

## Project Setbacks

During a meeting on January 4, 2019, County Staff indicated that the 350-foot setbacks proposed in The Staff Report were intended to address three issues: temporary temperature increases, visual screening, and noise. sPower believes that the proposed 100-foot setbacks achieve the same objectives as intended by County Staff:

### “Temporary Temperature Increases”

- This appears to be the main concern driving the 350-foot setback prescription.
- County Staff took Dewberry’s prescription for 350 ft. in their 11/26/18 review of a paper by Dr. Fthenakis during their Heat Island Effect Assessment
- On 12/12/18 Dr. Fthenakis responded to Dewberry’s interpretation of his paper as a misinterpretation: the 328 ft referenced in the data corresponded to maximum mean temperature differences that may occur for only a few hours.
- 12/17/18 County Staff and Dewberry changed the terminology from Heat Island Effect to “Temporary Temperature Increases”
  - County Staff, Dewberry, Dr. Fthenakis, and sPower agree there is no Heat Island Effect
  - The concern was now only about a short-lived temperature increases of 1-2° possibly coming from the solar facility
- sPower proposed a fully vegetated, 100-foot vegetation buffer comprised of plantings and natural regrowth around the entire project site to shield neighboring properties from “temporary temperature increase”
  - it is acknowledged by Dr. Fthenakis, Dr. Barron-Gafford, Dewberry and agencies such as the EPA that vegetation will have a cooling effect through both shading and evapotranspiration
- Dr. Barron-Gafford testified regarding data he collected demonstrating less than 100 ft would be needed for heat dissipation *without* vegetation
- Dr. Barron-Gafford also gathered information in a scientific literature review demonstrating that project with revegetation under the panels have no heat increases even within the panel array, and were actually cooler than surrounding areas
- Dr. Barron-Gafford’s review also revealed there are no temperature increases in the surrounding soils and no impacts on soil moisture.
- This additional data **suggests that no vegetative shielding for heat effects would be necessary at all**, let alone 350 feet.

### Visual Impacts

- Proposed visual screening for residences neighboring the project site consist of 8ft tall berms and evergreen trees and shrubs located on the property line
- Visual screens will be backed-up by the vegetative regrowth discussed above in the 100-foot project setback
- The berms and evergreen plantings will provide all the screening necessary
  - With vegetative regrowth plus the proposed berms and plantings for screening, nothing is gained by an additional 250 feet of setback (Attachment A)

- Therefore, because the screening is accomplished by the berms and plantings, 100-foot setbacks of regrowth achieve the same objective as 350-foot setbacks

#### Noise Impacts

- As demonstrated by the noise impact analysis presented to County Staff, the loudest construction-related noise generating activity would be related to pile driving
  - Note: this study assumed the original 50 ft setbacks initially proposed
  - The study did not account for 100 ft of regrowth
- The noise level is comparable to a to a gas lawn mower at approximately 100 feet away. This noise level is also sometimes described as the level at which people need to begin to raise their voices to carry a normal conversation.
- The pile -driving will be restricted to the hours of operation outlined in the conditions
- The pile-driving will be temporary, as all pile-driving activity is only anticipated to last 3-4 days in any area near neighboring property.
- The activity will move away from the adjacent properties towards the site interior as the construction progresses.
- During the operations phase of the project will have zero noise impacts
- Imposing a permanent mitigation measure in the form of a 350-foot setback to only address 3-4 days of temporary noise impacts does not seem practical

#### Impacts to the solar Farm

The 350-foot setback would have significant impacts to the developable footprint of the project, thereby resulting in considerable losses to production (Attachment B).

Setback	Developable Area (acres)	Developable Area losses (acres)	Panels (qty)	MWac	MWdc	MWac losses
50ft	2,810	N/A	1,619,705	500	650	N/A
100ft	2,807	3	1,619,705	500	650	N/A
350ft	2,415	395	1,321,627	407	529	93

## Attachment A

With vegetative regrowth and the proposed berms and plantings for screening, nothing is gained by imposing an additional 250 feet of setbacks.

100-foot setback

350-foot setback

Setback



Setback with  
natural  
regrowth



Setback, natural  
regrowth, berm  
and plantings

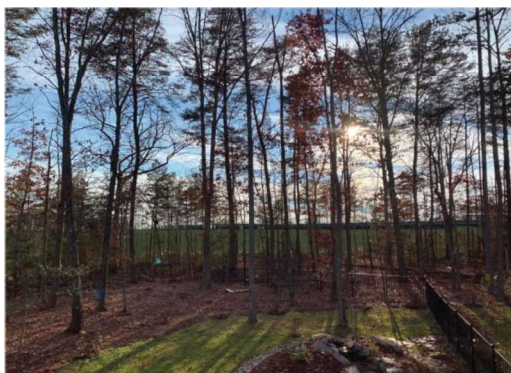




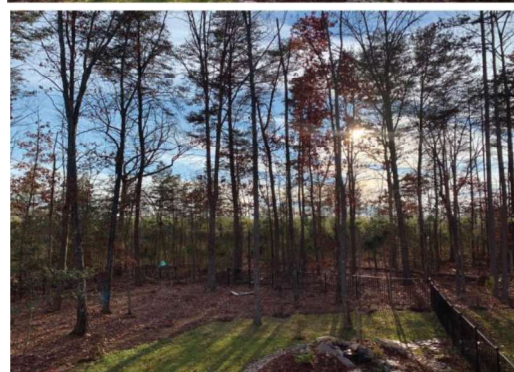
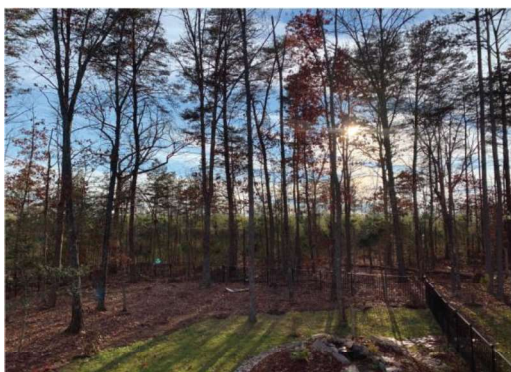
100-foot setback

350-foot setback

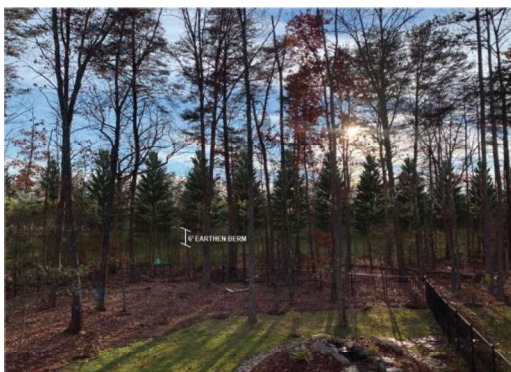
Setback



Setback with  
natural  
regrowth

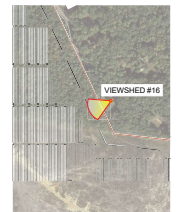


Setback, natural  
regrowth, berm  
and plantings





100' panel setback with no buffering



VIEWSHED #16 LOCATION  
SCALE: 1" = 400'



# SPOTSYLVANIA SOLAR ENERGY CENTER

Spotsylvania County, Virginia



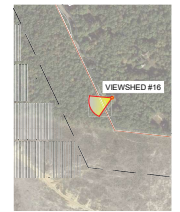
VIEW 16 - Perspective  
MARCH 26, 2019







350' panel setback with no buffering



VIEWSHED #16 LOCATION  
SCALE: 1" = 400'

## SPOTSYLVANIA SOLAR ENERGY CENTER

Spotsylvania County, Virginia



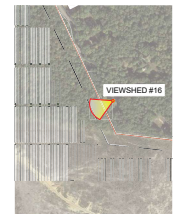
VIEW 16 - Perspective

MARCH 26, 2019





100' panel setback with forest regrowth



VIEWSHED #16 LOCATION  
SCALE: 1" = 400'

## SPOTSYLVANIA SOLAR ENERGY CENTER

Spotsylvania County, Virginia



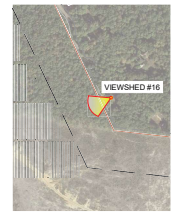
VIEW 16 - Perspective  
MARCH 28, 2019







350' panel setback with forest regrowth



VIEWSHED #16 LOCATION  
SCALE: 1" = 400'

## SPOTSYLVANIA SOLAR ENERGY CENTER

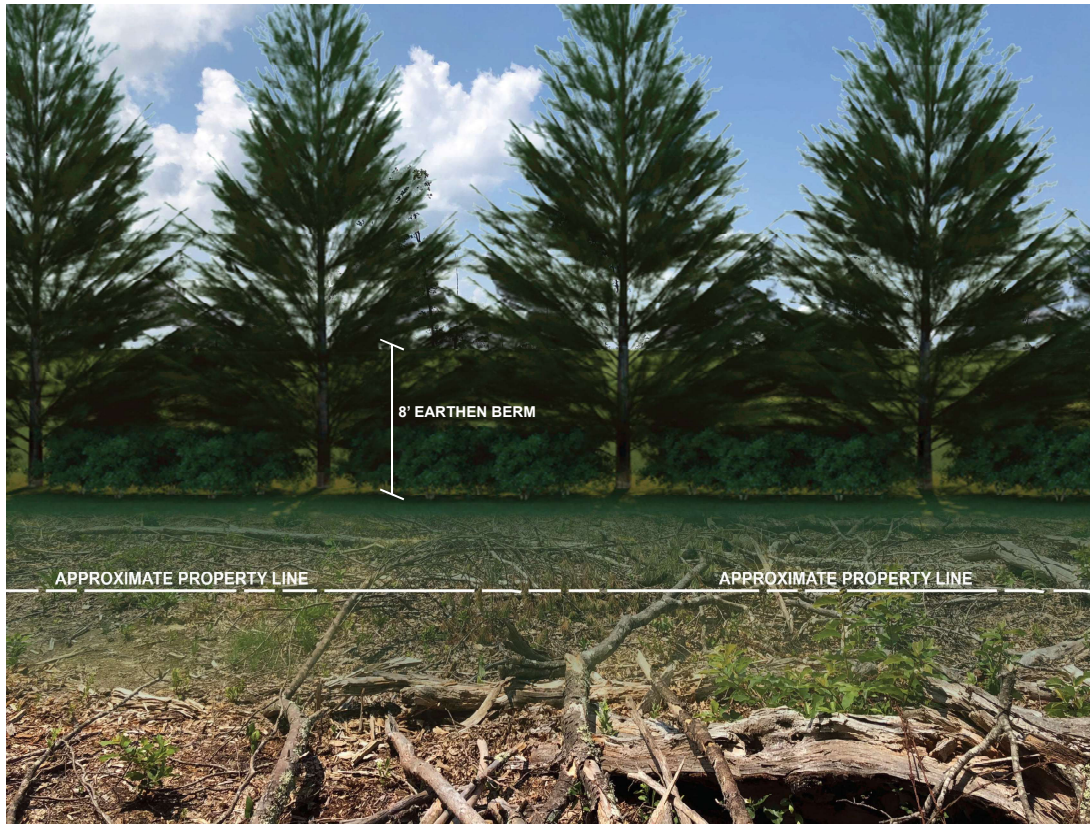
Spotsylvania County, Virginia



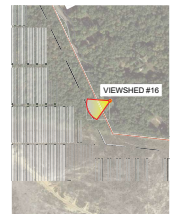
VIEW 16 - Perspective  
MARCH 26, 2019







100' panel setback with mature plantings, 8' berm, and forest regrowth



VIEWSHED #16 LOCATION  
SCALE: 1" = 400'

## SPOTSYLVANIA SOLAR ENERGY CENTER

Spotsylvania County, Virginia



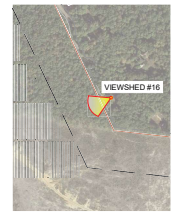
VIEW 16 - Perspective

MARCH 26, 2019





350' panel setback with mature plantings, 8' berm, and forest regrowth



VIEWSHED #16 LOCATION  
SCALE: 1" = 400'

## SPOTSYLVANIA SOLAR ENERGY CENTER

Spotsylvania County, Virginia



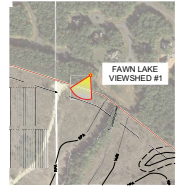
VIEW 16 - Perspective  
MARCH 26, 2019







100' panel setback with no buffering



FAWN LAKE VIEWSHED #1  
LOCATION  
SCALE: 1" = 400'



## SPOTSYLVANIA SOLAR ENERGY CENTER

Spotsylvania County, Virginia



Fawn Lake View 1-  
Perspective

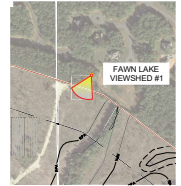
MARCH 26, 2019

Kimley»Horn





350' panel setback with no buffering



FAWN LAKE VIEWSHED #1  
LOCATION  
SCALE: 1" = 400'



## SPOTSYLVANIA SOLAR ENERGY CENTER

Spotsylvania County, Virginia



Fawn Lake View 1-  
Perspective

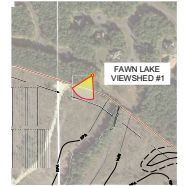
MARCH 26, 2019

Kimley»Horn





100' panel setback with forest regrowth



FAWN LAKE VIEWSHED #1  
LOCATION  
SCALE: 1" = 400'

## SPOTSYLVANIA SOLAR ENERGY CENTER

Spotsylvania County, Virginia



Fawn Lake View 1-  
Perspective

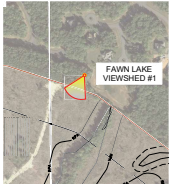
MARCH 26, 2019

Kimley»Horn





350' panel setback with forest regrowth



FAWN LAKE VIEWSHED #1  
LOCATION  
SCALE: 1" = 400'

**SPOTSYLVANIA SOLAR ENERGY CENTER**  
Spotsylvania County, Virginia



**Fawn Lake View 1-  
Perspective**

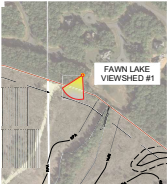
MARCH 26, 2019







100' panel setback with 6' berm, mature plantings, and forest regrowth



FAWN LAKE VIEWSHED #1  
LOCATION  
SCALE: 1" = 400'



**SPOTSYLVANIA SOLAR ENERGY CENTER**  
Spotsylvania County, Virginia

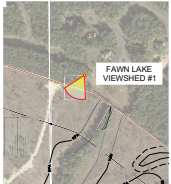


Fawn Lake View 1-  
Perspective

MARCH 26, 2019







FAWN LAKE VIEWSHED #1  
LOCATION  
SCALE: 1" = 400'

SPOTSYLVANIA SOLAR ENERGY CENTER  
Spotsylvania County, Virginia



350' panel setback with 6' berm, mature plantings, and forest regrowth

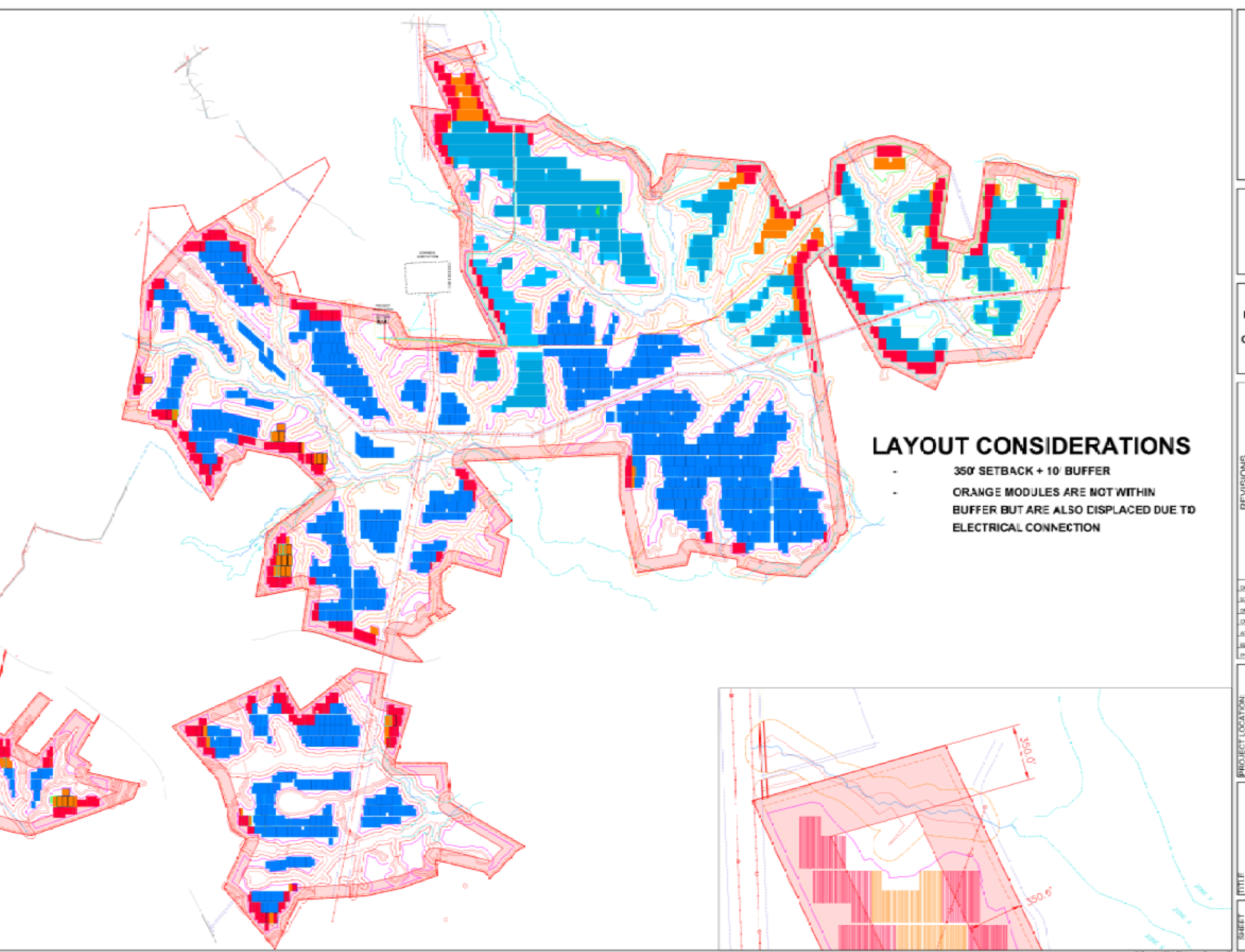
Fawn Lake View 1-  
Perspective

MARCH 26, 2019



## Attachment B

350-foot Setback Project Impacts



P  
C

REVISIONS

DATE  
SCALE  
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APP.  
REV.  
BY

PROJECT LOCATION:

SHEET  
TITLE