres
 Disturbance
- 16% lot coverage
- Accessory Solar SPRW





1803 5 Foothills, Business

- 86.4kW
- **0.3** acres Disturbance
- 1.87 acre parcel, 16% coverage





2012



NG D

D

2010

7100 South Boulder

- 109.98kW
- Disturbance 0.5
 acres on a 34 acre
 parcel
- Permitted as an accessory array
- 1.5% lot coverage





7 100 30utii bouluei koau

109.98kW0.5 acres Disturbance34 acre parcel, 1.5% coverage



2013





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Objectives of Update

- Improve Code organization
- Increase the opportunity for Community Solar Gardens
- Facilitate solar development in appropriate locations
- Revise solar energy system size categories to be based on acreage
- Update language and definitions



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Reasons for Amendment

- Sustainability Goals
- Resiliency and Distributed Energy
- Requests from property owners to consider solar on Significant Agricultural Lands
- Scarcity of sites for solar > 100kW



Why Now?

- Sustainability Goals of 100% renewables by 2050.
- Building Code HERs requirements call for accessory solar or solar garden purchase.
- One Community Solar Garden currently in unincorporated Boulder County.
- Best management practices of the industry have improved; solar has less impact on land.
- Solar equipment is more financially viable.
- Better understanding of grid capacity constraints.
- Distributed energy contributes to community resiliency



Sustainability Goals

Note, please see end of presentation for correction on updated GHG estimates and goals from the Sustainability Office.

EXTERNAL

TARGET 2

Reduce countywide greenhouse gas emissions by 40% below 2005 levels by 2020

STRATEGY 3

Support increased access to renewable energy sources throughout Boulder County

RENEWABLE ENERGY	GHG Emission Reduction Potential (mtCO₂e) in 2020	GHG Emission Reduction Potential (mtCO₂e) in 2030	GHG Emission Reduction Potential (mtCO₂e) in 2050
Continue Boulder County's suite of renewable energy programs	1,895	5,936	10,362
2. Expand rooftop solar	102,596	321,473	276,312
3. Expand community solar	10,018	31,389	26,979
4. Additional efforts	95,068	534,675	1,210,246
TOTAL	209,577	893,473	1,523,899



Why code updates?

- To clarify and facilitate building mounted solar
 - Currently ~5% of rooftops in county have solar

- To facilitate community solar gardens
 - About 50% of homes lack rooftop appropriate for solar



Distributed Energy

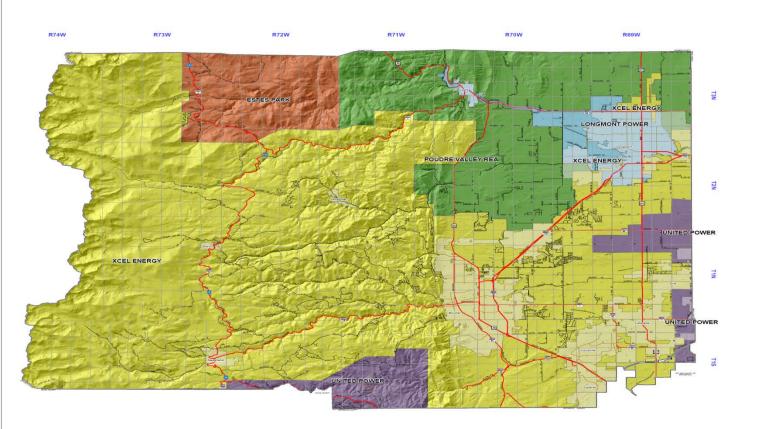
 Electrical <u>generation</u> and <u>storage</u> performed by a variety of small, <u>grid</u>-connected devices



Distributed Electrical Generation for Resiliency

- Increased electric system reliability for the entire grid
- Reduction in vulnerability to terrorism and natural disaster
- Enhances utility effectiveness and service delivery
- Local economic benefits and increased employment opportunities







Electric Service Area Boundaries

Electric Service Area REGION







This map is for illustrative purposes only. Boulder County Land Use Department makes no warranties regarding the accuracy, completeness, reliability, or suitability of these data. Boulder County Land Juse Department declames my liability associated to the county Land Land Land Land Land Land Land relying on these data, the user fully assumes any and all risk associated with this information.

Date: 5/2/2013

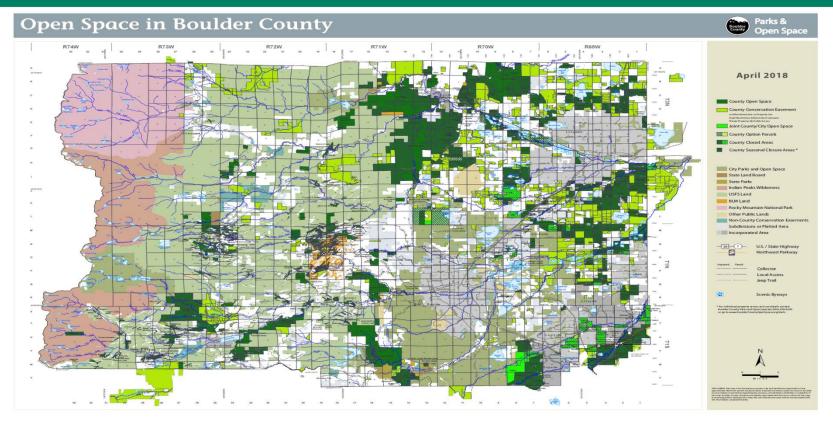


Xcel Hosting Capacity Map



Public Land Constraints on Solar





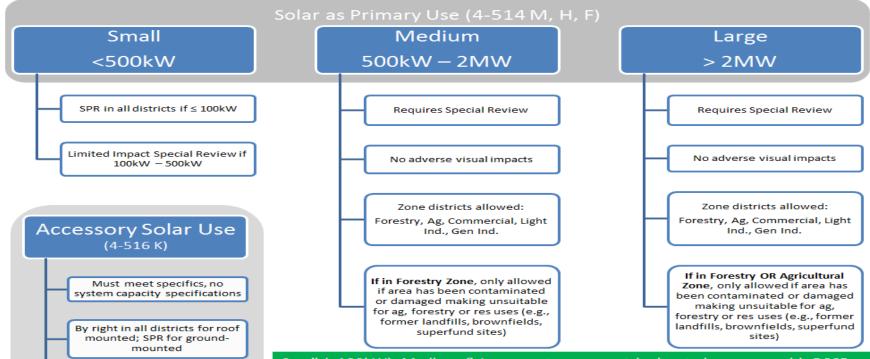
County Policies and the tax ballot language prohibit solar as a principal use on County Open Space and Conservation Easements.



Land Use Code Constraints on Solar



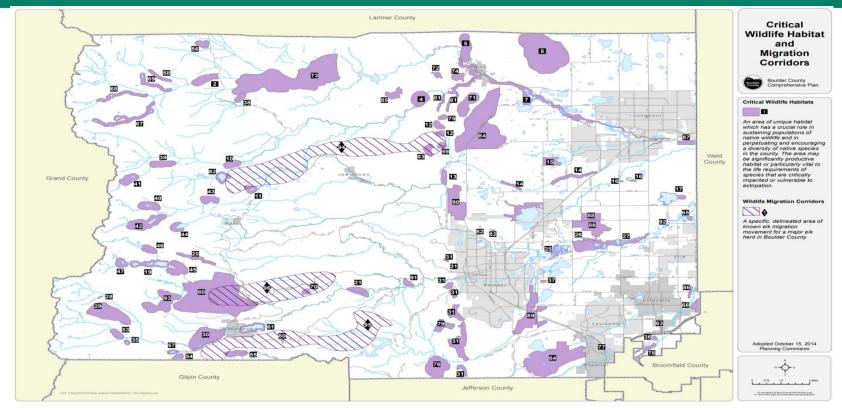
Current Land Use Code



Small (>100kW), Medium & Large systems cannot be located on areas with BCCP designations: Ag Lands of National, Statewide Importance, or Local Importance; Natural Landmarks and Areas, or Critical Wildlife Habitats.

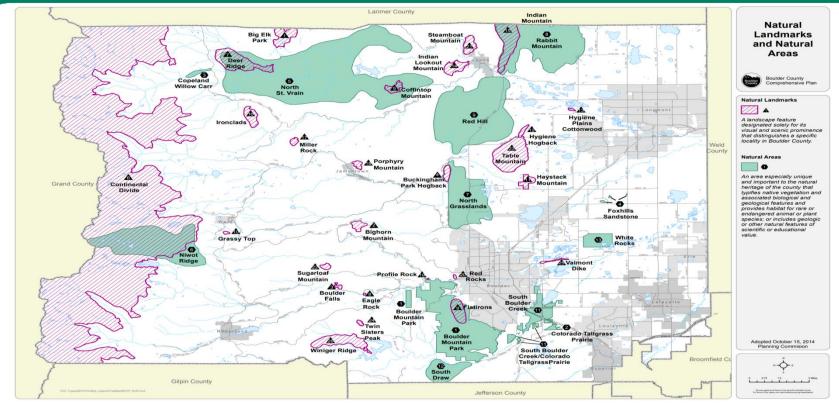


No adverse visual impact



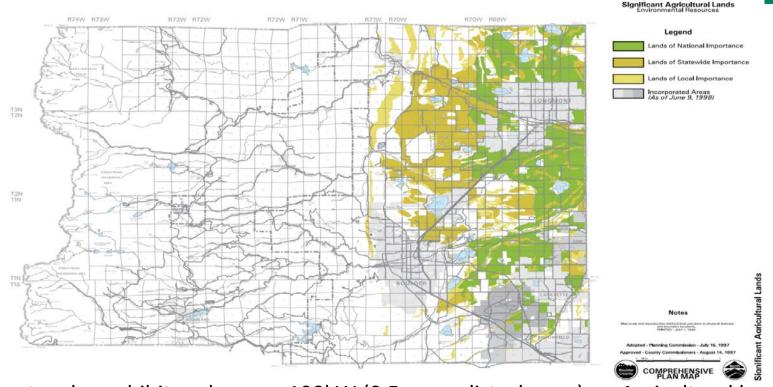
Current and proposed code prohibits solar over 100kW (0.5 acres disturbance) on Critical Wildlife Habitat and Natural Landmarks and Natural Areas





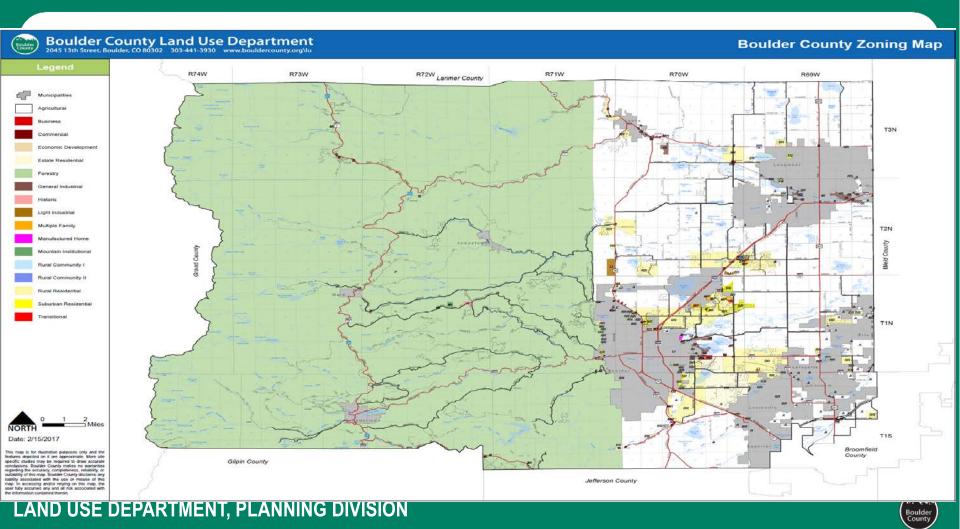
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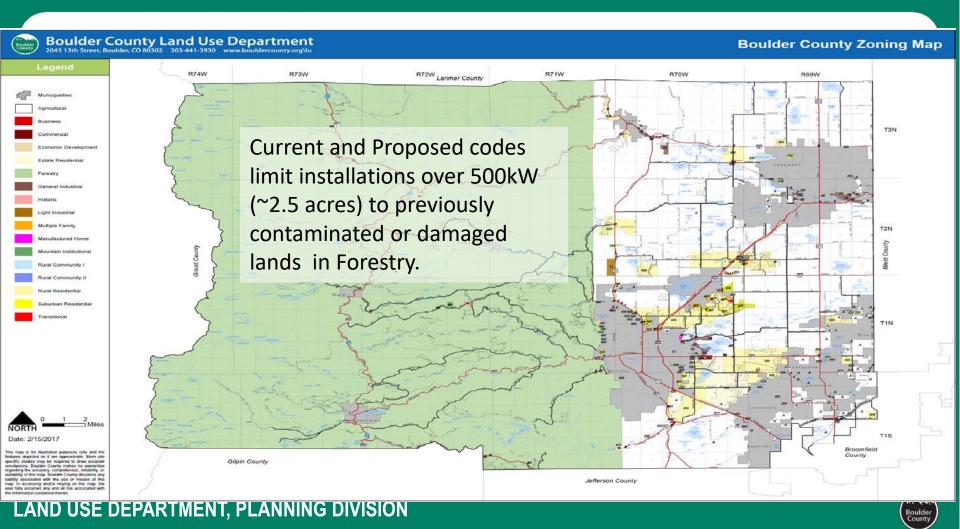




Current code prohibits solar over 100kW (0.5 acres disturbance) on Agricultural lands of Significance. Proposed updates explore allowing solar on these lands, given adequate mitigation measures.

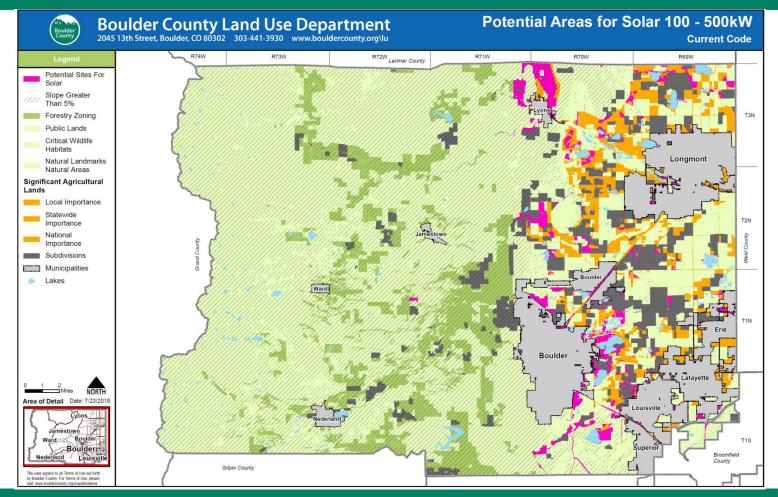




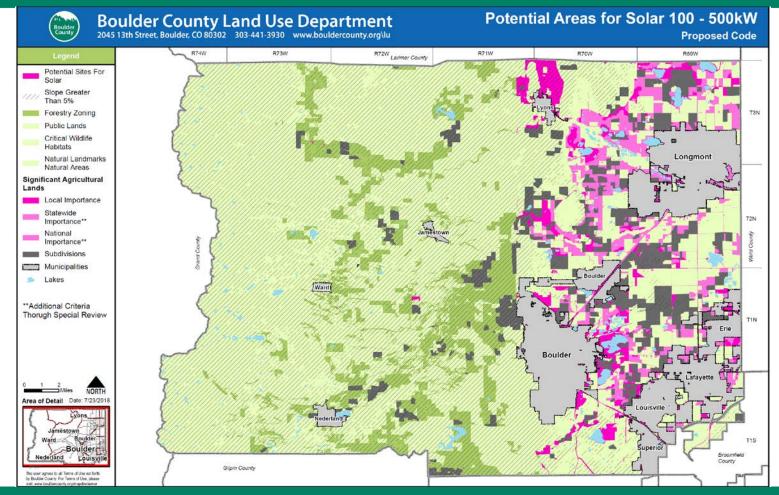


Land areas potentially available for Solar 100-500kW

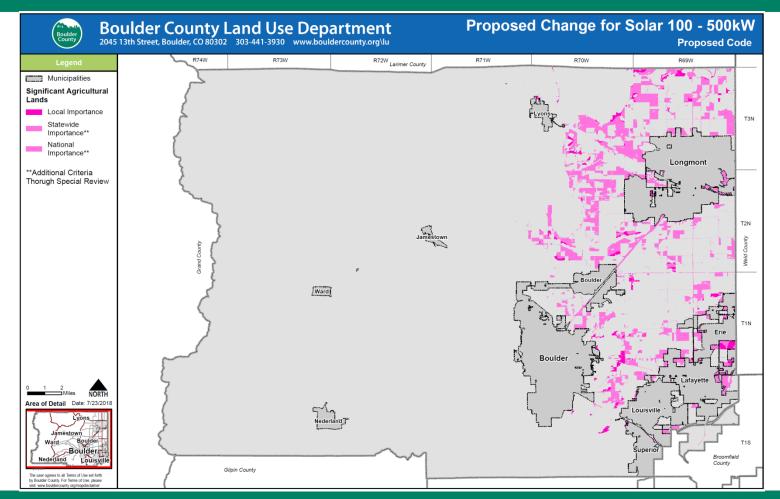








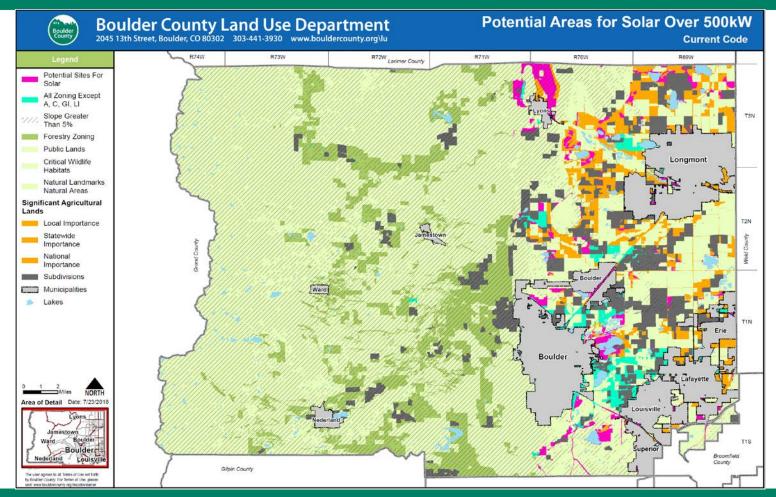




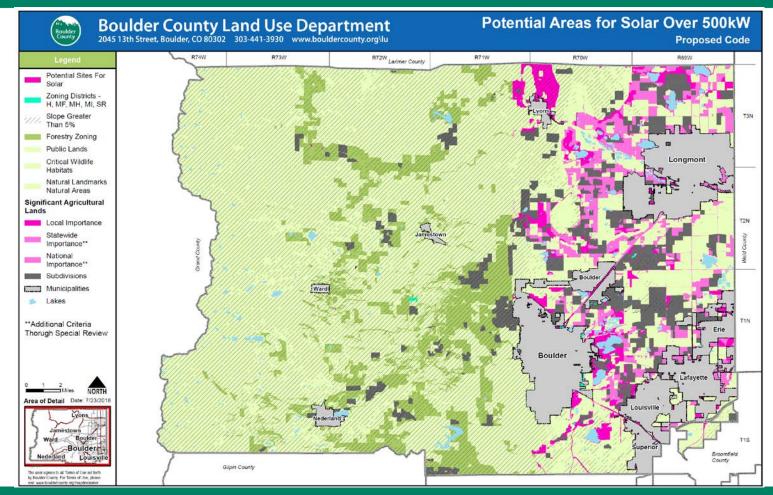


Over 500 kW

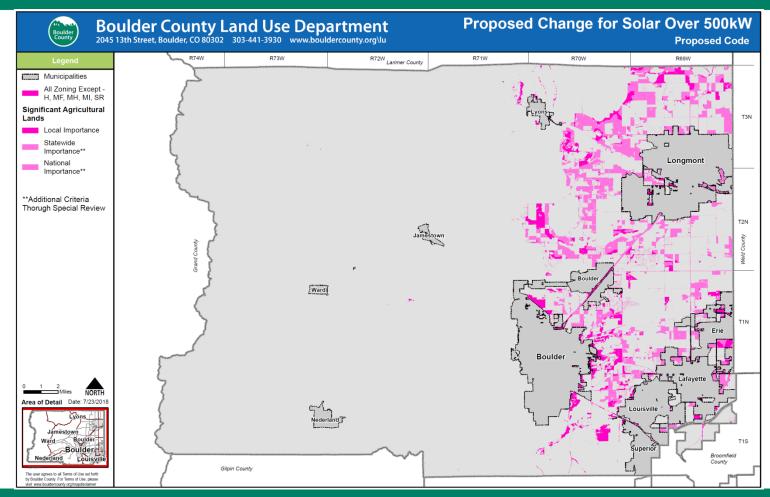














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Major Code Changes Under Consideration:

- Improve code organization
- Change ground-mounted size categories to acreage
- Allow Medium and Large Solar in More Zoning Districts (T, B, ER and RR un-subdivided)
- Revise provisions for Forestry and Agricultural zones
- Reduce review intensity where appropriate
- Allow solar on Agricultural lands of Significance given additional provisions



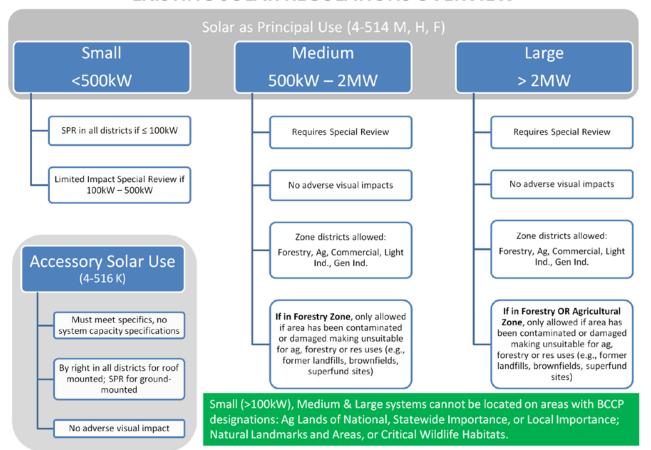
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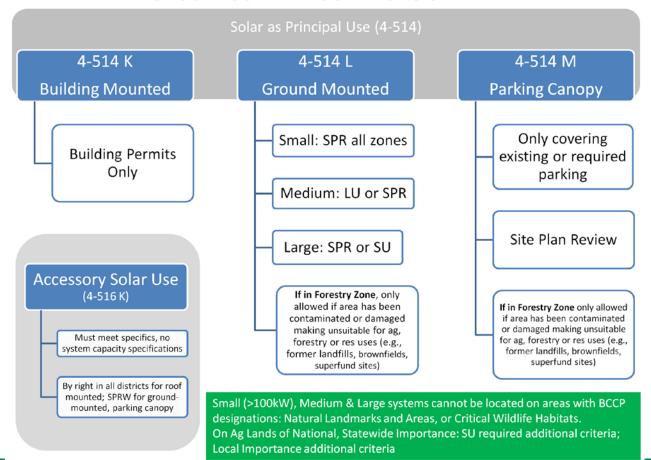


EXISTING SOLAR REGULATIONS OVERVIEW





PROPOSED SOLAR REGULATIONS OVERVIEW





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Size Categories for Ground Mounted Systems

	Small	Medium	Large
Current Code (Electrical Capacity)	0-500kW	500kW- 2MW	>2MW
Proposed Code (Disturbance Area)	0 – 2.5 acres	2.5 acres – 10 acres	> 10 acres

Disturbance areas were estimated based a 2013 NREL Report and includes all access roads and equipment.

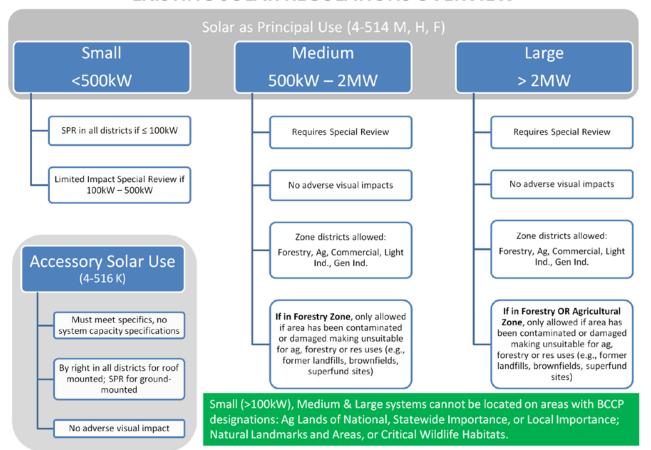


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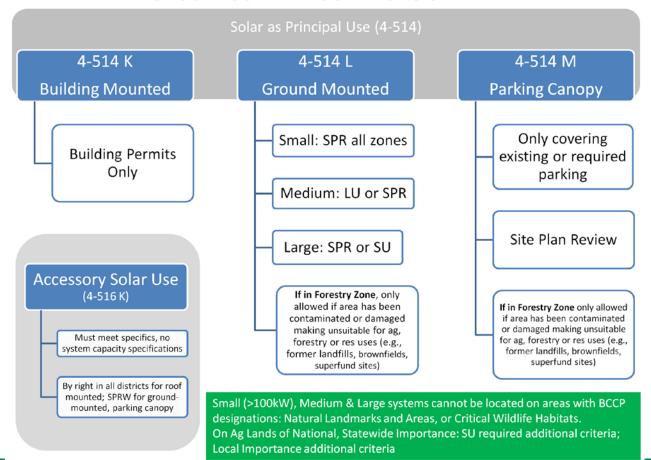


EXISTING SOLAR REGULATIONS OVERVIEW





PROPOSED SOLAR REGULATIONS OVERVIEW





Medium and Large Solar Zoning Districts Allowed

Medium

A, F, LI, GI, C

A, F, LI, GI, C,

T, B, ER and RR unsubdivided

Large

A, F, LI, GI, C

A, F, LI, GI, C,

T, B, ER and RR unsubdivided

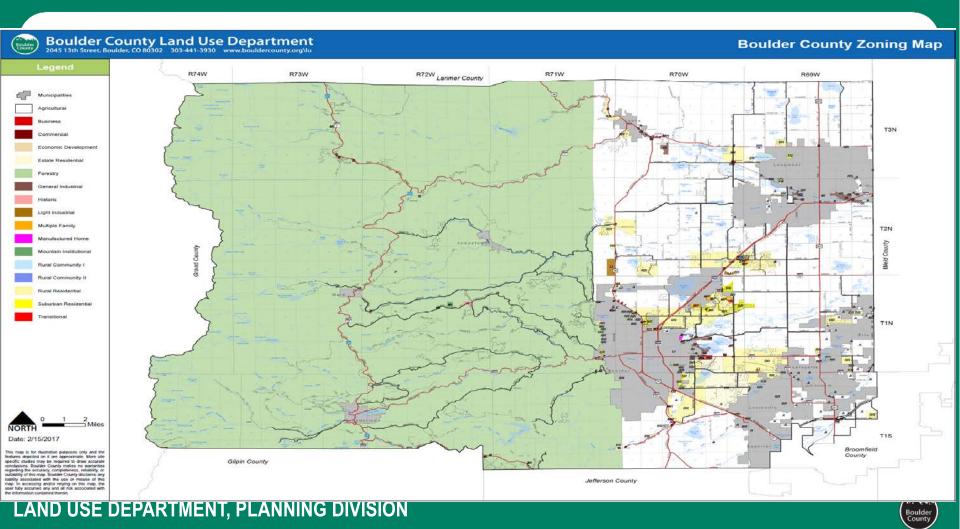
Proposed Code

Current Code

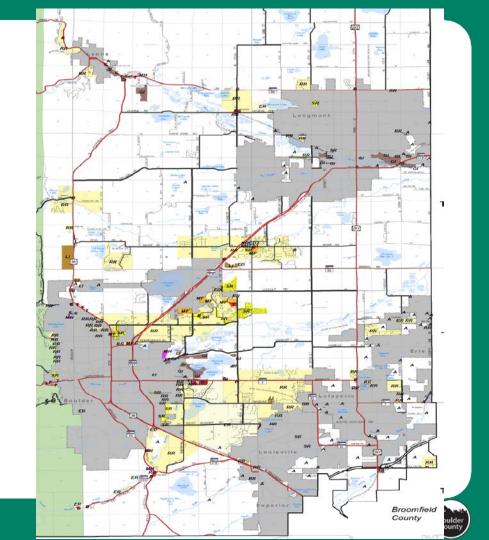


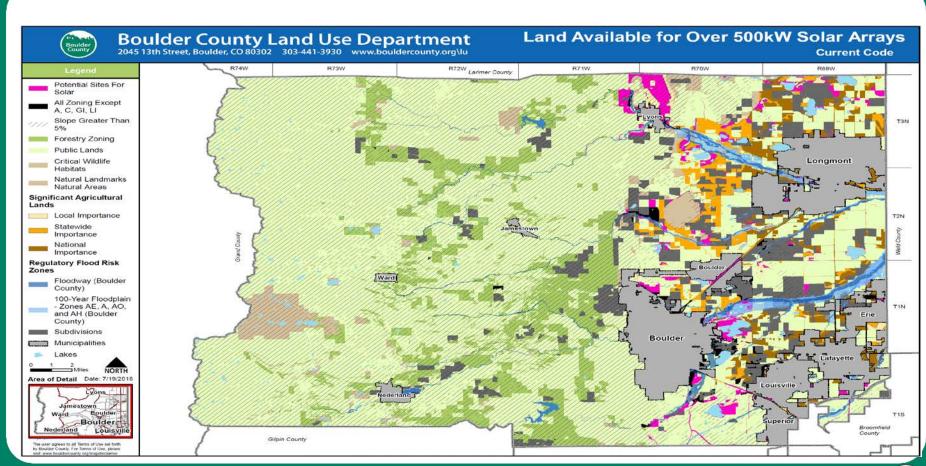
Zone District	Purpose as Described in Article 4-100
Agricultural (A)	Rural areas where conservation of agricultural resources is of major value, and where residential development compatible with agricultural uses is allowed
Rural Residential (RR)	Residential areas developed at a density and character compatible with agricultural uses.
Estate Residential (ER)	Low density urban residential areas.
Transitional (T)	Areas containing both a variety of residential uses and a limited number of business uses which are compatible with residential development.
Business District (B)	Areas for the development of restricted retail and business uses which have minimal exterior impact on surrounding properties.
Commercial District (C)	Areas for the development of commercial, business, retail, and/or service uses.
Light Industrial (LI)	Area for the development of research, light industrial, warehouse, and/or distribution centers.





Boulder County Zoning







Policy Focus Questions

 Open up Transitional and Business, to development over 500kW?

Transitional and Business are

- generally seen in more developed areas, likely to have services required for SES
- allow large marijuana grows and other industrial uses, which have a much higher structural development intensity and lasting impacts



RR and ER for Projects over 500kW?

Why?

- Treated similar to Ag in allowed uses, with the exception of some more intensive agricultural uses
- Direct solar away from more productive agricultural land
- Locate renewable energy in close proximity to where it may be consumed, more grid interconnection potential



Major Code Changes Under Consideration:

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- Allow Medium and Large Solar in More Zoning Districts (T, B, ER and RR)
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Existing Language

This use is permitted in the Forestry zone districts 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.

Applies to:

Medium and Large in Forestry Zone Large in Agricultural Zone District

Proposed Language

This use is permitted in the Forestry zone districts 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 properties that have undergone previous intensive development (commercial, industrial, warehouse, or materials storage areas), where reuse of these areas will not have additional significant impacts.

Applies to:

Medium and Large ground-mounted systems in Forestry Zone

Policy Focus Questions

• Is the revised language appropriate for the Forestry zone district?

- Should we allow 10+ acre systems on any Agricultural zoned property not just contaminated or damaged lands?
 - Consider the additional provisions for BCCP designated significant Ag Lands which cover 59% of privately held land in this zone district.



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Current Code

Zoning District	Accessory	Small		Medium	Large
		<100kW	100- 500kW	500kW-2MW	>2MW
MF, MH, MI, SR, H	SPRW	SPR	LU#	Not allowed	Not allowed
ER, RR	SPRW	SPR	LU#	Not allowed	Not allowed
F	SPRW	SPR	LU*	SU*	SU*
Α	SPRW	SPR	LU#	SU#	SU#*
LI, GI, C	SPRW	SPR	LU#	SU#	SU#
T, B	SPRW	SPR	LU#	Not allowed	Not allowed

^{*}Only if the areas used has been contaminated or damaged in the past making it unsuitable for agricultural, <u>forestry</u>, or residential uses. These areas may include former landfills, brownfields, Superfund sites, and the like.

#This use is not allowed on Agricultural Lands of Importance as designated by the Comprehensive Plan.



Proposed Code

Zoning District	Accessory	Small		Medium	Large
		< 0.5	0.5-2.5	2.5-10 acres	10+ acres
		acres	acres		
MF, MH, MI, SR, H	SPRW	SPR	SPR#	Not allowed	Not allowed
ER, RR	SPRW	SPR	SPR#	LU#	SU#
F	SPRW	SPR	SPR*	SU*	SU*
Α	SPRW	SPR	SPR#	LU#	SU#
LI, GI, C	SPRW	SPR	SPR#	SPR#	SPR#
T, B	SPRW	SPR	SPR#	SPR#	SPR#

^{*}Only if the areas used has been contaminated or damaged in the past making it unsuitable for agricultural, forestry, or residential uses. These areas may include portions of properties that have been intensely developed, former landfills, brownfields, Superfund sites, and the like.

On Significant Agricultural Lands, as designated by the Comprehensive Plan, this use is subject to additional criteria. This use requires Special Review on Lands of Statewide or National Importance.



Current Code

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		<100kW	100- 500kW	500kW-2MW	>2MW
MF, MH, MI, SR, H	SPRW	SPR	LU#	Not allowed	Not allowed
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Proposed Code

Zoning District	Accessory	S	mall	Medium	Large
		<0.5	0.5-2.5	2.5-10 acres	10+ acres
		acres	acres		
MF, MH, MI, SR, H	SPRW	SPR	SPR#	Not allowed	Not allowed
ER, RR	SPRW	SPR	SPR#	LU#	SU#
F	SPRW	SPR	SPR*	SU*	SU*
Α	SPRW	SPR	SPR#	LU#	SU#
LI, GI, C	SPRW	SPR	SPR#	SPR#	SPR#
T, B	SPRW	SPR	SPR#	SPR#	SPR#

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Policy Focus Questions

 Is it appropriate to reduce review for arrays between 0.5 and 2.5 acres (100kW to 500kW) from LU to SPR?

• Is it appropriate to Reduce Review from SU to LU for Medium arrays 2.5-10 acres in A, F, ER, RR?



Major Code Changes Under Consideration:

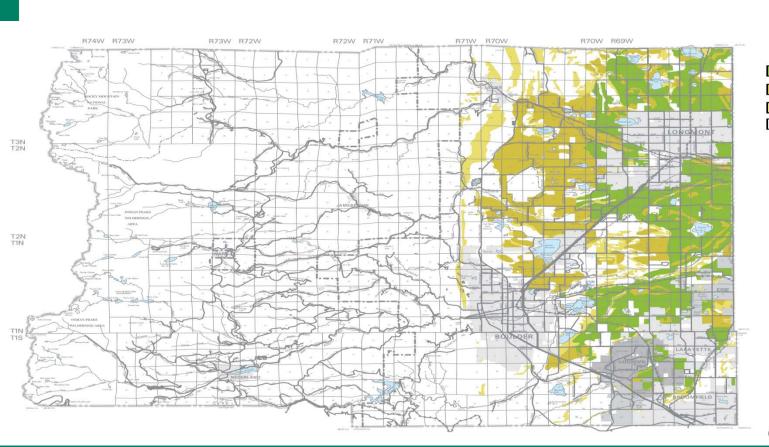
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Significant Agricultural Lands Environmental Resources

Legend

Lands of National Importance

Lands of Statewide Importance

Lands of Local Importance

Incorporated Areas (As of June 9, 1998)

Notes

and boundary locations. PRINTED - JULY 1, 1998

Adopted - Planning Commission - July 16, 1997 Approved - County Commissioners - August 14, 1997



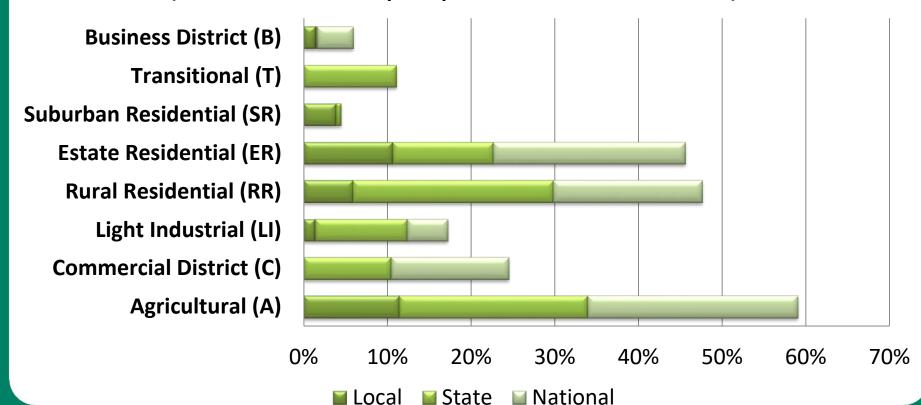


BCCP Agricultural Lands of Importance

rce of Identification

	Types	Distinguishing Factors and	Source of identification
		Crops Generally Grown Here	
National	Prime Farmland- based on criteria in Federal Public Law 95-87	Best physical and chemical characteristics: Soil moisture water availability/ irrigation mean soil temperature salinity permeability erodibility drainage/deeper water table slope less than 6%	USDA
Statewide	Irrigated Lands (inadequate water) High Potential Dry Cropland	Hay meadows, Dryland wheat, grain sorghum, forage sorghum, corn, fruit and vegetable growing and seed cultivation	CO Division of Agriculture, Dept of Natural Resources and CO Soil Conservation Board
Local	Irrigated Crop Land Dry Crop Land Rangeland	 Soil type- includes class III which is very limited Existing land Use—using aerial photography and Land Use records Carrying Capacity – based on soil type and moisture Grasses, grass-like plants, forbs and shrubs, valuable for grazing 	Longmont office of SCS and Boulder County Extension Office

National Ag Lands as a Percent of Zoning Districts (This chart excludes Open Space Lands from Calculations)

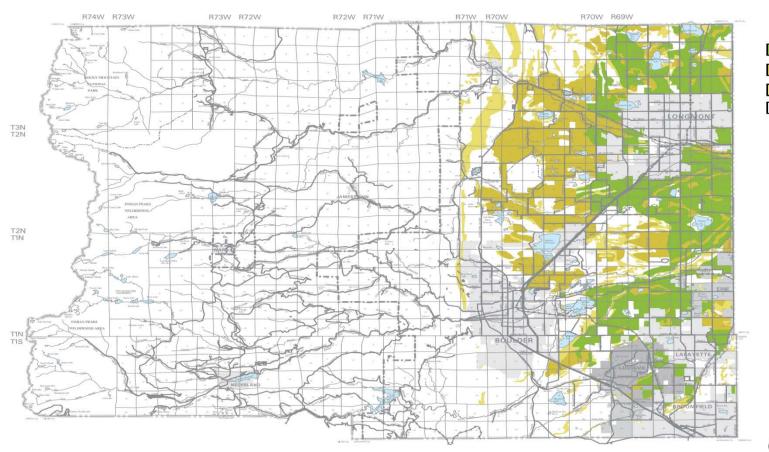




Proposed Code Overview

Requirements	Lands of Local Importance	Lands of State or National Importance
Review Process	Same as applicable Zoning District	Special Use (SU) Review
Development Report	Management Plan with narrative for proposed agricultural use or pollinator habitat under and/or around solar arrays	 Required for all applications. Suggested components include: Installation Plan Management Plan with narrative for proposed agricultural use under and/or around solar arrays Weed Control Plan Decommissioning Plan
Size Cap for Area		5 acres of disturbance for parcels up to 70 acres
of Disturbance	None	10 acres of disturbance for parcels more than 70 acres





Significant Agricultural Lands Environmental Resources

Legend

Lands of National Importance

Lands of Statewide Importance Lands of Local Importance

Incorporated Areas (As of June 9, 1998)

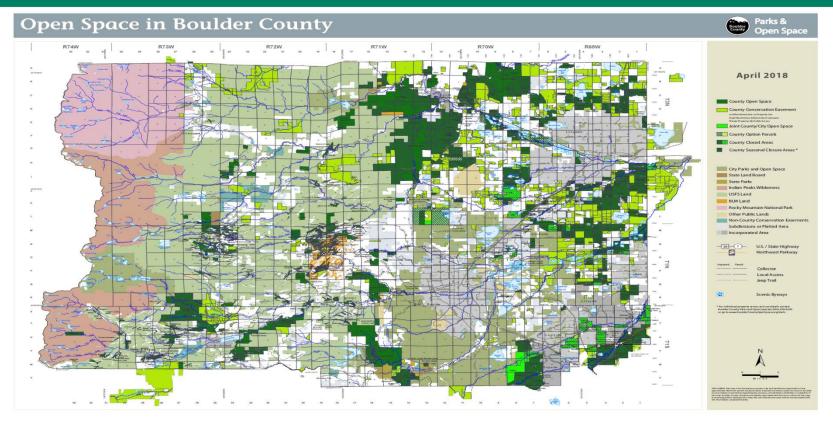
Notes

Map scale and reproduction method limit precision in physical features and boundary locations.
PRINTED - JULY 1, 1998

Adopted - Planning Commission - July 16, 1997 Approved - County Commissioners - August 14, 1997

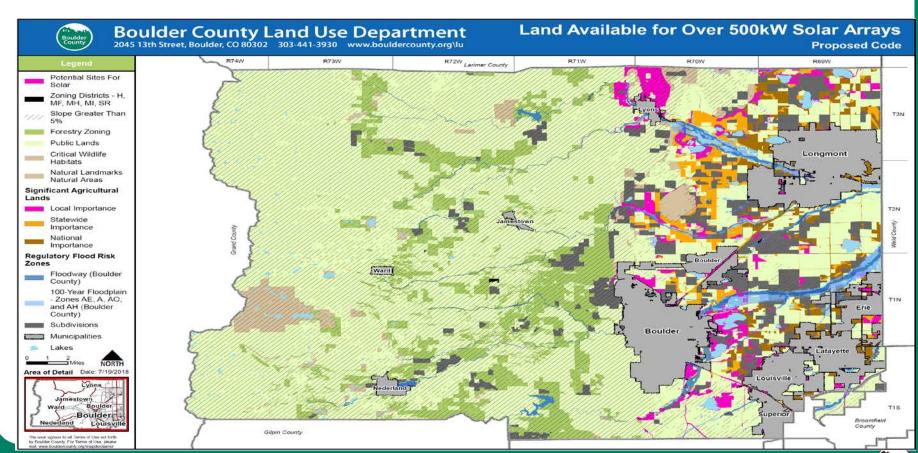






County Policies and the tax ballot language prohibit solar as a principal use on County purchased Open Space and Conservation Easements.





Staff Presentation

I.	Solar 101	
II.	Objectives	
III.	Background	
IV.	Changes Considered Significant Agricultural Lands	
V.		
VI.	Case Studies	
VII.	Planning Commission Discussion	













US News https://goo.gl/images/TyC2zf





Smithsonian Magazine, https://binged.it/2mEoKiU

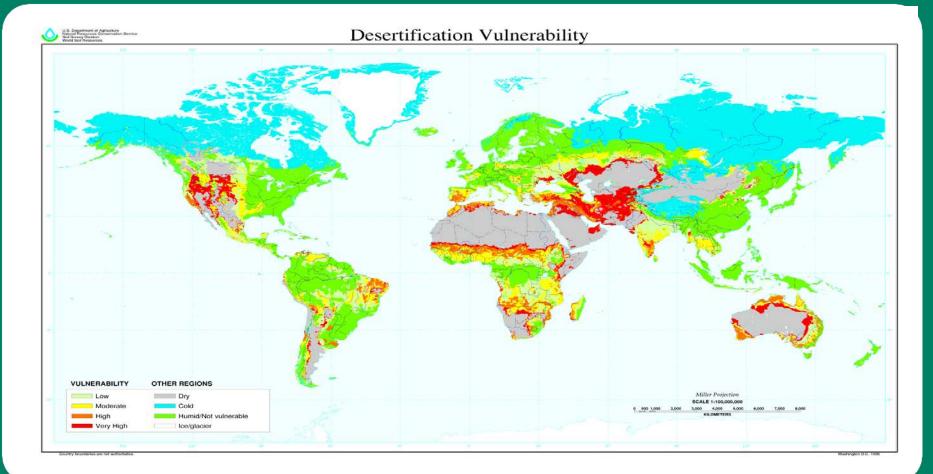


US News https://goo.gl/images/TyC2zf



Example Codes	Size Cap for Solar on Agricultural Lands
Weld County	By Special Review for Small Projects <20 acres and Medium Projects >20 acres No system greater than 30 MW in Agricultural zone
Santa Barbara County	Permanent preservation of off-site agricultural land at a ratio of 1 acre preserved land to 1 acre of solar
California County Planning Director's Association	State Conservation Easement: 15% of parcel up to 5 acres, up to 10 acres if non-prime Prime or State Unprotected: 30% of parcel, up to 7 acres through administrative process, up to 10 acres through Minor Review, 20+ acres requires conditional review Grazing Land: 30% up to 10 acres by administrative review, greater than 10 acres by minor review
Maui County	Up to 15 acres and no more than 35% of the lot, except land with soil class D or E
UMass Agricultural Solar Tariff Guidelines	Maximum AC rated capacity shall be 2MW
Casco Maine	More than 40% of system on Prime Ag Land requires Special Use Review
New Jersey State Agriculture Development Committee	No more than 10 acres, 1:5 solar to agricultural operations land ratio; No more than 2 MW







Staff Presentation

I.	Solar 101	
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Objectives of Update

- Improve Code organization
- Increase the opportunity for Community Solar Gardens
- Facilitate solar development in appropriate locations
- Revise solar energy system size categories to be based on acreage
- Update language and definitions



Major Code Changes Under Consideration:

- Improve code organization
- Change ground-mounted size categories to acreage
- Allow Medium and Large Solar in More Zoning Districts (T, B, ER and RR)
- Revise provisions for Forestry and Agricultural zones
- Reduce review intensity where appropriate
- Allow solar on Agricultural lands of Significance given additional provisions



Should Solar Energy Systems be allowed on Significant Agricultural Lands?

A. Land of Local Importance without additional review beyond zoning district?

B. Through Special Use Review for State and National Importance, given the proposed conditions?

C. Should Area of disturbance be limited?



Should Solar Energy Systems over 0.5 acres be allowed on Agricultural Land of Local Importance given a management plan with a co-located Agricultural use, without additional review beyond zoning district?



Should Solar Energy Systems over 0.5 acres be allowed on Agricultural Land of Local Importance?

- A. Yes, but no mitigating factors, Ag or pollinator habitat, required.
- B. Yes, should be allowed at the same review for the zoning district, with Ag use or Pollinator Habitat. (proposed by staff)
- C. Yes, should be allowed through an SU, with additional mitigation measures. (Please elaborate)
- D. No, should not be allowed on Ag Lands of State or National Importance regardless of mitigating factors.



Should Solar Energy Systems be allowed through Special Use Review for State and National Importance, given the proposed conditions?



Requirements	Lands of Local Importance	Lands of State or National Importance		
Review Process	Same as applicable Zoning District	Special Use (SU) Review		
Development Report	Management Plan with narrative for proposed agricultural use or pollinator habitat under and/or around solar arrays	 Required for all applications. Suggested components include: Installation Plan Management Plan with narrative for proposed agricultural use under and/or around solar arrays Weed Control Plan Decommissioning Plan Performance Guarantee 		
Size Cap for Area		5 acres of disturbance for parcels up to 70 acres		
of Disturbance	None	10 acres of disturbance for parcels more than 70 acres		



Proposed Code Language Under Consideration

Development reports for Solar Energy Systems greater than 0.5 acres on Agricultural Lands of State or National Significance shall include:

1. <u>Installation plan</u> describing installation methods proposed, and a site plan that delineates the area of disturbance. The area of disturbance shall be staked at the time of the site visit, and fenced prior to construction. The plan shall minimize soil disturbance and compaction through best management practices.



Proposed Code Language Continued

2. A management plan including:

- A <u>baseline soil quality test</u> reporting soil health within one year prior to submittal of the application.
- A <u>soil health improvement plan</u> which includes the proposed crops to be grown under and around the array, and/or animals to be grazed; Those applications which do not propose crops or grazing must submit a pollinator habitat plan.
- A <u>weed control plan</u>.
- An analysis of the impacts of <u>panel spacing and height</u> on the proposed Agricultural use. Panels should be spaced and oriented to avoid full shade beneath and behind the panels.



Proposed Code Language Continued

- 3. <u>Decommissioning and reclamation plan</u>, which includes the methods intended for the removal of all equipment and infrastructure associated with the solar energy system, and a revegetation plan.
- **4.** <u>Performance guarantee</u> in the form of a letter of credit or other financial guarantee in a form satisfactory to the County for the full cost of decommissioning and reclamation of the site



Should Solar Energy Systems be allowed through Special Use Review for State and National Importance, given the proposed conditions?

- A. Should be allowed, and with no additional review or mitigating factors needed.
- B. Should be allowed at the same review for the zoning district, with additional mitigation measures as listed by staff.
- C. Should be allowed through a Special Review, with additional mitigation measures as listed by staff. (This is staff's proposal)
- D. Yes, should be allowed through a Special Review, with different/additional mitigation measures than staff has listed. (Please elaborate)
- E. No, should not be allowed on Ag Lands of State or National Importance regardless of mitigating factors.



Should the area of disturbance on Ag Lands of State Significance and National Significance be limited to a maximum of 5 acres, 6 acres, 8 acres, 10 acres, other?



Do we put a limit on the percentage of a parcel or maximum acreage that can be developed for solar on Significant Ag Land?

Option 1: No limit

- Why? PUC regulations, review process, grid limitations, and cost of Land in county already severely restrict development. Concerns can be monitored through review process.
- Why not? Too many unknown variables, if the PUC changes regulations development could get out of hand.

Option 2: Limit to a % of Parcel

- Why? Allows for development to a size and scale appropriate with the property.
- Why not? Limits ability of smaller acreage properties to develop. Most developers find installations become feasible around 2MW (10 acres).
- •If % what percentage?
- •Maui County: 35% or 10 acres whichever is less
- •CA Counties Model: 15% up to 10 acres

Option 3: Comparable Conservation Easement

- Require a 1:1 ratio of developed acreage to conserved acreage of same BCCP designation
- •Why? Mitigates any land use impacts by ensuring conservation of equivalent land size elsewhere.
- •Why not? The majority of the plains are already conserved through POS and conservation easements and this would further restrict available land for solar.

Option 4: County Wide Cap on Development

- Put a maximum limit on the acreage that can be developed in the county
- •Why? To ensure land in county is not consumed by solar.
- •Why not?
- We don't want to limit the availability and potential for renewable energy.
- •The review processes help monitor the impacts of solar development.



What should the disturbance area limit be for Significant Agricultural Lands?

5 acres for under 70 acres

- Why? Allows for development to a financially viable size, and scaled appropriately with the property.
- Why not? Want to encourage spacing of panels for vegetative growth, which may require more area of disturbance

6 acres or 8 acres

- Why? Allows for development to a financially viable size, and allows some room for spacing.
- Why not? Does not allow for flexibility, may restrict parcels that are appropriately located for solar.

10 acres

- Why? Some developers have indicated that this is more of the financially viable scale.
- Why not? May be considered incompatible in some locations. Or may not give enough flexibility for instalations.



If solar is allowed, should the area of disturbance on Ag Lands of State and National Significance be limited?

- A. Should be limited to 0.5 acres to match the current code
- B. 5 acres
- C. 6 acres
- D.8 acres
- E. 10 acres
- F. No Limit
- G. Other



- Allow solar over 100+kw (0.5 acres) on Significant Agricultural Lands?
- Revise restrictions on solar development Forestry and Agricultural zoning district?
- Open up more zoning districts to solar development over 2.5 acres (500kW)?



Existing Language

This use is permitted in the Forestry zone districts 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.

Applies to:

Medium and Large in Forestry Zone Large in Agricultural Zone District

Proposed Language

This use is permitted in the Forestry zone districts 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 properties that have undergone previous intensive development (commercial, industrial, warehouse, or materials storage areas), where reuse of these areas will not have additional significant impacts.

Applies to:

Medium and Large ground-mounted systems in Forestry Zone

Should the language be revised?

Should we remove this restriction FOR 10+ ACRE (2MW+) arrays on Agricultural zoned?



Should the language for additional provisions for limiting solar development Forestry and Agricultural zoning district be revised?

- A. Yes, as proposed.
- B. Yes, but more like this....
- C. No, it should stay as it is.



Should this restriction to contaminated or damaged land be removed on Agricultural zoned property for 10+ acre (2MW+) arrays, given the proposed criteria for Significant Agricultural Lands?

A. No, it should remain the same.

B. Yes, this restriction should be removed for Agricultural zoning.



Main Focus Questions

- Allow solar over 100+kw (0.5 acres) on Significant Agricultural Lands?
- Revise restrictions on solar development Forestry and Agricultural zoning district?
- Open up more zoning districts to solar development over 2.5 acres (500kW)?



Is it appropriate to open up more zoning districts to solar development over 2.5 acres (500kW)?

Transitional and Business?

Un-subdivided Lands in RR and ER?



Should staff reduce the review in appropriate areas?



Current Code

Zoning District	Accessory	Sm	nall	Medium	Large
		<100kW	100- 500kW	500kW-2MW	>2MW
MF, MH, MI, SR, H	SPRW	SPR	LU#	Not allowed	Not allowed
ER, RR	SPRW	SPR	LU#	Not allowed	Not allowed
F	SPRW	SPR	LU*	SU*	SU*
Α	SPRW	SPR	LU#	SU#	SU#*
LI, GI, C	SPRW	SPR	LU#	SU#	SU#
T, B	SPRW	SPR	LU#	Not allowed	Not allowed

Proposed Code

Zoning District	Accessory	Small		Medium	Large
		<0.5	0.5-2.5	2.5-10 acres	10+ acres
		acres	acres		
MF, MH, MI, SR, H	SPRW	SPR	SPR#	Not allowed	Not allowed
ER, RR	SPRW	SPR	SPR#	LU#	SU#
F	SPRW	SPR	SPR*	SU*	SU*
Α	SPRW	SPR	SPR#	LU#	SU#
LI, GI, C	SPRW	SPR	SPR#	SPR#	SPR#
T, B	SPRW	SPR	SPR#	SPR#	SPR#

*Only if the areas used has been contaminated or damaged in the past making it unsuitable for agricultural, forestry, or residential uses. These areas may include portions of properties that have been intensely developed, former landfills, brownfields, Superfund sites, and the like.

On Significant Agricultural Lands, as designated by the Comprehensive Plan, this use is subject to additional criteria. This use requires Special Review on Lands of Statewide or National Importance.





Thank You!



BCCP Agricultural Goals

A.1 Future Urban Development should be located within or adjacent to existing urban areas in order to eliminate sprawl and strip development, to assure the provision of adequate urban services and preserve agricultural, forestry, and open space land uses, and to maximize the utility of fund invested in public facilities and services.



AG 1.03

It is the policy of Boulder County to encourage the preservation and utilization of those lands identified in the Agricultural Element as Agricultural Lands of National, State, or Local Importance and other agricultural lands for agricultural or rural uses. The Boulder County Comprehensive Plan Agricultural Element Map shall include such lands located outside of the boundaries of any municipality or the Niwot Community Service Area.



AG 1.04

In reviewing Applications for new development, Boulder County shall consider potential Impacts on existing adjacent agricultural uses and shall use its regulatory authority to mitigate those impacts which would be detrimental to the continuation of existing agricultural operations and activities and the establishment of new agricultural operations and activities.



AG 1.08 The county shall encourage the development of resource management plans for significant native grassland ecosystems.



AG 1.10 The county shall encourage the development of soil and water conservation plans to help assure sound resource stewardship and, where appropriate, may require such plans in land use applications subject to the county's discretionary review processes as defined in the county Land Use Code.



AG 1.13 The county shall continue to monitor the application of these policies and attendant Boulder County land use codes, as to their effectiveness in preserving agricultural land and perpetuating agricultural uses in Boulder County, while maintaining a reasonable use to individual owners.



Infrastructure Development on Agricultural Land

AG 2.01 The county shall discourage the placement of new utility infrastructure upon agricultural lands. The county supports using existing easement or other public rights of way to minimize the impacts to agriculturally productive land.

AG 2.01.01 If a thorough analysis of alternative concludes that routing/siting of facilities is necessary on or across agricultural lands, all construction activities will be located and performed so as to minimize disturbance to agricultural resources.

AG 2.01.02 If the infrastructure location is determined necessary, infrastructure construction activities across agricultural lands should not occur during growing season.

AG 2.01.03 Any agricultural lands and water resource systems disturbed by infrastructure construction shall be restored to their former productivity.



<u>Current Hurdles to Solar Development</u>

- Have to win a bid with utility company and in some cases also the Public Utilities Commission
- Projects must be located near three phase power and distribution substations
- Lease Agreements with private property owners
- Land Leases significantly more expensive in Boulder County
- Funding sources and capital for installation
- Solar installations of all scales are taxed



<u>Current Hurdles to Solar Development</u>

- Technical constraints of the grid, and utility companies
- Limited availability of land due to public lands
- Limited availability of land due to Land Use Code Provisions
- Soft costs and uncertainty of Land Use Review Process



Post-Hearing Notice from Boulder County Sustainability July 24, 2018

Staff has become aware that some outdated GHG estimates and Sustainability goals were presented during the study session on July 23, 2018. The following message is from our Sustainability office:

The final report from the consultant's work on our countywide GHG inventory and GHG emission reduction strategies is now published online. It can be viewed on the county website here. Please scroll to page 35 (the page number printed on the page) and you'll see the table containing the renewable energy estimates. They are slightly different than your table for expand rooftop solar, community solar, and additional efforts as you'll see given latest revisions.

We are estimated to reach 23% reduction by 2020 and the Commissioners want to adopt longer-term goals. The latest goals are 45% reduction by 2030 and 90% reduction by 2050 below 2005 levels. Please scroll to page 30 (the page number printed on the page). The Commissioners will formally adopt this goals when they adopt the updated Sustainability Plan in mid-August.

Please refer to the "Climate" chapter of the <u>Boulder County Sustainability Plan</u>, as well as the <u>Boulder County Green House Gas Emissions Inventory and Modeling Report</u> for more complete and up to date information on other renewable energy and GHG reduction measures.



July 23, 2018

Significant Agricultural Lands

- 1. Should Solar Energy Systems over 0.5 acres be allowed on Agricultural Land of Local Importance?
 - a. Yes, but no mitigating factors, Ag or pollinator habitat, required.
 - b. Yes, should be allowed at the same review for the zoning district, with Ag use or Pollinator Habitat. (proposed by staff)
 - c. Yes, but should be allowed through an SU, with additional mitigation measures. (Please explain)
 - d. No, should not be allowed on Ag Lands of State or National Importance regardless of mitigating factors.
- 2. Should Solar Energy Systems be allowed on Agricultural lands of State or National Importance?
 - A. Should be allowed, and with no special requirements.
 - B. Should be allowed at the same review for the zoning district, with additional mitigation measures as listed by staff.
 - C. Should be allowed through a Special Review, with additional mitigation measures as listed by staff. (This is staff's proposal)
 - D. Yes, should be allowed through a Special Review, with different/ additional mitigation measures than staff has listed. (Please elaborate)
 - E. No, should not be allowed on Ag Lands of State or National Importance regardless of mitigating factors.

July 23, 2018

3.	If sola	is allowed, should the area of disturbance on Ag Lands of State and			
	National Significance be limited?				
	A.	Should be limited to 0.5 acres to match the current code			
	D	F agree			

- B. 5 acres
- C. 6 acres
- D. 8 acres
- E. 10 acres
- F. No Limit
- G. Other

Forestry and Agricultural Provisions

4.	Should the language for additional provisions for limiting solar development
	Forestry and Agricultural zoning district be revised?

- A. Yes, as proposed.
- B. Yes, but more like this....

- C. No, it should stay as it is.
- 5. Should the restriction to contaminated or damaged land be removed on Agricultural zoned property for 10+ acre (2MW+) arrays, given the proposed criteria for Significant Agricultural Lands?
 - A. No, it should remain the same.
 - B. Yes, this restriction should be removed for Ag Lands.

July 23, 2018

Additional Zoning Districts

6.	Is it appropriate to open up more zoning districts to solar development over 2.5
	acres (500kW)?

• Transitional and Business?

• Un-subdivided Lands in RR and ER?

7. Should staff reduce the review required in appropriate areas as shown on the following page?

July 23, 2018

Current Code							
Zoning District	Accessory	Small		Medium	Large		
		<100kW	100- 500kW	500kW-2MW	>2MW		
MF, MH, MI, SR, H	SPRW	SPR	LU#	Not allowed	Not allowed		
ER, RR	SPRW	SPR	LU#	Not allowed	Not allowed		
F	SPRW	SPR	LU*	SU*	SU*		
Α	SPRW	SPR	LU#	SU#	SU#*		
LI, GI, C	SPRW	SPR	LU#	SU#	SU#		
Т, В	SPRW	SPR	LU#	Not allowed	Not allowed		

^{*}Only if the areas used has been contaminated or damaged in the past making it unsuitable for agricultural, <u>forestry</u>, or residential uses. These areas may include former landfills, brownfields, Superfund sites, and the like.

#This use is not allowed on Agricultural Lands of Importance as designated by the Comprehensive Plan.

Proposed Code

Zoning District	Accessory	Small		Medium	Large
		< 0.5	0.5-2.5	2.5-10 acres	10+ acres
		acres	acres		
MF, MH, MI, SR, H	SPRW	SPR	SPR#	Not allowed	Not allowed
ER, RR	SPRW	SPR	SPR#	LU#	SU#
F	SPRW	SPR	SPR*	SU*	SU*
Α	SPRW	SPR	SPR#	LU#	SU#
LI, GI, C	SPRW	SPR	SPR#	SPR#	SPR#
T, B	SPRW	SPR	SPR#	SPR#	SPR#

^{*}Only if the areas used has been contaminated or damaged in the past making it unsuitable for agricultural, forestry, or residential uses. These areas may include portions of properties that have been intensely developed, former landfills, brownfields, Superfund sites, and the like. # On Significant Agricultural Lands, as designated by the Comprehensive Plan, this use is subject to additional criteria. This use requires Special Review on Lands of Statewide or National Importance.

O'Dwyer, Sinead

From:

Byron Kominek

byron.kominek@gmail.com>

Sent:

Wednesday, July 18, 2018 9:22 AM

To:

O'Dwyer, Sinead

Subject:

Re: Boulder County Planning Commission Study Session for Solar Energy in Land Use

Code

Hi Sinead,

Thank you very much for sharing the document. I'm very happy to see all the research and thoughtful analysis the Land Use Department has put into the proposed amendments. Kudos. I especially appreciate the condition of combining agriculture and/or pollinator communities on a solar development.

Out of curiosity, would additional multi-purpose uses (e.g. art installations, educational programs, wildlife habitat) further be considered to be favorable? Also, what if there was a commitment from the landowner of lands of importance to improve agricultural, pollinator, wildlife habitat, or other condition on their remaining parcel of land as a quid-pro-quo for being allowed to install and operate a solar garden?

A couple other points...

- 1) the document notes that 5 acres is the minimum for a 1MW solar array. I'd advocate for an additional acre (20% increase) as my understanding is the disturbance of 5 acres of land consists solely of the solar array itself, and not necessarily the other infrastructure around the solar array (i.e. control panel, parking pad, gates, fencing, access road, potentially equipment storage, transmission lines). Additionally, would the 5 acre requirement be applicable post-construction, or throughout construction, as an additional acre may be minimally impacted during construction due to vehicle access?
- 2) I agree with the proposed requirement for additional documentation for solar arrays on lands of national & state ag significance. However, I'd advocate for systems up to 2MW be required to follow the Limited Use Review process (with the additional documentation) and not the special review process. As noted at the beginning of the document, solar systems are significantly less intensive on the environment due to advances in solar installation technology (including minimal compaction, pile driven anchors for solar modules). Special Review processes are for developments or uses that may potentially have a significant impact on the property, its resources, and the surrounding areas. It would seem contradictory to request a special review process for an activity deemed to be significantly less damaging to the environment than other more detrimental developments that require a SU. I understand that due to the nature of the land being of national & state ag significance there is a desire to ensure the conservation of the soils / lands / environs, but could this not be done through a LU review that requires the additional documentation as noted in the proposal (installation plan, management plan with narrative for proposed agricultural use under and/or around solar arrays, weed control plan, and decommissioning plan)? Would there be other documentation (usefulness to the community, signatures from neighbors, etc) that could be provided under a LU that would satisfy the desire to conserve such lands while not adding on significant costs and time delays that often stem from a SU?

Please do not take my "couple other points" notes as any sort of dissatisfaction with your team's work, which would be to the contrary of my viewpoint. These thoughts are simply meant to help push the conversation during the County's deliberations.

Many thanks for your continued efforts in this process Sinead!

Byron

On Mon, Jul 16, 2018 at 5:50 PM, O'Dwyer, Sinead < sodwyer@bouldercounty.org > wrote:

Hello!

I have previously reached out to you in regards to the proposed text amendments to the Solar Energy-related provision of the Boulder County Land Use Code. Thank you for taking the time to answer my questions and connect me with the right individuals. Staff has requested a study session with Planning Commission to discuss the concepts for considered amendments to solar-related provisions in the Code. You may find the Study Session Staff Report here: https://assets.bouldercounty.org/wp-content/uploads/2018/07/dc-18-0002-planning-commission-study-session-20180723.pdf. Due to scheduling conflicts, Planning Commission will not be held on Wednesday, as is customary. Instead the Planning Commissioners will be meeting for public hearing on Monday July 23, at 2:30 p.m. All comments submitted prior to the hearing will be shared with the Commissioners. No public testimony will take place at the hearing, however, public feedback is welcome throughout the process. Please do not hesitate to email me (sodwyer@bouldercounty.org) with questions, comments, or concerns.

Any future referrals and public hearings can be found on the docket page: https://www.bouldercounty.org/property-and-land/land-use/planning/land-use-code-update/dc-18-0002/. Please let me know if you have any questions or concerns in regards to this project.

Sincerely,

Sinead O'Dwyer

Planner I

Boulder County | Land Use Department 303.441.4597 | 2045 13th St. | Boulder, CO 80302

sodwyer@bouldercounty.org