Pender County

Agenda

Board of County Commissioners Meeting
Monday, October 3, 2022 @ 4:00 PM
Pender County Public Assembly Room
805 S. Walker Street, Burgaw, NC

			Presenter	Page
1.	CALL TO ORDER			
2.	INVOCATION			
3.	PLEDGE OF ALLEGIANCE			
4.	ADOPTION OF AGENDA			
5.	PUBLIC INFORMATION			
	5.1.	Penderlea Community Park Update Output Document (AIR - 2650) - Pdf	Zach White	3 - 18
	5.2.	Eastern Pender County R/O Plant and Well Field Site Update R/O Plant and Well Field Site Update - Pdf	Commissioner Piepmeyer	19 - 31
6.	PUBLIC COMMENT			
7.	CONSENT AGENDA			
	7.1.	Approval of Tax Releases and Refunds September 2022 Releases and Refunds - Pdf		33 - 35
	7.2.	Approval to carryover purchase orders from FY22 to FY23 Approval to carryover purchase orders from FY22 to FY23 for Utilities - Pdf		37 - 54
	7.3.	Approval of the Board of Commissioner Meeting Minutes September 19, 2022 BOCC Meeting Minutes September 19, 2022 - Pdf		55 - 237
	7.4.	Approval of Budget Ordinance Amendment Assigning Revenue Received from SEDC Grant of $10,000 for US 421 Sewer Project Fund 86 BOA_SEDCGrantRevenueAssignment_US421SewerProject - Pdf		239 - 241
	7.5.	Budget Ordinance Amendment - Holly Shelter Shooting Range for NRA Foundation Award BOA - Pdf		243 - 245
	7.6.	Request Approval for Demolition of Dental/COVID Trailer and Purchase Order to Robert Palmer & Son's in the amount of $10,900. Demolition of Mobile Trailer - Pdf		247 - 252
8.	APPROVALS AND RESOLUTIONS			
	8.1.	Approval of Offer & Authorize Closing Process for Sale of Surplus Property - Parcel 2286-65-9062-0000 Country Court Apartments US Hwy 421	Meg Blue	253 - 258

Sale of Country Court - Pdf

8.2.	Approval of Surplus Property Advertisement for Auction - 2907 Englishtown Road, Willard Surplus - Englishtown Road Willard - Pdf	Meg Blue	259 - 264
8.3.	Approval of Capital Project Ordinance and Budget Ordinance Amendment for LCFWASA Parallel Raw Water Main to PCU Water Plant CapProOrdBOA_LCFWASAParallelRawWaterMain - Pdf	Kenny Keel	265 - 275
8.4.	Resolution Requesting Safety Feasibility Study from NCDOT on the NC 210 Corridor Between Hampstead and Rocky Point NC 210 Safety Study - Pdf	Commissioner Piepmeyer	277 - 279

9. DISCUSSION

9.1.	Eastern Pender Water Improvements Project Cost Updates & Comparisons Discussion_EasternPenderWaterImprovementsComparisons - Pdf	Kenny Keel	281 - 287

10. APPOINTMENTS

10.1.	Approval of Re-appointment to the Pender County Advisory Board of Health Jennings App - Pdf		289 - 291

11. MAPLE HILL WATER AND SEWER DISTRICT

12. ROCKY POINT WATER AND SEWER DISTRICT

13. SCOTTS HILL WATER AND SEWER DISTRICT

14. MOORES CREEK WATER AND SEWER DISTRICT

15. CENTRAL PENDER WATER AND SEWER DISTRICT

16. PENDER COUNTY BOARD OF HEALTH

17. SOCIAL SERVICES BOARD

18. ITEMS FROM THE COUNTY ATTORNEY, COUNTY MANAGER, ASSISTANT COUNTY MANAGERS, & COUNTY COMMISSIONERS

19. CLOSED SESSION (IF APPLICABLE).

20. ADJOURNMENT

Pender County
Public Information

TO:	Board of County Commissioners
FROM:	Zack White
DATE:	October 3, 2022
SUBJECT:	Penderlea Community Park Update

SUMMARY:
Staff will provide a presentation on the upgrades and upcoming programming at Penderlea Community Park.

ACTION REQUESTED:
None



PENDERLEA COMMUNITY PROPERTY UPDATE

10/3/22

PENDERLEA GROUNDS













PENDERLEA GROUNDS

CLASSROOMS









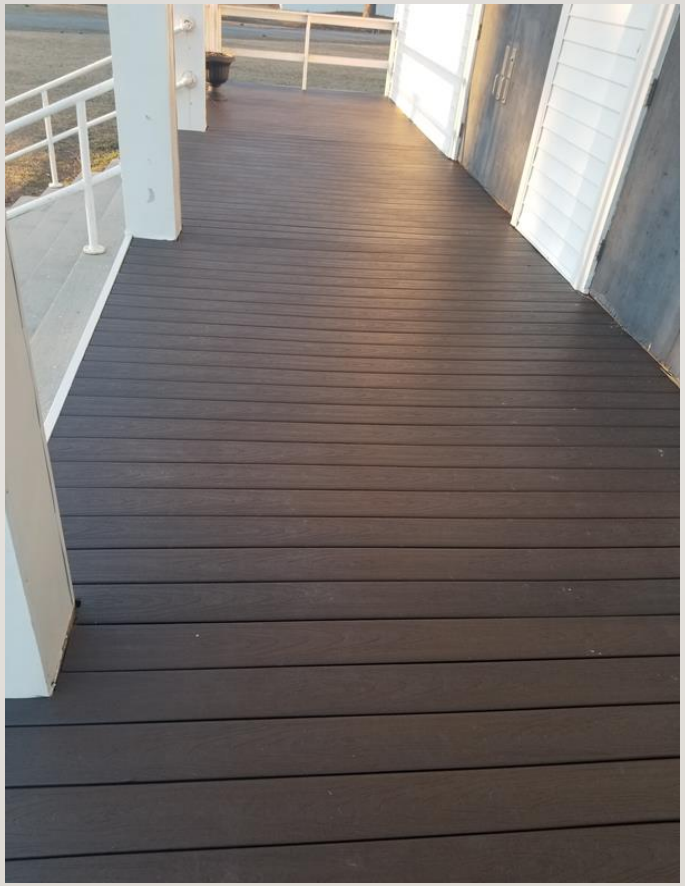
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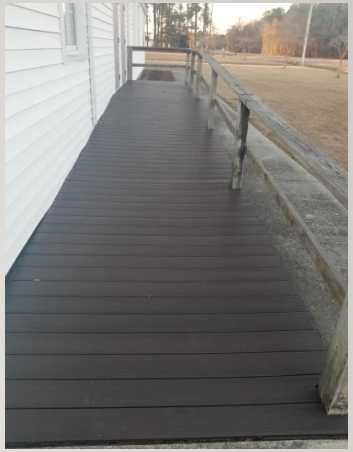




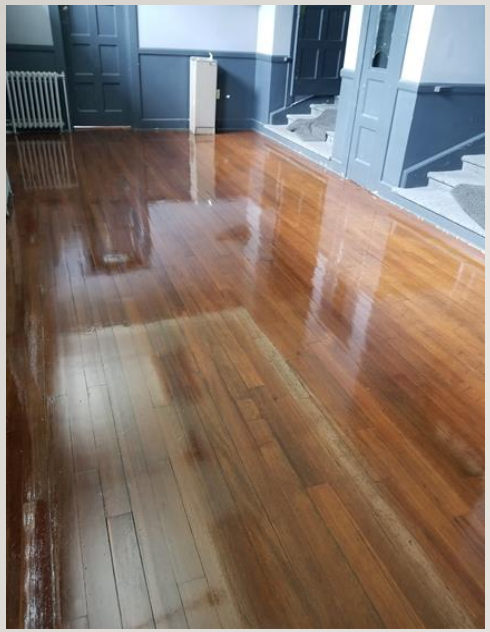
GYM FLOOR PATCH

HANDICAP RAMP & DECK REPLACEMENT











PENDERLEA FLOOR REFINISHING





CURTAIN REPLACEMENT

LAWN GAME AREA



PLAYGROUND INSTALLATION





ROOFING



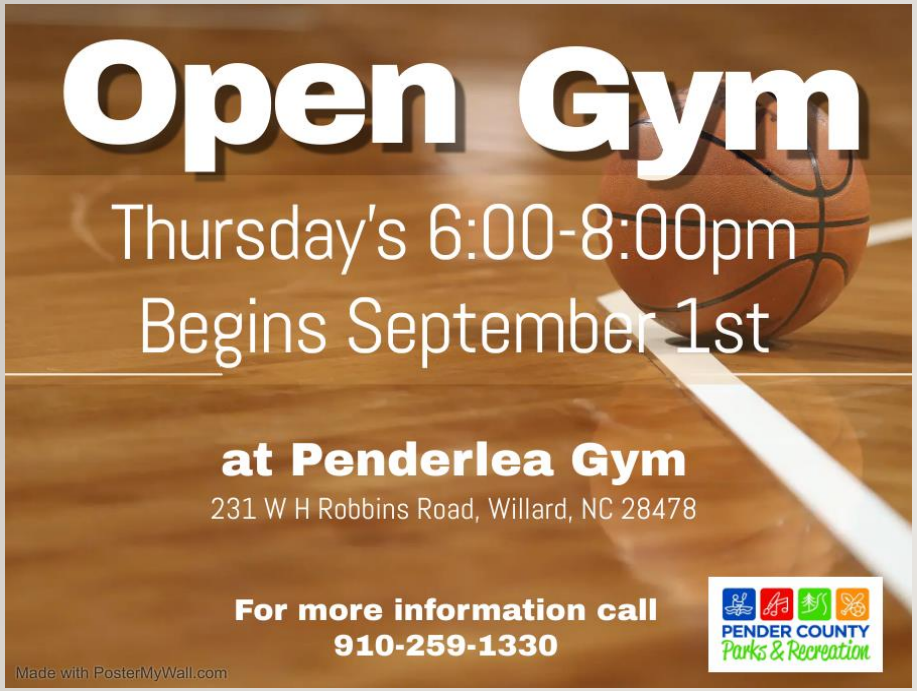




OTHER COMPLETED PROJECTS

- Fire suppression system installed
- All restrooms are in working order
- Auditorium sump pump has been replaced.
- Underground water leaks have been repaired.
- Picnic tables installed







PROGRAMMING

PROGRAMMING





Pender County
Eastern Pender County R/O Plant and Well Field Site Update

TO:	Board of County Commissioners
FROM:	David Piepmeyer
DATE:	October 3, 2022
SUBJECT:	Eastern Pender County R/O Plant and Well Field Site Update

SUMMARY:
Eastern Pender County R/O Plant and Well Field Site Update

Pender County's Request to Acquire 200 Acres in the Holly Shelter Game Lands

August 31, 2022

Commissioner David Piepmeyer

History:

The Commissioners for Pender County identified that we had a water distribution problem 7 years ago when I was elected to the board and have been spending a majority of our time at our annual BOCC Retreat trying to develop and agree on a Strategic Plan to address this issue.

We have even proposed to pay Cape Fear Utilities (New Hanover County) for a "Metered" connection at Scott's Hill (Pender / New Hanover County Line) as well as for water consumed. This proposal was "rejected".

Pender Utilities hired consultants to determine if it was better to run a dual water line from Rocky Point to Hampstead or to build a Reverse Osmosis Water Plant and Well field here on the east side. We were advised to build RO Plant and Well Field.

History (continued):

Pender County and Pender County Utilities Managers have been actively searching for the last 4 years for a large enough tract of land, in and around the east side of Pender County, to build a Reverse Osmosis Water Plant and 16 Water Wells (~200 acres).

Likewise, Pender County Board of Education has put forth a Bond Referendum, That if passed in November, Requires Pender County to Acquire Two more 100+ acre Tracts of Land on the East Side to Build Two More Schools.

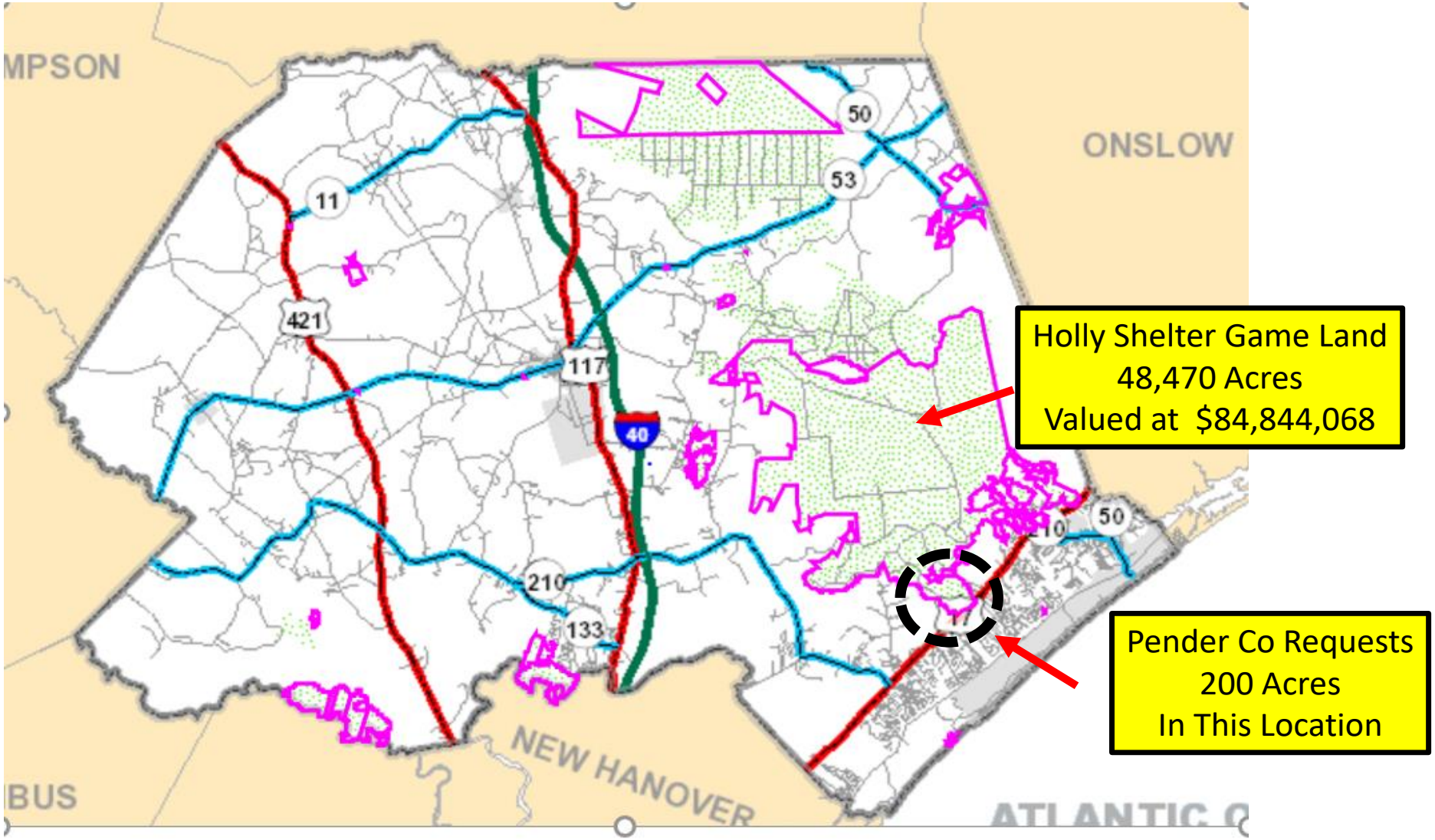
All discussions with Large Landowners have Ended with either an Emphatic “Not Interested in Selling” or a HUGE Price Tag that the County just CAN’T Afford.

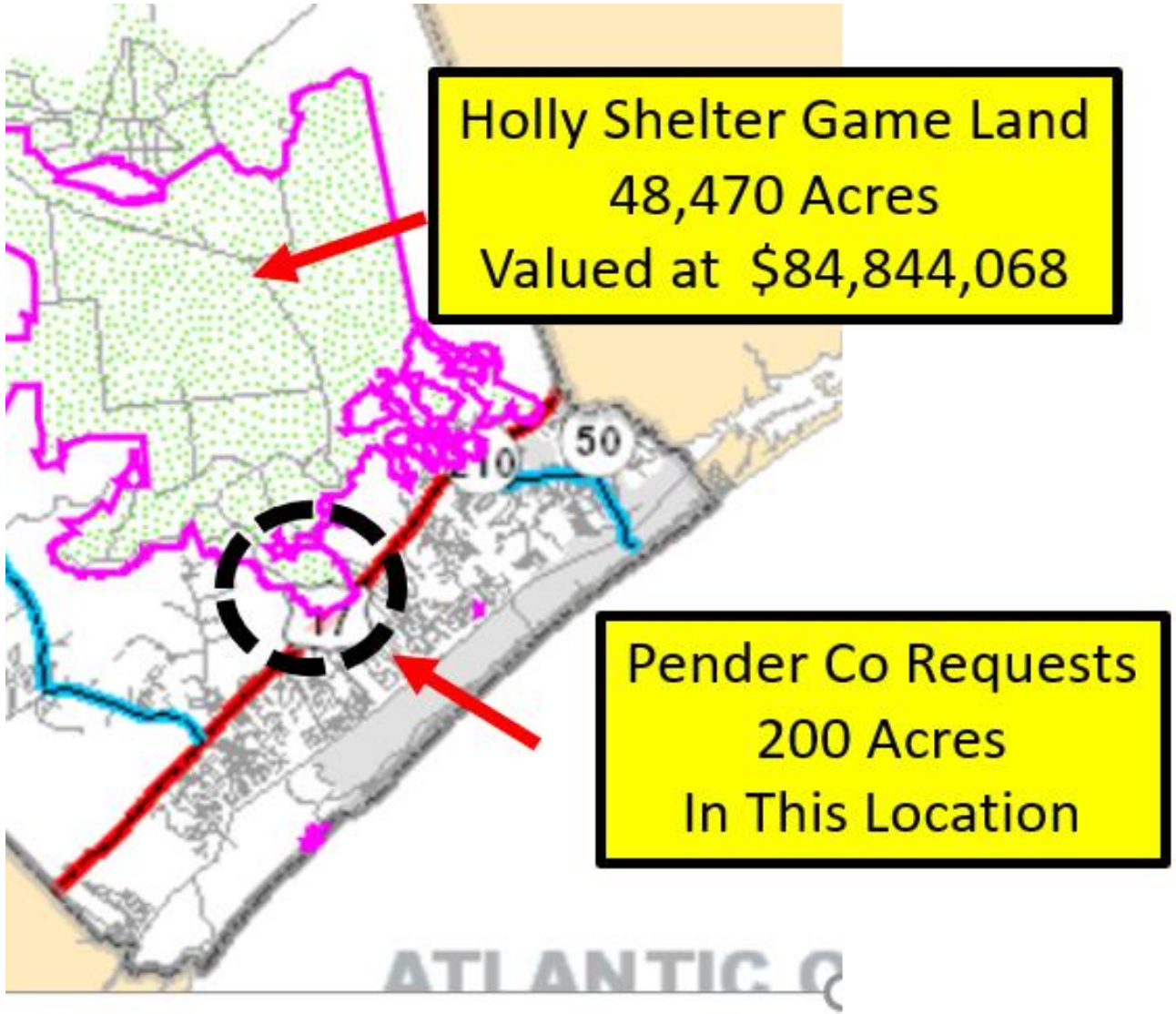
Request:

For the NC Wildlife Resources Commission (or the State of NC) to Lease, Gift, Partner or Sell 200 acres of Land on Highway 17, at or near the intersection of Sloop Point Loop Road, in the Holly Shelter Game Land Tract for the Purpose of Pender County Building a Reverse Osmosis Water Plant as well as 16 Water Wells to meet the Demand for Drinking Water on the East Side of Pender County (Scott's Hill, Hampstead, as well as potentially the Town of Topsail Beach).

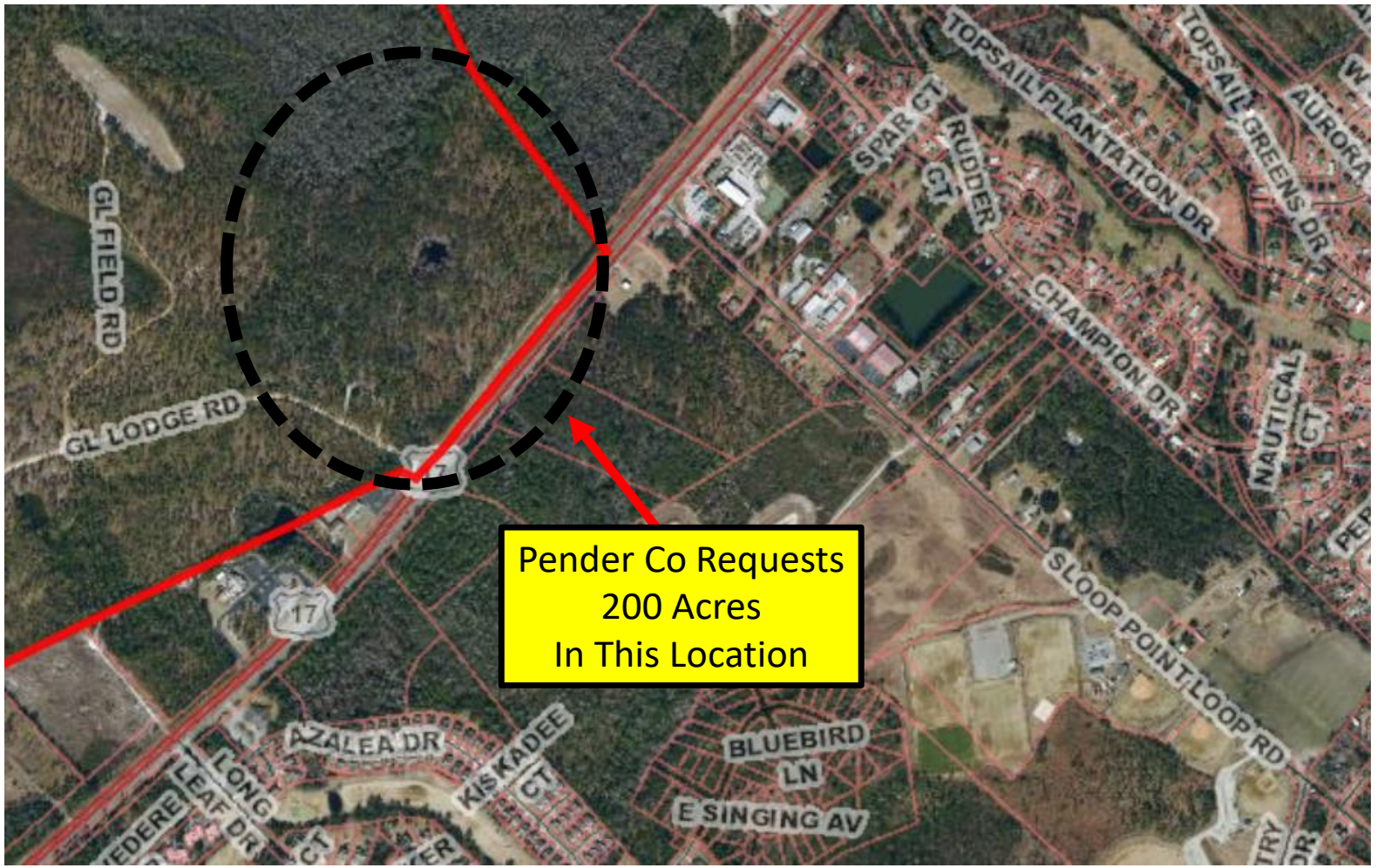
We would also be happy with just 50 acres for the RO Plant located on 17 near the Sloop Point Loop Road intersection and a lease agreement that allows the county to place nonintrusive Wells and Elevated Tanks along the GL Lodge and GL Field Roads.

Please see the following Slides for Supporting Information and Exact Location


MPSON
ONSLOW
NEW HANOVER
BUS
ATLANTIC O
11
421
117
40
210
133
50
53
50
Holly Shelter Game Land
48,470 Acres
Valued at $84,844,068
Pender Co Requests
200 Acres
In This Location


Holly Shelter Game Land
48,470 Acres
Valued at $84,844,068
Pender Co Requests
200 Acres
In This Location
50
ATLANTIC




GL FIELD RD
GL LODGE RD
17
Pender Co Requests
200 Acres
In This Location
AZALEA DR
KISKADEE CT
BLUEBIRD LN
E SINGING AV
SLOOP POINT LOOP RD
CHAMPION DR
TOPSAIL PLANTATION DR
TOPSAIL GREENS DR
RUDDER CT
SPAR CT
NAUTICAL CT
AURORA

Justification for the Request:

Since Pender County Invested Over a Million Dollars to Purchase Property to Build a 3 Slip Vehicle Boat Ramp and Parking Lot on the ICWW in Partnership with NC Wildlife Resource Commission

And Since Pender County Again Partnered with the NC Wildlife Resource Commission to Purchase and Construct a Public Shooting Range on Shaw Highway to promote Safety and Provide Gun Safety Instruction as well as a Safe Range for Target Practice

And since the State of North Carolina owns over a 105,227 acres of land in the Pender County at a value of over $215 Million Dollars

And Since Pender County loses $1.585MM annually in Tax Revenue because the State does Not pay Property Taxes on the 105,227 acres it owns in Pender County

Justification for the Request:

And Since this is NOT an Unprecedented Request as the State has granted Similar Requests Previously to other NC Counties or Municipalities

And since the State of North Carolina owns over a 48,470 acres of land in ONE Tract in the Holly Shelter Game Lands at a value of over $85 Million Dollars

And Since Pender County is only Requesting to Acquire 200 Acres, Which is LESS than ½ a Pencent of the 48,470 State Owned Acres in the Holly Shelter Game Lands

Then, the State of North Carolina, as well as the NC Wildlife Resource Commission, should see Pender County's Request as Reasonable and Well Founded and thus Honor and Grant this Request for Property to Support the Infrastructure (drinking water) Needed to Meet the RISING Population Growth Demand as Stated in the Above Request on the 4th Slide of this Presentation.

Back Up Slides

(All State Owned Land in Pender)

Number	Property Owner	Acreage	East of 117 and West of Hwy 17	Total Value	Township	Comments
	1st Map of State Owned Property					
1	State of NC	0.3	No	$54.00	Caswell	
2	State of NC	1	No	$221,508.00	Caswell	
3	State of NC	811.3	No	$1,419,775.00	Caswell	
4	State of NC	812.65	No	$668,405.00	Cantuck	
5	State of NC	27.8	No	$63,650.00	Columbia	
6	State of NC	700.1	No	$575,832.00	Grady	On 421 near New Hanover County Line
7	State of NC	72.86	yes	$218,580.00	Burgaw	On Stage Park Road
8	State of NC	775.2	Yes	$2,317,140.00	Burgaw	On Whitestocking
9	State of NC	1081.28	Yes	$3,243,840.00	Union	Near Angolia Bay
10	State of NC	3080.69	Yes	$9,242,070.00	Holly	
11	State of NC	5	Yes	$49,480.00	Burgaw	Off Whitestocking
12	State of NC	2007.32	Yes	$5,923,360.00	Holly	Near Hwy 53
13	State of NC	2527.25	Yes	$7,581,750.00	Holly	Near Hwy 53
14	State of NC	4420.17	Yes	$13,260,510.00	Holly	Near Hwy 53
15	State of NC	10516	Yes	$32,063,000.00	Holly	
26	State of NC	1.1	No	$8,800.00	Topsail	On Lea Island
27	State of NC	4.55	Yes	$568,750.00	Topsail	West side of Hwy 17 - May be part of Hampstead Bypass
28	State of NC	50.1	Yes	$104,126.00	Topsail	West side of Hwy 17 - May be part of Hampstead Bypass
29	State of NC	5.15	Yes	$643,750.00	Topsail	West side of Hwy 17 - May be part of Hampstead Bypass
30	State of NC	13.01	Yes	$23,763.00	Topsail	West side of Hwy 17 - May be part of Hampstead Bypass
31	State of NC	375	Yes	$656,250.00	Topsail	Near Onslow County Line
32	State of NC	520.88	Yes	$1,302,200.00	Topsail	Near Onslow County Line
	2nd Map of State Owned Property					
1	State Of North Carolina	8.83	No	$7,263.00	Canetuck	Near Brunswick County Line
2	State Of North Carolina	606.68	No	$498,994.00	Canetuck	Near Brunswick County Line
3	State Of North Carolina	7.49	No	$6,161.00	Canetuck	Near Brunswick County Line
4	State Of North Carolina	1000	No	$822,500.00	Canetuck	Near Brunswick County Line
5	State Of North Carolina	126.75	No	$104,252.00	Canetuck	Near Brunswick County Line
6	State Of North Carolina	356	No	$292,810.00	Canetuck	Near Brunswick County Line
7	State Of North Carolina	180	No	$148,050.00	Grady	
8	State Of North Carolina	650	No	$534,625.00	Canetuck	Near Brunswick County Line
9	State Of North Carolina	1	No	$98,603.00	Columbia	On Hwy 53 West of Burgaw
10	State Of North Carolina	4.02	No	$303,847.00	Columbia	On Hwy 421
11	State Of North Carolina	277.8	No	$542,994.00	Columbia	Old Fish Farm Property on Shiloh Rd
12	State Of North Carolina	304.5	No	$427,518.00	Rocky Point	Near New Hanover County Line
13	State Of North Carolina	5	No	$141,486.00	Burgaw	On Hwy 53 West of Burgaw
14	State Of North Carolina	1143.33	No	$1,601,480.00	Rocky Point	Near New Hanover County Line
31	State Of North Carolina	410.8	Yes	$718,900.00	Holly	
32	State Of North Carolina	12.95	Yes	$36,413.00	Holly	
33	State Of North Carolina	941.58	Yes	$1,647,765.00	Holly	
34	State Of North Carolina	117.47	Yes	$205,573.00	Holly	
	3rd Map of State Owned Property					
1	State of N C	2.1	YES	$1,050,000.00	Topsail	
2	State of N C	109.6	YES	$197,173.00	Topsail	
3	State of N C	118	YES	$212,285.00	Topsail	
	TOTALS:	105226.6		$215,099,672		

Back Up Slides

(Holly Shelter Game Land Acreage Data Highlighted)

Number	Property Owner	Acreage	East of 117 and West of Hwy 17	Total Value	Township	Comments
	1st Map of State Owned Property					
1	State of NC	72.86	yes	$218,580.00	Burgaw	On Stage Park Road
2	State of NC	775.2	Yes	$2,317,140.00	Burgaw	On Whitestocking
3	State of NC	1081.28	Yes	$3,243,840.00	Union	Near Angolia Bay
4	State of NC	3080.69	Yes	$9,242,070.00	Holly	
5	State of NC	5	Yes	$49,480.00	Burgaw	Off Whitestocking
6	State of NC	2007.32	Yes	$5,923,360.00	Holly	Near Hwy 53
7	State of NC	2527.25	Yes	$7,581,750.00	Holly	Near Hwy 53
8	State of NC	4420.17	Yes	$13,260,510.00	Holly	Near Hwy 53
9	State of NC	10516	Yes	$32,063,000.00	Holly	
20	State of NC	4.55	Yes	$568,750.00	Topsail	West side of Hwy 17 - May be part of Hampstead Bypass
21	State of NC	50.1	Yes	$104,126.00	Topsail	West side of Hwy 17 - May be part of Hampstead Bypass
22	State of NC	5.15	Yes	$643,750.00	Topsail	West side of Hwy 17 - May be part of Hampstead Bypass
23	State of NC	13.01	Yes	$23,763.00	Topsail	West side of Hwy 17 - May be part of Hampstead Bypass
24	State of NC	375	Yes	$656,250.00	Topsail	Near Onslow County Line
25	State of NC	520.88	Yes	$1,302,200.00	Topsail	Near Onslow County Line
	2nd Map of State Owned Property					
1	State Of North Carolina	15.5	Yes	$28,375.00	Holly	
2	State Of North Carolina	916.12	Yes	$1,603,210.00	Holly	
3	State Of North Carolina	800	Yes	$103,875.00	Holly	
4	**State Of North Carolina**	**48470**	**Yes**	**$84,844,068.00**	**Holly**	**Holly Shelter Game Lands**
5	State Of North Carolina	2	Yes	$119,329.00	Holly	On Hwy 53
6	State Of North Carolina	2.25	Yes	$146,247.00	Holly	On Hwy 53
7	State Of North Carolina	14411	Yes	$25,275,500.00	Holly	Near Duplin County Line
8	State Of North Carolina	99.76	Yes	$299,280.00	Burgaw	
9	State Of North Carolina	37	Yes	$64,750.00	Holly	
10	State Of North Carolina	4	Yes	$32,000.00	Holly	
11	State Of North Carolina	6.4	Yes	$11,200.00	Holly	
12	State Of North Carolina	6.4	Yes	$19,200.00	Holly	
13	State Of North Carolina	6.7	Yes	$11,725.00	Holly	
14	State Of North Carolina	15.42	Yes	$35,110.00	Holly	
15	State Of North Carolina	6.4	Yes	$19,200.00	Holly	
16	State Of North Carolina	50	Yes	$87,500.00	Holly	
17	State Of North Carolina	410.8	Yes	$718,900.00	Holly	
18	State Of North Carolina	12.95	Yes	$36,413.00	Holly	
19	State Of North Carolina	941.58	Yes	$1,647,765.00	Holly	
20	State Of North Carolina	117.47	Yes	$205,573.00	Holly	
	3rd Map of State Owned Property					
1	State of N C	2.1	YES	$1,050,000.00	Topsail	
2	State of N C	109.6	YES	$197,173.00	Topsail	
3	State of N C	118	YES	$212,285.00	Topsail	
	TOTALS:	98200.95		$206,611,065		

Pender County
Request for Board Action

TO:	Board of County Commissioners
FROM:	Justian Pound
DATE:	October 3, 2022
SUBJECT:	Approval of Tax Releases and Refunds

SUMMARY:
Releases and refunds result from listing and assessing due to incorrect and incomplete information. Taxpayers will or have overpaid taxes. Board action rectifies the mistake. The refunds and releases are recommended as follows:

ACTION REQUESTED:
Staff requests that the board approves the attached list of releases and refunds for September 2022.

Pender County

Request For Board Action

DATE OF MEETING: October 3, 2022

REQUESTED BY: Justian Pound, Tax Assessor, Tax Assessor's Office

SHORT TITLE: Approval of Tax Releases and Refunds

BACKGROUND: Releases and refunds result from listing and assessing due to incorrect and incomplete information. Taxpayers will or have overpaid taxes. Board action rectifies the mistake. The refunds and releases are recommended as follows:

RELEASES OVER $100

YEAR	NAME	ACCOUNT	AMOUNT	REASON
NONE				

REFUNDS OVER $100

YEAR	NAME	ACCOUNT	AMOUNT	REASON
2021	ANDERSON, JON ERIC	254815842	178.95	SOLD
2021	BARDIN, WILLIAM EARL JR	256298397	128.45	SOLD
2021	CUSTOM DESIGN BUILDERS INC	256298772	145.24	SOLD
2021	DUFRESNE, BRANDI BRENDA	254853999	255.25	MILTRY EXEMPT
2022	FITZ, JAMES RICHARD	340610060	139.37	SITUS
2021	HOBBS, TERRY THOMAS	341730636	134.03	SITUS
2021	MCKEITHAN, MICHAEL	257369262	187.11	SOLD
2022	MILLER, MATTHEW DANIEL	342044656	183.45	SITUS
2021	MORRIS, TOY NELL	255006408	127.19	SOLD
2021	RIECKEN, JEFFREY LEE	256102860	130.32	OUT OF STATE
2021	RIECKEN, JUDITH ANN	254816310	109.74	OUT OF STATE
2021	SPERLING, ERIK	255664002	140.70	SOLD
2021	TEKMENZHI, NAOMI ANN	342390716	513.65	SOLD
2021	WHITENER, MICHAEL LEE	256534281	362.25	MILTRY EXEMPT
TOTAL REFUNDS OVER $100			$2,735.70	

RELEASES UNDER $100

YEAR	NAME	ACCOUNT	AMOUNT	REASON
NONE				

REFUNDS UNDER $100

YEAR	NAME	ACCOUNT	AMOUNT	REASON
2021	AMATRUDA, BARBARA JANE	256103025	37.88	SOLD
2021	BRYER, ERIC RYAN	256298715	62.64	SOLD
2021	BYRD, KENNETH LEON	255988308	56.57	SOLD
2021	GOLD, STEWART OTTO	255471735	41.52	DESTROYED
2021	GRAHAM, NELVA EARLENE	255753693	29.46	SOLD
2019	JACKSON, KEITH ANDREW	341731556	30.39	MILTRY EXEMPT
2021	JASWAL, KIREN	255753615	24.26	SOLD
2022	KING, BRYAN LEE	256792971	64.17	SOLD
2021	LIPFORD, BEVERLY TRIMBLE	255753276	14.46	SOLD
2021	MARTIN, MINDY NANNETTE	254854311	19.51	SOLD
2021	MITCHELL, SHANNON FENE	256532816	16.05	SOLD
2021	MONNIER, EDWARD FRANCIS	256793013	8.45	SOLD
2021	MONNIER, LAURIE LOOMIS	256533285	52.31	SOLD
2021	MURPHY, MITCHELL LEE JR	340610372	27.75	SITUS
2021	NELSON, DAWN MARIE	339805832	90.30	SITUS
2021	OCEAN BREEZE CHILD CARE	257190345	11.29	SOLD
2021	OCEAN BREEZE CHILD CARE	257190336	26.04	SOLD
2022	PARRISH, SHERI WALTON	342042788	89.91	SITUS
2020	PITTS, JEFFREY WAYNE	256298751	22.39	SOLD
2021	PLUMB, PETER MORGAN	255988422	21.11	SOLD
2021	POPE, KAREN	254816151	42.51	SOLD
2021	SALT AIR LANDSCAPES INC	256102842	16.25	SOLD
2021	SCHMITT, CARL MARTIN III	257190195	77.07	OUT OF STATE
2021	SHOLDERS, JEFFREY BRIAN	339754500	9.47	SITUS
2021	ESTATE OF JOYCE SWICEGOOD	255457656	27.83	SOLD
2021	TULLOCH, DORIS TURLINGTON	255119094	20.37	SOLD

TOTAL REFUNDS UNDER $100 $939.96

TOTAL OF ALL RELEASES NONE

TOTAL OF ALL REFUNDS $3,675.66

Pender County
Request for Board Action to carry over purchase orders from FY22 to FY23

TO:	Board of County Commissioners
FROM:	James Proctor
DATE:	October 3, 2022
SUBJECT:	Approval to carryover purchase orders from FY22 to FY23

SUMMARY:
To carryover the purchase orders approved in Fy2022 for

- Bill Carone for a F150 extended cab 4wd truck for $ 31,882.00
- Fairway Ford for a F150 crew cab 4wd truck for $ 42,244.00
- Piedmont Truck Center for f350 crane truck for $ 80,305.90
- YSI probe project for Pender County WWTP YSI Probe project for $61,861

The reason for this carryover is supply chain issues in delivering in a timely manner. The trucks were ordered in September and October of 2021 and the YSI probes were ordered in March of 2022.

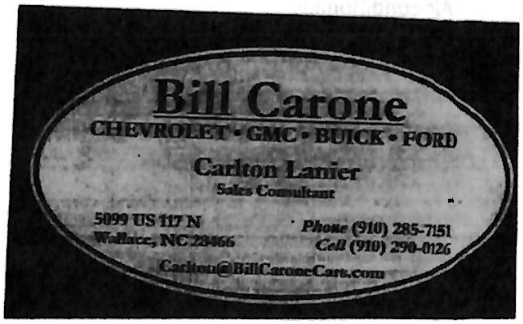
ACTION REQUESTED:
To approve the carry over of the FY 2022 purchase orders due to supply chain issues

CNGP530 VEHICLE ORDER CONFIRMATION 10/18/21 18:16:59
==> Dealer: F21651
2022 F-150 Page: 1 of 1
Order No: 9999 Priority: B4 Ord FIN: QB444 Order Type: 5B Price Level: 215
Ord PEP: 100A Cust/Flt Name: PENDER PO Number:

		RETAIL			RETAIL
X1E	F150 4X4 S/C	$37155	50S	CRUISE CONTROL	$225
	145" WHEELBASE		53B	CLASS IV HITCH	205
YZ	OXFORD WHITE		794	PRICE CONCESSN	
A	VINYL 40/20/40	NC		REMARKS TRAILER	
S	MED DARK SLATE		94S	LED WARNING AMB	600
100A	EQUIP GRP			FLEX FUEL	
	.XL SERIES			SP DLR ACCT ADJ	
	.17"SILVER STEEL			SP FLT ACCT CR	
995	5.0L V8 FFV ENG	1995		FUEL CHARGE	
44G	ELEC 10-SPDAUTO		B4A	NET INV FLT OPT	NC
	.265/70R-17			DEST AND DELIV	1695
XL3	3.31 ELEC LOCK	420	TOTAL	BASE AND OPTIONS	42295
	7050# GVWR		TOTAL		42295
	FLEET SPCL ADJ	NC	*THIS IS NOT AN INVOICE*		
425	50 STATE EMISS	NC	*TOTAL PRICE EXCLUDES COMP PR		

F1=Help F2=Return to Order F3/F12=Veh Ord Menu
F4=Submit F5=Add to Library F9=View Trailers
S099 - PRESS F4 TO SUBMIT QC07932

42295.00 MSRP
3974.00 Discount dealer
38321.00
1168.00 - 3% DMV Tax
599.00 - Doc fee
95.00 - Title, TAG fee
40183.00
-9400.00 - Ford discount
30783.00
+1099.00 Acari mount with Whelen 23" Light Bar
31882.00



FAIRWAY FORD, INC.
444 US HWY 117 S
BURGAW, NC 28425
910-259-2371

July 27, 2021

To: Mr. James Proctor, Water and Sewer Superintendent, County of Pender

From: Hugh Highsmith, III

Re: Quote to order new 2022 Ford F150 pickup, new 2022 Ford Explorer SUV, new 2022 F250 with service body.

Mr. Proctor,

Thank you for the opportunity to quote the vehicles that Pender County Utilities and Pender Solid Waste is considering. Please find below specifications and pricing for four of the vehicles requested. The final vehicle, a 2022 F350 with crane body will be forwarded in a different quote.

Pricing is based on ordering units from Ford Motor Company. Order lead times are extended, 2022 Super Duties are currently scheduling for April 2022.

Pricing and specifications are not yet available from Ford Motor Company for the 20222 F150 or Explorer. Pricing is estimated based on the current 2021 North Carolina State Contract Price Concession amounts and may not reflect final pricing once 2022 pricing and State Contract Price Concessions are announced by Ford Motor Company.

Pricing for the 2022 F250 is accurate.

Vehicle #1: New 2022 Ford F150 pickup (ESTIMATE ONLY):
2022 Ford F150 crew cab 4x4 pickup
6 1/2 foot pickup bed
5.0L V8 gasoline engine
Automatic transmission with 10 forward gears
XL trim level
101A package upgrade includes:

1) power windows/door locks/mirrors
2) cruise control
3) reverse sensing system
4) remote locking tailgate
5) remote entry keys (2 included with quote)

3.31 ratio electronic locking rear axle
Black platform cab length running boards
Class IV trailer hitch receiver

Cont'd

Trailer brake controller
Backup alarm
XL Chrome package includes:

1) chrome front and rear bumpers
2) fog lamps
3) 17" silver painted aluminum wheels

Full vinyl floor covering (floor mats not included with vinyl floor)
Vinyl 40/20/40 front seat, 60/40 rear seat
Front and rear strobe lights
23" mini LED light bar, Acari 3rd brake light mount
Sprayed on bedliner
Exterior color: White
Interior: Gray

2021-2022 STATE OF NORTH CAROLINA TERM CONTRACT 070A-Vehicles (Passenger, Truck, Van, SUV, Law Enforcement)
OPTIONS LIST-CATEGORY G -F350 Cab and Chassis-DRW
BID NO. 202100002

STANDARD ITEMS
STANDARD ITEMS: 14,000lb GVWR, Exterior Color: Oxford White, XL Trim Package, 6.2L V8 gasoline engine, 10-speed automatic transmission, 3.73 regular rear axle, LT245 17" BSW All season tires, Power Equipment Group, Air conditioning, AM/FM/MP3 radio with SYNC Bluetooth, Tilt steering wheel, (2) keys, 40/20/40 Vinyl seats-Gray, Vinyl flooring

CAB CHASSIS CONFIGURATION			BASE BID PRICE
2022 Ford F350 Supercab 4x4 Dual rear wheel-60"CA	X3H-640A		$33,451.00

	OPTION	MSRP	STATE PRICING 6% Discount
POWERTRAIN			
Limited Slip w/4.30 Axle Ratio	X4L	$360.00	$338.40
WHEELS/TIRES			
Spare Tire, Wheel & Jack	512	$350.00	$329.00
OTHER OPTIONS			
Utility Lighting System - Includes LED side-mirror spotlights - required with Power Equipment Group (90L)	63A	$160.00	$150.40
Heavy-Service Front Suspension Package - Includes heavy-service front springs (1 up upgrade above the spring computer selected as a consequence of options chosen) Recommended only on vehicles which will permanently utilize aftermarket equipment such as heavy-duty winches, brush guards or other apparatus which loads the front axle to the specified Gross Axle Weight Rating (GAWR). Note 1: Vehicle ride height will increase with the addition of this package. Note 2: May result in deterioration of ride quality when vehicle is not equipped with front end utility attachment	67H	$125.00	$117.50
Upfitter Interface Module	18A	$295.00	$277.30
Platform Running Boards-SUPERCAB & CREW CAB ONLY	18B	$445.00	$418.30
110V/400W Outlet - Includes 1 in-dash mounted outlet	43C	$175.00	$164.50
Exterior Backup Alarm	76C	$140.00	$131.60
Steering Wheel-Mounted Cruise Control	525	$235.00	$220.90
SAFETY LIGHTING			
(4) corner LED lights, (2) front grille mounted & (2) rear mounted, wired to factory upfitter switches in cab ***Amber***	4CLED		$975.00
23" Whelen MC23MA Mini LED light bar, Acari 3rd brake light mount, wired to upfitter switch in cab	LBMINI		$1,540.00

2021-2022 STATE OF NORTH CAROLINA TERM CONTRACT 070A-Vehicles (Passenger, Truck, Van, SUV, Law Enforcement)

OPTIONS LIST-CATEGORY G -F350 Cab and Chassis-DRW

BID NO. 202100002

UPFIT OPTIONS			
Adkins Model 109-94-CB 9' Heavy Duty crane body, 8" heavy duty drop down tailgate, 12" workbench bumper with (2) recessed access steps, (2) grab handles at rear of compartments, rubber fenderettes around wheel wells, mud flaps, (4) tie down D-rings in cargo area, Cab guard with perforated cut-outs, Rod type Master Locking system (handles at rear of body), 2" receiver hitch with safety chain hooks, 7 way RV style trailer plug, Spray in bedliner for cargo area, compartment tops & bumper, LiftMoore 4000X-20 electric crane, remote pendant control 25', Manual In/Out & Manual crank Up/Down outriggers, Boom support	ADK9CB		$42,192.00

Total for chassis & options quote#PENX3HG9CB-72621	**Date: 7.26.2021**	**$80,305.90**

Pender County - Water & Sewer
James Proctor
910.259.1327bp jproctor@pendercountync.gov

ADDITIONAL OPTIONS - not included in above pricing (for consideration)	**ADD**
Liftmoore 5000X-20 in lieu of 4000lb crane	$3,615.00
Hydraulic In/Out and Up/Down outriggers in lieu of manual operation	$5,481.00

BASE FLOW LLC
10219 NW 62nd ST
Miami, FL 33178
+1 7863936264
sales@baseflow.net

Estimate

ADDRESS
Adam J Snipes Pender County Government 15060 US HWY 17 Hampstead, NC 28443

SHIP TO
Adam J Snipes Pender County Government 15060 US HWY 17 Hampstead, NC 28443

ESTIMATE #	DATE	EXPIRATION DATE
1462	02/23/2022	04/30/2022

SHIP VIA
TBD

PRODUCT	QTY	RATE	AMOUNT
470 026Y System 2020 3G - 20 Channel Terminal/Controller with MIQ/MC3 Controller with Ethernet interface (Modbus TCP, Ethernet/IP, PROFINET), MIQ/PS wide range power supply, 5 available IQ Sensor Net Connections	2	3,790.00	7,580.00
480014Y Output Module, IQ, 3 Analog and 3 Relay. 2 IQ Sensor Net Connections	2	811.10	1,622.20
480015Y Output Module, IQ, 6 Analog outputs. 2 IQ Sensor Net Connections	1	1,055.55	1,055.55
480004Y Power Supply Module, IQ, 100-240 VAC, 18 Watts. 3 IQ Sensor Net Connections.	1	502.22	502.22
470020Y System 2020 3G Terminal/Controller only. Used as redundant (back up) controller. Complete with USB interface. No Modules Included.	1	2,398.86	2,398.86
480008Y Passive Junction Box IQ. 4 IQ Sensor Net Connections.	3	303.33	909.99
109295Y IQ Sun Shield, Plastic, for 2020 & 282 module mounting, also used for mounting air cleaning box.	3	145.55	436.65
109286Y Rail mounting kit for SD/M 170, SD/K 170 and SSH/IQ sun shields(dia. 25-60 mm)	3	116.67	350.01
109170Y pH or ORP probe w/ Amplifier, IQ probe. Requires pH or ORP electrode.	1	815.55	815.55
109115Y pH electrode with built in reference for SensoLyt 690/700, SensoLyt 700 IQ, 2-12 pH	1	392.22	392.22
201650Y Optical DO probe for IQ System, 0-20.00 mg/l	1	1,866.65	1,866.65

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PRODUCT	QTY	RATE	AMOUNT
302500Y Submersible Conductivity probe for IQ System, requires cable assembly	1	1,155.54	1,155.54
107 072YK AmmoLyt Plus Ammonium probe complete w/Reference Electrode, Ammonium & Potassium Electrodes	1	6,183.27	6,183.27
600 012Y ViSolid 700 IQ, IQ SensorNet Suspended Solids probe with integrated UltraClean ultrasonic cleaning.	1	4,211.07	4,211.07
2458000Y Quick Release Stainless Steel Handrail Mounting Bracket for Sensors with 1.5 inch PVC couplers and end cap	5	356.66	1,783.30
481 048YM Optical COD - total and soluble/TOC/DOC/BOD/SAC - total and soluble/UVT-254 probe with spectral processing of the UV/VIS range for use in influent/effluent/biological tank (municipal wastewater) with integrated ultrasonic cleaning.	1	20,999.79	20,999.79
109281Y Vario pipe mounting stand for mounting a EH/F 170 swing or EH/P 170 pendulum assembly directly to a vertical or horizontal rail.	1	657.77	657.77
109272Y SensoClean Swing mounting assembly, boom length 1.5 m	1	207.78	207.78
481073Y Horizontal mounting kit for UV/VIS probes with Swing mount EH/F 170	1	175.55	175.55
480 042Y SACIQ-7.0, IQ Sensor Connection cable, 7 m, 22.9 ft	6	142.22	853.32
480 017Y Cleaning Air Box	6	1,692.21	10,153.26
900107Y Cleaning Head Assembly for IQ Sensors with 15 Meters of Tubing	6	443.33	2,659.98
109295Y IQ Sun Shield, Plastic, for 2020 & 282 module mounting, also used for mounting air cleaning box.	6	145.55	873.30
109 286Y MR/SD 170, Rail mounting kit for SD/M 170, SD/K 170 and SSH/IQ sun shields(dia. 25-60 mm)	6	111.11	666.66
480 046YM-XX IQ Cable, 2 Wire w/Shield, Specify length in meters, XX = length in meters (1 meter = 3.28 feet) 30m	30	7.78	233.40
TOTAL FOR INFLUENT PUMP STATION			Subtotal: 68,743.89
480014Y Output Module, IQ, 3 Analog and 3 Relay. 2 IQ Sensor Net Connections	1	811.10	811.10
480015Y Output Module, IQ, 6 Analog outputs. 2 IQ Sensor Net Connections	2	1,055.55	2,111.10
471020Y Module IQ/microcontroller for system 2020 XT, 2 free IQ SensorNet connections, in module housing, with automatic barometric pressure compensation, USB interface (IP67), Ethernet RJ45 interface (IP 67)	1	1,651.09	1,651.09
480004Y Power Supply Module, IQ, 100-240 VAC, 18 Watts. 3 IQ Sensor Net Connections.	1	502.22	502.22
470020Y	1	2,398.86	2,398.86

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PRODUCT	QTY	RATE	AMOUNT
System 2020 3G Terminal/Controller only. Used as redundant (back up) controller. Complete with USB interface. No Modules Included.			
480008Y Passive Junction Box IQ. 4 IQ Sensor Net Connections.	10	303.33	3,033.30
109295Y IQ Sun Shield, Plastic, for 2020 & 282 module mounting, also used for mounting air cleaning box.	10	145.55	1,455.50
109286Y Rail mounting kit for SD/M 170, SD/K 170 and SSH/IQ sun shields(dia. 25-60 mm)	10	116.67	1,166.70
109170Y pH or ORP probe w/ Amplifier, IQ probe. Requires pH or ORP electrode.	2	815.55	1,631.10
109115Y pH electrode with built in reference for SensoLyt 690/700, SensoLyt 700 IQ, 2-12 pH	2	392.22	784.44
201650Y Optical DO probe for IQ System, 0-20.00 mg/l	2	1,866.65	3,733.30
302500Y Submersible Conductivity probe for IQ System, requires cable assembly	2	1,155.54	2,311.08
107 072YK AmmoLyt Plus Ammonium probe complete w/Reference Electrode, Ammonium & Potassium Electrodes	2	6,183.27	12,366.54
600012Y Suspended Solids probe for IQ System	1	4,422.18	4,422.18
2458000Y Quick Release Stainless Steel Handrail Mounting Bracket for Sensors with 1.5 inch PVC couplers and end cap	9	356.66	3,209.94
480042Y Sensor Connection cable, IQ, 7 m, 22.9 ft	9	145.55	1,309.95
480 046YM-XX IQ Cable, 2 Wire w/Shield, Specify length in meters, XX = length in meters (1 meter = 3.28 feet) 30m	30	7.78	233.40
TOTAL FOR EQUALIZATION BASIN & CLARIFIER 01			Subtotal: 43,131.80
470026Y System 2020 3G - 20 Channel Terminal/Controller with MIQ/MC3 Controller with Ethernet interface (Modbus TCP, Ethernet/IP, PROFINET), MIQ/PS wide range power supply, 5 available IQ Sensor Net Connections	1	4,422.18	4,422.18
480014Y Output Module, IQ, 3 Analog and 3 Relay. 2 IQ Sensor Net Connections	1	811.10	811.10
480015Y Output Module, IQ, 6 Analog outputs. 2 IQ Sensor Net Connections	1	1,055.55	1,055.55
470020Y System 2020 3G Terminal/Controller only. Used as redundant (back up) controller. Complete with USB interface. No Modules Included.	1	2,398.86	2,398.86
480008Y Passive Junction Box IQ. 4 IQ Sensor Net Connections.	4	303.33	1,213.32
109295Y IQ Sun Shield, Plastic, for 2020 & 282 module mounting, also used for mounting air cleaning box.	3	145.55	436.65

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PRODUCT	QTY	RATE	AMOUNT
109286Y Rail mounting kit for SD/M 170, SD/K 170 and SSH/IQ sun shields(dia. 25-60 mm)	3	116.67	350.01
109170Y pH or ORP probe w/ Amplifier, IQ probe. Requires pH or ORP electrode.	2	815.55	1,631.10
109115Y pH electrode with built in reference for SensoLyt 690/700, SensoLyt 700 IQ, 2-12 pH	2	392.22	784.44
201650Y Optical DO probe for IQ System, 0-20.00 mg/l	2	1,866.65	3,733.30
302500Y Submersible Conductivity probe for IQ System, requires cable assembly	2	1,155.54	2,311.08
107 072YK AmmoLyt Plus Ammonium probe complete w/Reference Electrode, Ammonium & Potassium Electrodes	2	6,183.27	12,366.54
2458000Y Quick Release Stainless Steel Handrail Mounting Bracket for Sensors with 1.5 inch PVC couplers and end cap	8	356.66	2,853.28
480042Y Sensor Connection cable, IQ, 7 m, 22.9 ft	8	145.55	1,164.40
480 046YM-XX IQ Cable, 2 Wire w/Shield, Specify length in meters, XX = length in meters (1 meter = 3.28 feet) 30m	30	7.78	233.40
TOTAL FOR MBBR (B-TRAIN, CELL 1) & MBBR (B-TRAIN, CELL 3)			Subtotal: 35,765.21
470026Y System 2020 3G - 20 Channel Terminal/Controller with MIQ/MC3 Controller with Ethernet interface (Modbus TCP, Ethernet/IP, PROFINET), MIQ/PS wide range power supply, 5 available IQ Sensor Net Connections	1	4,422.18	4,422.18
480014Y Output Module, IQ, 3 Analog and 3 Relay. 2 IQ Sensor Net Connections	1	811.10	811.10
480015Y Output Module, IQ, 6 Analog outputs. 2 IQ Sensor Net Connections	2	1,055.55	2,111.10
480004Y Power Supply Module, IQ, 100-240 VAC, 18 Watts. 3 IQ Sensor Net Connections.	1	502.22	502.22
470020Y System 2020 3G Terminal/Controller only. Used as redundant (back up) controller. Complete with USB interface. No Modules Included. (optional)	1	2,398.86	2,398.86
480008Y Passive Junction Box IQ. 4 IQ Sensor Net Connections.	10	303.33	3,033.30
109295Y IQ Sun Shield, Plastic, for 2020 & 282 module mounting, also used for mounting air cleaning box.	12	145.55	1,746.60
109286Y Rail mounting kit for SD/M 170, SD/K 170 and SSH/IQ sun shields(dia. 25-60 mm)	12	116.67	1,400.04
109170Y pH or ORP probe w/ Amplifier, IQ probe. Requires pH or ORP	3	815.55	2,446.65

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PRODUCT	QTY	RATE	AMOUNT
electrode.			
109115Y pH electrode with built in reference for SensoLyt 690/700, SensoLyt 700 IQ, 2-12 pH	3	392.22	1,176.66
201650Y Optical DO probe for IQ System, 0-20.00 mg/l	3	1,866.65	5,599.95
302500Y Submersible Conductivity probe for IQ System, requires cable assembly	3	1,155.54	3,466.62
107 072YK AmmoLyt Plus Ammonium probe complete w/Reference Electrode, Ammonium & Potassium Electrodes	3	6,183.27	18,549.81
600012Y Suspended Solids probe for IQ System	1	4,422.18	4,422.18
2458000Y Quick Release Stainless Steel Handrail Mounting Bracket for Sensors with 1.5 inch PVC couplers and end cap	13	356.66	4,636.58
481 048YM Optical COD - total and soluble/TOC/DOC/BOD/SAC - total and soluble/UVT-254 probe with spectral processing of the UV/VIS range for use in influent/effluent/biological tank (municipal wastewater) with integrated ultrasonic cleaning.	1	20,999.79	20,999.79
109281Y Vario pipe mounting stand for mounting a EH/F 170 swing or EH/P 170 pendulum assembly directly to a vertical or horizontal rail.	1	657.77	657.77
109272Y SensoClean Swing mounting assembly, boom length 1.5 m	1	207.78	207.78
481073Y Horizontal mounting kit for UV/VIS probes with Swing mount EH/F 170	1	175.55	175.55
480042Y Sensor Connection cable, IQ, 7 m, 22.9 ft	14	145.55	2,037.70
480017Y Cleaner Air Box Assembly, 115VAC	8	1,692.21	13,537.68
900107Y Cleaning Head Assembly for IQ Sensors with 15 Meters of Tubing	8	443.33	3,546.64
109295Y IQ Sun Shield, Plastic, for 2020 & 282 module mounting, also used for mounting air cleaning box.	8	145.55	1,164.40
109286Y Rail mounting kit for SD/M 170, SD/K 170 and SSH/IQ sun shields(dia. 25-60 mm)	8	116.67	933.36
480 046YM-XX IQ Cable, 2 Wire w/Shield, Specify length in meters, XX = length in meters (1 meter = 3.28 feet) 40m	40	7.78	311.20
TOTAL FOR EFFLUENT PUMP STATION, DIGESTER 01, & DIGESTER 02			Subtotal: 100,295.72

FCA: Miami, FL | TERMS: Prepaid | Currency: USD
Warranty Valid in the US. Tariff charges not included.
Wires: BASE FLOW LLC
JPMorgan Chase Bank NA - 270 Park Avenue, New York, NY 10017
Acc#701929389 - ABA 021000021 - SWIFT CHASUS33

TOTAL **$247,936.62**

TOTAL FOR INFLUENT PS & CLARIFIERS ONLY = $111,875.69

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Accepted By

Accepted Date

NOTES:

1. Customer should verify quantity, range, mounting, and chemical compatibility
2. Integral lightning protection is included on all YSI IQ SensorNet products when instruments and sensors are wired with approved IQ SensorNet cable, model SNCIQ-X.X.
3. Sensor mounting pipes not included in quotation, and must be supplied by others.
4. Sunshields are required for modules mounted in direct sunlight.
5. Startup and training is not included in quotation, but is available at an additional cost.
6. One manual per system included at no charge. Additiona manuals are available for download from the website at no charge.
7. Stainless steel, plastic, and paper tags are not incluede in the quotation.
8. Buyer agrees to review all technical data and make final determination as tu suitability of the product for the buyer's intended application.
9. Terms are 50% down 50% at time of shipment .
10. Freight not included. It will be calculated and added to invoice at time of shipment.

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FLWSE
INSTRUMENTATION SOLUTIONS

Beck Sales & ENGINEERING

QUOTATION

Issued to:

Kurt Lonander
Pender County Utiltities WWTP
469 Quality Way
Wilmington, NC 28401
Phone: (910) 515-8003 Fax:
Email: klonander@pendercountync.gov

Quote Number: 98903
Quote Date: 3/7/2022

Manufacturer	Inquiry Number	Inquiry Date	Quote Firm	Terms	Shipping Method
YSI Inc	W&WW - Melinda K. Knoerzer Adaptive Ecosystem WWTF- Influent & Clarifiers	3/7/2022	30 Days	See Terms Below	FOB Shipping Point

Item	Quantity	Description	Delivery	Unit Price	Extended
1	1	**Influent Pump Station** YSI model MIQ/C6 Output Module, IQ, 6 Analog outputs, 2 IQ Sensor Net Connections, Item # 480 015Y.	2-3 weeks ARO	$950.00	$950.00
2	1	YSI model MIQ/R6 Relay Module with 6 relays, 2 IQ Sensor Net Connections, Item # 480013Y.	2-3 weeks ARO	$898.00	$898.00
3	1	YSI model MIQ/PS Power Supply Module, IQ, 100-240 VAC, 18 Watts, three (3) IQ Sensor Net Connections, Item # 480004Y.	2-3 weeks ARO	$452.00	$452.00
4	2	YSI model MIQ/JB Passive Junction Box, IQ, 4 IQ Sensor Net Connections, Item # 480008Y.	2-3 weeks ARO	$273.00	$546.00
5	3	YSI model SSH/IQ IQ Plastic sun shield, for IQ module mounting, Item # 109295Y.	2-3 weeks ARO	$131.00	$393.00
6	3	YSI model MR/SD 170 Rail mounting kit for SSH/IQ sun shields (dia. 25-60mm), Item # 109286Y.	2-3 weeks ARO	$105.00	$315.00
7	1	YSI model SensoLyt® 700 IQ pH/ORP probe w/ Amplifier, IQ probe, Item # 109170Y.	2-3 weeks ARO	$734.00	$734.00
8	1	YSI model SensoLyt SEA pH combination electrode for SensoLyt 690/700, SensoLyt 700 IQ, 2-12 pH, Item # 109115Y.	2-3 weeks ARO	$353.00	$353.00
9	1	YSI model FDO 700 IQ Optical DO probe for IQ System, 0-20.00 mg/l, Item # 201650Y.	2-3 weeks ARO	$1,680.00	$1,680.00
10	1	YSI model TetraCon® 700 IQ Submersible Conductivity probe for IQ System, requires cable assembly, Item # 302500Y.	2-3 weeks ARO	$1,040.00	$1,040.00
11	1	YSI model AmmoLyt Plus set/comp Ammonium probe, includes reference electrode and electrodes for Ammonium and compensation for potassium, Item # 107 072YK.	2-3 weeks ARO	$5,565.00	$5,565.00
12	1	YSI model ViSolid 700 IQ Suspended Solids probe for IQ System, Item # 600012Y.	2-3 weeks ARO	$3,980.00	$3,980.00
13	5	YSI model SMK Quick Release Stainless Steel handrail mounting bracket for IQ sensors with 1.5-inch pipe mounting adapter. Sensor Mounting pipe not included, Item 2458000Y.	2-3 weeks ARO	$321.00	$1,605.00

14	1	YSI model CarboVis 701 IQ Optical COD -total and soluble/TOC/DOC/BOD/SAC -total and soluble/UVT-254 probe with spectral processing of the UV/VIS range for use in influent/effluent/biological tank (municipal wastewater) with integrated ultrasonic cleaning, Item # 481 048YM.	2-3 weeks ARO	$18,900.00	$18,900.00
15	1	YSI model BE/ST 170-R Vario pipe mounting stand for mounting a EH/F 170 swing or EH/P 170 pendulum assembly directly to a vertical or horizontal rail, Item # 109281Y.	2-3 weeks ARO	$592.00	$592.00
16	1	YSI model EH/F 170-1.5 SensoClean Swing mounting assembly, boom length 1.5 m., Item # 109272Y.	2-3 weeks ARO	$187.00	$187.00
17	1	YSI model VIS Set/EH Horizontal mounting kit for UV/VIS probes with Swing mount EH/F 170, Item # 481073Y.	2-3 weeks ARO	$158.00	$158.00
18	6	YSI model SACIQ-7.0 sensor connection cable for IQ sensors, 7 m/22.9 ft., Item # 480042Y.	2-3 weeks ARO	$131.00	$786.00
19	1	YSI model CAB2-1, Cleaning Air Compressor Box, 2 Channel, 115 VAC, Item # 601402-1.	2-3 weeks ARO	$3,287.00	$3,287.00
20	1	YSI model CAB4-1, Cleaning Air Compressor Box, 4 Channel, 115 VAC, Item # 601404-1.	2-3 weeks ARO	$4,148.00	$4,148.00
21	2	YSI Optional Heater, Single and Multi Channel Compressor, 120V, Item # 601428-1.	2-3 weeks ARO	$268.00	$536.00
22	2	YSI Handrail mounting kit, Multichannel compressor, Item # 601405.	2-3 weeks ARO	$315.00	$630.00
23	5	YSI model CH Cleaning Head Assembly for IQ Sensors with 15 Meters of Tubing, Item # 900107Y.	2-3 weeks ARO	$399.00	$1,995.00
24	1	YSI model SET/AP Air Pressure cleaning set for CarboVis 701 IQ Optical COD, with connector and 15m air tubing, Item # 481075Y.	2-3 weeks ARO	$97.00	$97.00
25	0	YSI model SNCIQ IQ Cable, 2 Wire w/Shield, Specify length in meters, XX= length in meters (1 meter = 3.28 feet), Item # 480 046YM-XX.	2-3 weeks ARO	$7.00	$0.00
26	2	**Clarifier #1 and #2** YSI model AmmoLyt Plus set/comp Ammonium probe, includes reference electrode and electrodes for Ammonium and compensation for potassium, Item # 107 072YK.	2-3 weeks ARO	$5,565.00	$11,130.00
27	2	YSI model SMK Quick Release Stainless Steel handrail mounting bracket for IQ sensors with 1.5-inch pipe mounting adapter. Sensor Mounting pipe not included, Item 2458000Y.	2-3 weeks ARO	$321.00	$642.00
28	2	YSI model SACIQ-7.0 sensor connection cable for IQ sensors, 7 m/22.9 ft., Item # 480042Y.	2-3 weeks ARO	$131.00	$262.00
		NOTES & EXCEPTIONS **1.** Customer should verify quantity, range, mounting, and chemical compatibility. **2.** Customer should verify YSI IQ module mounting locations. Additional sunshields and mounting brackets may be required. **3.** We have quoted the airblast cleaning for the sensors at the influent pump station, since they were included on the budgetary quote. Airblast cleaning may not be required on all sensors, depending on customer's maintenance and cleaning schedule, but we do recommend it on the CarboVis 701 IQ Optical COD sensor. Customer should verify. **4.** Integral lightning protection is included on all YSI IQ SensorNet products when instruments and sensors are wired with approved IQ SensorNet Cable, model SNCIQ-X.X. Customer should verify cable lengths required.			

		5. Sensor mounting pipes not included in quotation, and must be supplied by others. **6.** Sunshields are required for modules mounted in direct sunlight. **7.** Startup and training is not included in quotation, but is available at additional cost. **8.** One manual per system is included at no charge. Additional manuals are available for download from the website at no charge. **9.** Stainless steel, plastic, and paper tags are not included in quotation. **10.** Buyer agrees to review all technical data and make final determination as to the suitability of the product for the buyer's intended application. **11.** The above is YSI's standard product offering. No other parts, spare parts, or services are included in quotation. Please refer to data sheets for complete specifications. **12.** The above prices are F.O.B. Yellow Springs, OH with Freight Prepay/Added to Invoice. **13.** Terms are Net 30 days.			
				Total	$61,861.00

TOTAL FOR INFLUENT PS & CLARIFIERS ONLY

Thank you for the Opportunity to Quote! Please address your order to:
YSI Inc
1700/1725 Brannum Ln
Yellow Springs, OH 45387
(770) 424-1731 Fax: (770) 424-9733
Email: sales@flwse.com

Water & Wastewater Market Manager	**Your Assigned Inside Sales Rep**	**Your Assigned Sales Engineer**
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suzanne.wright@flwse.com	bill.morgan@flwse.com	matthew.williams@flwse.com

Beck Sales is excited to announce that we are now part of FLW Southeast. We will continue business as usual out of our Charlotte office, and will now also be supported by FLW Southeast's staff of Customer Service and Applications & Product Support personnel to ensure every customer receives the best service available.

FLWSE
INSTRUMENTATION SOLUTIONS

Beck Sales & ENGINEERING

QUOTATION

Issued to:

Kurt Lonander
Pender County Utiltities WWTP
469 Quality Way
Wilmington, NC 28401
Phone: (910) 515-8003 Fax:
Email: klonander@pendercountync.gov

Quote Number: 98903
Quote Date: 3/7/2022

Manufacturer	Inquiry Number	Inquiry Date	Quote Firm	Terms	Shipping Method
YSI Inc	W&WW - Melinda K. Knoerzer Adaptive Ecosystem WWTF- Influent & Clarifiers	3/7/2022	30 Days	See Terms Below	FOB Shipping Point

Item	Quantity	Description	Delivery	Unit Price	Extended
1	1	**Influent Pump Station** YSI model MIQ/C6 Output Module, IQ, 6 Analog outputs, 2 IQ Sensor Net Connections, Item # 480 015Y.	2-3 weeks ARO	$950.00	$950.00
2	1	YSI model MIQ/R6 Relay Module with 6 relays, 2 IQ Sensor Net Connections, Item # 480013Y.	2-3 weeks ARO	$898.00	$898.00
3	1	YSI model MIQ/PS Power Supply Module, IQ, 100-240 VAC, 18 Watts, three (3) IQ Sensor Net Connections, Item # 480004Y.	2-3 weeks ARO	$452.00	$452.00
4	2	YSI model MIQ/JB Passive Junction Box, IQ, 4 IQ Sensor Net Connections, Item # 480008Y.	2-3 weeks ARO	$273.00	$546.00
5	3	YSI model SSH/IQ IQ Plastic sun shield, for IQ module mounting, Item # 109295Y.	2-3 weeks ARO	$131.00	$393.00
6	3	YSI model MR/SD 170 Rail mounting kit for SSH/IQ sun shields (dia. 25-60mm), Item # 109286Y.	2-3 weeks ARO	$105.00	$315.00
7	1	YSI model SensoLyt® 700 IQ pH/ORP probe w/ Amplifier, IQ probe, Item # 109170Y.	2-3 weeks ARO	$734.00	$734.00
8	1	YSI model SensoLyt SEA pH combination electrode for SensoLyt 690/700, SensoLyt 700 IQ, 2-12 pH, Item # 109115Y.	2-3 weeks ARO	$353.00	$353.00
9	1	YSI model FDO 700 IQ Optical DO probe for IQ System, 0-20.00 mg/l, Item # 201650Y.	2-3 weeks ARO	$1,680.00	$1,680.00
10	1	YSI model TetraCon® 700 IQ Submersible Conductivity probe for IQ System, requires cable assembly, Item # 302500Y.	2-3 weeks ARO	$1,040.00	$1,040.00
11	1	YSI model AmmoLyt Plus set/comp Ammonium probe, includes reference electrode and electrodes for Ammonium and compensation for potassium, Item # 107 072YK.	2-3 weeks ARO	$5,565.00	$5,565.00
12	1	YSI model ViSolid 700 IQ Suspended Solids probe for IQ System, Item # 600012Y.	2-3 weeks ARO	$3,980.00	$3,980.00
13	5	YSI model SMK Quick Release Stainless Steel handrail mounting bracket for IQ sensors with 1.5-inch pipe mounting adapter. Sensor Mounting pipe not included, Item 2458000Y.	2-3 weeks ARO	$321.00	$1,605.00

14	1	YSI model CarboVis 701 IQ Optical COD -total and soluble/TOC/DOC/BOD/SAC -total and soluble/UVT-254 probe with spectral processing of the UV/VIS range for use in influent/effluent/biological tank (municipal wastewater) with integrated ultrasonic cleaning, Item # 481 048YM.	2-3 weeks ARO	$18,900.00	$18,900.00
15	1	YSI model BE/ST 170-R Vario pipe mounting stand for mounting a EH/F 170 swing or EH/P 170 pendulum assembly directly to a vertical or horizontal rail, Item # 109281Y.	2-3 weeks ARO	$592.00	$592.00
16	1	YSI model EH/F 170-1.5 SensoClean Swing mounting assembly, boom length 1.5 m., Item # 109272Y.	2-3 weeks ARO	$187.00	$187.00
17	1	YSI model VIS Set/EH Horizontal mounting kit for UV/VIS probes with Swing mount EH/F 170, Item # 481073Y.	2-3 weeks ARO	$158.00	$158.00
18	6	YSI model SACIQ-7.0 sensor connection cable for IQ sensors, 7 m/22.9 ft., Item # 480042Y.	2-3 weeks ARO	$131.00	$786.00
19	1	YSI model CAB2-1, Cleaning Air Compressor Box, 2 Channel, 115 VAC, Item # 601402-1.	2-3 weeks ARO	$3,287.00	$3,287.00
20	1	YSI model CAB4-1, Cleaning Air Compressor Box, 4 Channel, 115 VAC, Item # 601404-1.	2-3 weeks ARO	$4,148.00	$4,148.00
21	2	YSI Optional Heater, Single and Multi Channel Compressor, 120V, Item # 601428-1.	2-3 weeks ARO	$268.00	$536.00
22	2	YSI Handrail mounting kit, Multichannel compressor, Item # 601405.	2-3 weeks ARO	$315.00	$630.00
23	5	YSI model CH Cleaning Head Assembly for IQ Sensors with 15 Meters of Tubing, Item # 900107Y.	2-3 weeks ARO	$399.00	$1,995.00
24	1	YSI model SET/AP Air Pressure cleaning set for CarboVis 701 IQ Optical COD, with connector and 15m air tubing, Item # 481075Y.	2-3 weeks ARO	$97.00	$97.00
25	0	YSI model SNCIQ IQ Cable, 2 Wire w/Shield, Specify length in meters, XX= length in meters (1 meter = 3.28 feet), Item # 480 046YM-XX.	2-3 weeks ARO	$7.00	$0.00
26	2	**Clarifier #1 and #2** YSI model AmmoLyt Plus set/comp Ammonium probe, includes reference electrode and electrodes for Ammonium and compensation for potassium, Item # 107 072YK.	2-3 weeks ARO	$5,565.00	$11,130.00
27	2	YSI model SMK Quick Release Stainless Steel handrail mounting bracket for IQ sensors with 1.5-inch pipe mounting adapter. Sensor Mounting pipe not included, Item 2458000Y.	2-3 weeks ARO	$321.00	$642.00
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Water & Wastewater Market Manager	**Your Assigned Inside Sales Rep**	**Your Assigned Sales Engineer**
Suzanne Wright	Bill Morgan	Matthew Williams
(704) 542-9329	(704) 542-9329	(770) 4 4-1731 Ext:332
suzanne.wright@flwse.com	bill.morgan@flwse.com	matthew.williams@flwse.com

Beck Sales is excited to announce that we are now part of FLW Southeast. We will continue business as usual out of our Charlotte office, and will now also be supported by FLW Southeast's staff of Customer Service and Applications & Product Support personnel to ensure every customer receives the best service available.

Pender County
Board of Commissioner Meeting Minutes
September 19, 2022

TO:	Board of County Commissioners
FROM:	Tera Cline
DATE:	October 3, 2022
SUBJECT:	Approval of the Board of Commissioner Meeting Minutes September 19, 2022

SUMMARY:
Approval of the Board of Commissioner Meeting Minutes September 19, 2022

MINUTES
Board of County Commissioners Meeting
Monday, September 19, 2022 4:00 PM
Pender County Public Assembly Room

MEMBERS PRESENT: George Brown
Fred McCoy
Jacqueline A. Newton
David Piepmeyer
Jimmy Tate

MEMBERS ABSENT:

OTHERS PRESENT: David Andrews, County Manager
Trey Thurman, County Attorney
Tera Cline, Clerk to the Board
Allen Vann, Assistant County Manager
Other Staff and Members of the Press and Public.

Page

1 CALL TO ORDER
Chairman McCoy called the meeting to order at 4:00pm

2 INVOCATION
Commissioner Tate

3 PLEDGE OF ALLEGIANCE
Commissioner Brown

4 SPECIAL PRESENTATION
Vice Chairman Jimmy Tate presented Representative Carson Smith with the Order of the Long Leaf Pine Award for his past and continued service to Pender County. Mr. Smith was accompanied by his wife, Jennifer, Daughter Natalie, Father-in-law and his mom. Samantha Jones was also present.

4.1 Motion to add The Order of the Long Leaf Pine Presentation to Carson Smith to the agenda.

Moved by George Brown, seconded by Jimmy Tate

Motion Approved

	For	Against	Abstained	Absent
George Brown	x			
Fred McCoy	x			
Jacqueline A. Newton				x
David Piepmeyer	x			
Jimmy Tate	x			
	4	0	0	1

CARRIED.

5 ADOPTION OF AGENDA

5.1 Motion to adopt the agenda

No motion made just a vote taken. ALL IN FAVOR

CARRIED.

6 PUBLIC INFORMATION

6.1 County Trade Pull Factors and Tier Status Update

Mark Seitz, Cooperative Extension, presented the 2021 tier level equations and data. He stated that Tier Status is used by NC Department of Commerce to rank a county's level of "economic distress" based on median household income, unemployment, population growth, and per capita property tax valuation. The following formula is used to calculate the tier level.
County Tier Ranking = MHI (index value) + POP (index value) + UI (index value) + PTV (index value). 20 /Tier 3 Counties/ Least economically distressed and 40/ Tier 2 Counties/Moderate economic distress and then 40/ Tier 1 Counties/High economic distress. Mr. Seitz, stated that a pull factor such as a mathematical (economic) way, using sales tax revenue data, to quantify what we know about our county or regional economies as well as trade area capture, which is measured as TAC = county population X county CTPF.
TAC is a follow up that tells how strong the pull is relative to the county's permanent population. Pender County's TAC is low because its CTPF is less than one due to its proximity to Wilmington, its lack of large hotel and convention space and its limited retail shopping outlets. It recovers some of this from the spending done by tourists from May through September when the county's population nearly doubles. The following is the the Tier Status with "Pull Factors"

Formula:
–County Tier Ranking (index ranking values)
= MHI + POP + UI + PTV + CTPF + TAC + MS
= 86 + 83 + 76 + 69 + 47 + 54 + 54
= 460 (75)
= 75th = Tier 2
Three counties move down from Tier 3 to Tier 2:–Macon, Pender, Camden–
Three counties move up from Tier 2 to Tier 3:–Dare, Catawba, Forsyth
Representative Carson Smith in favor of the pull factors being used for Tier status calculations. He stated that he is presenting a bill to have these factors included and requested the commissioners reach out to the NCACC to facilitate votes on this behalf.

6.2 Update on Black River Aquatic Connectivity Project and Slocum Trail Culvert Replacement

Danielle Darkangelo, Cape Fear Resource Conservation and Development, presented to the board and update on the Black River connectivity project and Slocum trail culvert replacement. Looking long term at assessing the entire Cape Fear River basin. We narrowed that down to focus on the lower back river, the basin and the tributaries. Roughly five years ago, in 2017, when we started working with Moffat and Nickel or engineering partners and we really started putting this project together, so initially we did Commissioner meetings, Community meetings, we worked with dot. We worked with Southeastern Aquatics Resource Partnership and they really provided a lot of the access to data and a way for us to record the data that we were going to take in the field, surveys. The first phase over 200 culverts were assessed. We looked at the top five culverts that needed the most work and needed the most attention and were the most at risk to impacting flooding or some type of negative impact on the environment, the habitat and the the area. So what we did was we went physically to every single culvert. Phase two, which is the actual restoration, so phase one is really the assessment portion to set us up for the next phases. Phase two, we are restoring two culverts, which is an estimated $750,000. The funding from this project is a largely grant funding. We also have some donations and the county contributes 9000 every year just to our overhead and to be able to give us the stability to move forward on these projects. Moffett and Nichols, coastal engineering firm, stated they have been working with Cape Fear resource conservation and development since about 2017 to support the initial grant development and working together in partnership with the Caterpillar. The partnership, which is a coalition of federal and state resource agencies, academics,

nonprofits, all working towards improving the health of the river basin. Basin and tributaries in the Cape Fear that needed to be assessed for fish passage as well as flood resilience. As she mentioned, we have been working for several years now on completing the assessments and now we have ranked those barriers ground truth and have developed preliminary engineering design for the top five ranked those that were deemed to be severely. We are currently in the 90% design statement we've been working with the division and district of the North Carolina Department of Transportation on having their staff review all of these plans, including the hydraulic design effort to confirm that the engineering and the hydraulic design is is up to par based on their standards and their guidance again. And also the replacement of four additional barriers on this would enhance up to 9 miles of spawning habitat for fish as well as support, floodplain connectivity and flood resilience to local communities. So we're very excited about this and and look forward to evaluating other funding opportunities that we can explore.

7 PUBLIC COMMENT

Kenny Keel, Director of Utilities, gave an update on the new utilities notification system.

Tavis Henley, Planning Director, Announced the award received from the American Planning Association North Carolina chapter. Pender County won the Marvin Collins Outstanding Planning award for Pender Commerce Park.

Wes Stewart, Director of DSS, introduced Quentin Morgan the new DSS attorney and Amanda Howard DSS supervisor to the board.

8 CONSENT AGENDA

8.1 Approve State Loan and Grant Funding Resolution and Application for CFPUA Water Interconnection Project

8.2 Approval of Resolution Adopting the FY23 PCU Capital Improvements Plan

8.3 Approval of Purchase Orders to Computers for Department of Social Services: $36,800

8.4 Approval of a Purchase Order to Huntington Leasing Corporation for Annual IT Infrastructure Renewal in the amount of $381,322.00.

8.5 Approval of the Board of Commissioner Meeting Minutes September 6, 2022

8.6 Motion to approve consent agenda with Commissioner Brown clarifying he requesting just item 4.1 to be removed from the agenda at the last meeting not the entire section 4.

Moved by George Brown, seconded by Jimmy Tate

Motion Approved

	For	Against	Abstained	Absent
George Brown	x			
Fred McCoy	x			
Jacqueline A. Newton	x			
David Piepmeyer		x		
Jimmy Tate	x			
	4	1	0	0

CARRIED.

9 APPROVALS AND RESOLUTIONS

9.1 Approval of Lease and Purchase Order for thirty (30) Axon body worn cameras in the amount of $20,522.62 per year for 5 years.

Moved by George Brown, seconded by Jimmy Tate

Motion Approved

	For	Against	Abstained	Absent
George Brown	x			
Fred McCoy	x			
Jacqueline A. Newton		x		
David Piepmeyer	x			
Jimmy Tate	x			
	4	1	0	0

CARRIED.

9.2 Approval of Offer & Start of Upset Bid Process for Sale of Surplus Property - 2393-48-3645-0000 on Red Tip Lane

Meg Blue, Finance Director, recommended that the $12,000 bid from Matthew Walker for parcel number 239348-3645-0000 be accepted by the County and the upset bid process to begin as of August 15, 2022. The attached letter indicates the details of the bid and upset bid process for this property. The tax value for this property is listed at $19,460.

Moved by George Brown, seconded by Jimmy Tate

Motion Approved

	For	Against	Abstained	Absent
George Brown	x			
Fred McCoy	x			
Jacqueline A. Newton	x			
David Piepmeyer	x			
Jimmy Tate	x			
	5	0	0	0

CARRIED.

9.3 Resolution Providing Pender County to become a member of the American Flood Coalition

Moved by George Brown, seconded by Jacqueline A. Newton

Motion to approve

	For	Against	Abstained	Absent
George Brown	x			
Fred McCoy	x			
Jacqueline A. Newton	x			
David Piepmeyer	x			
Jimmy Tate	x			
	5	0	0	0

CARRIED.

10 DISCUSSION

11 APPOINTMENTS

12 MAPLE HILL WATER AND SEWER DISTRICT

13 ROCKY POINT WATER AND SEWER DISTRICT

13.1 Approve for renewal of State Loan and Grant Funding Resolution and Updating the Application for Reverse Osmosis Water Plant Project

Moved by Jacqueline A. Newton, seconded by George Brown

Motion to Adopt

	For	Against	Abstained	Absent
George Brown	x			
Fred McCoy	x			
Jacqueline A. Newton	x			
David Piepmeyer	x			
Jimmy Tate	x			
	5	0	0	0

CARRIED.

14 SCOTTS HILL WATER AND SEWER DISTRICT

15 MOORES CREEK WATER AND SEWER DISTRICT

16 CENTRAL PENDER WATER AND SEWER DISTRICT

17 PENDER COUNTY BOARD OF HEALTH

18 SOCIAL SERVICES BOARD

19 ITEMS FROM THE COUNTY ATTORNEY, COUNTY MANAGER, ASSISTANT COUNTY MANAGERS, & COUNTY COMMISSIONERS

Trey Thurman, County Attorney, Item 3 Attorney Client and Item 5 Acquisition of Real Property

Allen Vann, Assistant County Manager, Introduced Jeremy Drummond as the new Assistant Director of Fleet and Facilities. Mr. Vann gave an update on the CAB grant as well. Completing Access to Broadband grant.

Commissioner Tate, Thanked members of the school board for taking him to several county schools on tours and showing him a lot the needs the schools have. Stated he met with Topsail Beach officials as well and understands they need some help with internet and broadband issues as well. Thanked Sheriff Cutler, Chief Hock and Captain Rowell for meeting to discuss SRO challenges and parent concerns.

Commissioner Newton, Stated her concerns with the advertisements in the Star News from the NC Justice Association in regards to how hospitals are being managed.
She cautioned everyone to take and be mindful of those issues. Those are the very issues that Commissioner Piepmeyer and herself have been so vehemently trying to bring to your attention and to be so cautious and careful of

how we go forward in the future with the health care for Pender County. Make no mistake about it, the decision that's made on that issue will be a generational effect, so it is very concerning. It would behoove all of you to pay attention to what's going on. Ms. Newton updated everyone on the AFC Bus Tour that had a huge participation to include members of COG, Golden Leaf, mayors, legislators, and Commissioners. She stated the huge media presence was great due to the continued effort that needs to be made with flood resiliency issues.

Chairman McCoy, stated the county credit rating is good and him and Tommy Batson met and discussed hurricane preparedness and stated he likes to have face to face meetings.

20 CLOSED SESSION (IF APPLICABLE).

Commissioner Brown made the motion to go into closed session at 5:22 PM Second by Commissioner Tate to discuss item 3 attorney client, and item 5 Land acquisition.

21 7PM PUBLIC HEARINGS: SPECIAL USE PERMITS/ZONING MAP AMENDMENTS/ RESOLUTIONS

21.1 ZTA 2022-16 - Zoning Text Amendment to Article 11 'Road Naming and Addressing' for Code Maintenance and Clarification 15 - 19

Mike Dickson, GIS addressing, reviewed the modifications being suggested for Article 11. Pender County, applicant, is requesting the approval of Zoning Text Amendments to the Pender County Unified Development Ordinance. Specifically, the request is to amend Section 11.1 “Authority;” Section 11.3.1 “New Road Names;” Section 11.4.1.B “Petition for Road Names;” Section 11.4.3.A “Prohibited Road Names;” Section 11.6.1.D, L, and Q “Numerical Addressing Requirements;” Section 11.10.2 “Identification;” and Section 11.11.1 “Installation;” Section 11.11.2 “Maintenance.” These amendments are requested to increase the health and safety of the citizens through 911 addressing requirements, clear up ambiguous language, to grant more property rights to the owners of unnamed access easements, to align the code with current workflows and designated departments, to delineate exceptions for addressing requirements, and to encode the necessity of street signs for private roads.
The Administrator respectfully recommends approval of the Zoning Text Amendment to the Unified Development Ordinance as described in this report, as the amendment is consistent with the Pender County Unified

Development Ordinance. The text amendments are proposed to increase the health and safety of the citizens through 911 addressing requirements, clear up ambiguous language, to grant more property rights to the owners of unnamed access easements, to align the code with current workflows and designated departments, to delineate exceptions for addressing requirements, and to encode the necessity of street signs for private roads. Attached is the notice of changes presented.

Moved by Jimmy Tate, seconded by George Brown

Motion to approve zoning text amendment.

	For	Against	Abstained	Absent
George Brown	x			
Fred McCoy	x			
Jacqueline A. Newton	x			
David Piepmeyer	x			
Jimmy Tate	x			
	5	0	0	0

CARRIED.

ZTA 2022_16 proposed languageR annotated

21.2 Trey Thurman, Attorney, swore in all parties speaking in regards to SUP 2022-35 - Special Use Permit Request for the Construction and Operation of a Solar Farm in the Burgaw, Columbia, and Union Townships. 21 - 182

Justian Brantley, Senior Planner, presented on behalf of Coastal Pine Solar, LLC, applicant, is requesting approval of a Special Use Permitfor the construction and operation of a solar farm which is included in the category of Other Electric Power Generation (NAICS 221119) in the RA, Rural Agriculture zoning district. The subject properties are located west of Penderlea Highway and Horse Branch Road, south of Shiloh Road, east of US HWY 421/NC HWY 11, and north of Piney Woods Road. Portions of the subject properties are located within the Burgaw, Columbia, and Union Townships and may be further identified by Pender County PINs 2390-54-2868-0000 and 2380-77-7421-0000. The applicant, Coastal Pine Solar, LLC, is seeking to obtain a Special Use Permit for the construction and operation of a solar farm which is included in the category of Other Electric Power Generation North American Industry Classification System (NAICS) 221119. The owner of the 6,587-acre subject property is Evergreen Timber Co NC, LLC,

however Coastal Pine Solar, LLC has entered into a purchase agreement with the owner for the 2,360-acre project area (included as Attachment 2). As shown on the applicant's site plan below (and included as Attachment 4), the project area is located on the eastern side of the property with Cypress Creek as the western boundary. The subject property is zoned RA, Rural Agricultural zoning district and per the Pender County Unified Development Ordinance Other Electric Power Generation (NAICS 221119) is permitted via Special Use Permit in the RA, Rural Agricultural zoning district. According to the applicant's narrative, the proposed 200 megawatt (AC) solar farm will generate energy through a power purchase agreement with Duke Energy Carolinas.The energy will be generated byapproximately 400,000 AstroEnergy 650W modules with panels measuring approximately four (4) feet wide and eight (8) feet long which are installed on steel frames six (6) to eight (8) feet in height. Once fully operational, this facility is expected to produce enough energy to power approximately 50,000 homes. **Conditions to Consider in Issuing a Special Use Permit for this Project**

1. The project shall comply with all requirements of the Pender County Unified Developed Ordinance.
1. The obligations imposed by this permit will be the responsibility of the property owner and shall continue in effect for the duration of this permit.
1. The applicant shall meet all other local, state, and federal regulations.
1. Any violations of the conditions of this permit, confirmed by the Zoning Administrator shall result in the pursuit of revocation actions pursuant to N.C.G.S. 160D-403(f), if not corrected within 30 days of receipt of the notice of violation.
1. Unless a request for additional time is granted or approved otherwise as a condition of the permit, a Special Use Permit shall expire and become void if final Zoning Approval has not been issued for the project within 24 months after the Notice of Approval of the Special Use Permit has been served on the applicant.
1. Prior to final zoning approval, a Decommissioning Plan shall be recorded within the Pender County Register of Deeds. The plan shall identify and establish procedures for removal of equipment, conduit, structures, fencing, roads, and foundations.

Tom Terrell, Attorney, Fox, and Rothschild, presented on behalf of the applicant. we've just given you a notebook that addresses probably everything that you potentially could want to ask about a solar farm and about this site, even though that notebook is the thick. I will go through it very quickly and introduce this. This is an almost $300 million project to get this approved by the time it gets to up to construction. It would be over a $300 million project. And I have with me six consultants who will

be addressing some of these points. This is a project overview. These are all kind of questions that people have. This is a large project that sometimes is the elephant in a room and people say, why is it so large? And the answer is Duke Energy. In 2017, Duke Energy asked the legislature if it could, and this is a simplification of a long process, if it could control the pipeline of the renewable energy being placed on its critical, and the legislature granted the right to do that. And companies like Coastal Pine or its owner, Birch Creek, must participate in what is called an RFP process. They request for proposal and submit projects in a competitive procurement situation. You cannot build a five-megawatt farm anymore. If that was the standard for a year to be competitive and be selected. You must have a much larger project. This is the size is to make it competitive for Duke. The answer on the image you saw, that was a 6900-acre site. That's not this site. That is the surrounding property of coastal pine will purchase. Upon approval and financing and other things, who will purchase a 2360-acre tract in the middle? And we have that site plan in here as to whether 50,000 homes is a true number, the answer is yes. Mr. Terrell noted the letter that was sent to property owners as well as the public meeting.At the next tab. We have a frequently asked question section if you would like to consult us at any time. This is something that we often hand out to people at our neighborhood meetings. It gives them a little more information than what is in the letter. He noted sections in the book to include the site plan, Health and Safety, evidence to meet standards, planning reports, etc. Mr. Terrell noted the decommission process and that applicant will bond that process and file with the county. Mr. Terrell gave details on the components of the farm as well as the types of materials used. The life of these panels have a guaranteed lifespan of 25 years. That's the warranty for 25. But the panels are expected to go up to around 40. Those panels can be replaced, and this could have a longer lifespan. It is anticipated that technology will change and increase over time, and we don't know what that technology will be at the end. But this is the important thing about decommissioning. This can be returned to Timberland or to agriculture. When you have homes or a chicken house put out here, you assume that that is a permanent structure, whereas a solar farm is put in with the assumption that it's temporary and that the land can be returned. Clarification was made in regard to the sales memorandum and the purchase of the additional 600 acres. Paterson Calhoun, Atlanta Ga, confirmed that environmental studies have been started and the required applications have been started. Mr. Terrell confirmed with the board that the decommissioning plan is enforceable by the county.

Jennifer Lester, Kimly-Horn Design Engineering, gave a brief overview of the site plan that is enclosed in the book. She stated that the setbacks for this project are well above what is required. She states in her professional opinion, the site plan as proposed meets or exceeds

the requirements of Pender Counties as well as any applicable state and federal regulations.

Chris Sandifer, Electrical Engineer, 3118 Green Rd, presented information on the health and safety of this project. He went into specifics on the solar panels with the information he had and answered questions in regards size and type of panels. Soil testing will be done to determine depth of poles etc. He stated there is no hazardous materials in the panels. Advised the panels can be recycled.

Tommy Cleveland, PE, 4141 Laurels Hill Rd., presented to the board his health and safety assessment report that is in the book. He addressed positive health and safety impacts, and the negative. Electrical shock and arc flash hazard, fire, and emergency response. Toxicity (equipment and operations) and electromagnetic fields. He defined heat island effect. He confirmed it is very unlikely that anything would leach into the soil. He stated in his professional opinion the project would not endanger public health or safety and its all explained in his report.

Tom Terrell, attorney, confirmed no state or federal subsidy would be received.

Richard Kirkland, Kirkland Appraisals, stated that there is no impact on the property value according to his market impact study.

Kara Drane, AICP, Senior Project Manager with Colliers Engineering and Design. stated that the project is harmonious and consistent with the comprehensive plan of Pender County according to the standards and within the law. It is consistent with the land use plan as well.

Michael Graham, Bennettsville SC, spoke to the board as a consultant who has worked on a solar farm and lives close to one.

Tom Terrell, Attorney, closed with noting there are approximately 800 solar farms that have been approved in North Carolina. Of those solar farms, probably 700 to 725 are approved a special use permit where the county or municipality have made the findings based on the evidence that the solar farm will not materially harm health or safety and is a harmonious use of. We believe that we have submitted competent material and substantial evidence on each of your standards that are in your ordinance. But I would like to supplement them with three additional conditions. First would be they that no papers or shall be in any of the panels. Number two, that wildlife permeable fencing shall be used. And three, I will repeat that we would like to have a 36-month period to start construction to get to that point. We would like the board to accept all these witnesses as experts in the field for which they were tendered. And we are ready now to proceed to the second part, and I don't hope to be here to cross-examine or to ask questions of witnesses, but like not to do that. But I may exercise the right of rebuttal at the end.

Charles Rooks, 105 N. Bennett St., spoke against the project.

Wesley Wooten, 8155 Malpass Corner Rd, spoke against the project.

Larry Eakins, Hwy 421, spoke against the project.

Don Rawls, Lake Rd, spoke against the project.
Shawn Wells, 5890 Penderlea Rd, spoke against the project.
James Cooper, 4491 Highsmith Rd, spoke against the project.
Amery Wells, 4891 Horse branch Rd, spoke against the project.
Chris McDonald, 3391 Shiloh Rd, spoke against the project.
Tom Terrell, Attorney, closed by saying the only thing that is relevant are the eight standards that are in your ordinance. That is the law. We must present evidence to you that's competent, which I submit to you with these experts who are. Trained in what they do, then it's very competence on point. It must be material. It must be to address the issues. And it must be substantial. And that notebook, which we tendered as evidence, is substantial. I submit that Coastal Pine solar has met the standards of your ordinance, and under several North Carolina Supreme Court cases, it has become entitled to a permit. It's not a term that I would like to hear, but that is the term used by the North Carolina Supreme Court, because we have shown evidence that tends to prove that this company has met the standards. And with that, Thank you.
The board had brief discussion on the project.
Commissioner Newton made a motion to deny the special use process under condition. One that they use is not similar in character to other activities or entities or endeavors as listed in that district under to that the requested use. The standard says shall not impair the integrity of character of the surrounding or adjoining districts. And for a fact, if, when you clearcut that much timber and a red area is going to have a devastating effect on the rest of us and the surrounding landholders, and further that the proposed use shall not constitute a nuisance or hazards. Well, we don't know what's going to happen in 25, 30 years and who's going to be around to clean it up. And typically, when you have fuels, tanks stored in the ground and seepage, you have government having to clean it up on the backs of the taxpayers. And that's not right. I would ask that, and I would move that. Commissioner Tate second the motion to deny.

Moved by Jacqueline A. Newton, seconded by Jimmy Tate

Motion to deny

	For	**Against**	**Abstained**	**Absent**
George Brown	x			
Fred McCoy	x			
Jacqueline A. Newton	x			
David Piepmeyer	x			
Jimmy Tate	x			
	5	0	0	0

CARRIED.

Coastal Pines Book
Coastal Pines Site plan

22 ADJOURNMENT

ARTICLE 11 ROAD NAMING AND ADDRESSING

11.1 AUTHORITY

Under the authority and provisions of the General Statutes of North Carolina, Chapter 153A-121, 239.1., and local modifications thereto, a county may by ordinance, name or rename any road within the county and not within a city, and may assign or reassign street numbers for use on such a road. In naming or renaming a road, a county may not:

C. Give the road a name that is phonetically ~~deceptively~~ similar to the name of any other public road in the vicinity.

In Article 11.1.C, the current text says a road may not be named if the name is "deceptively' like any other nearby roads. Article 11.2.1.B.3) calls for the elimination of "duplicate or phonetically similar" road names. Also, Article 11.4.3.A, 4), 6), and 8) pair the words "duplicate" and "phonetic." Therefore, the applicant argues that changing "deceptively" to "phonetically" aligns Article 11.1.C with existing language.

A county shall not ~~name or~~ rename a road ~~or assign~~ or reassign street numbers on a road until it has held a public hearing on the matter. At least 10 days before the day of the hearing the Board of Commissioners shall cause notice of the time, place, and subject matter of the hearing to be prominently posted at the county courthouse, in at least two public places in the township or townships where the road is located, and shall publish a notice of such hearing in a newspaper of general circulation published in the county. After ~~naming or~~ renaming a road~~, or assigning~~ or reassigning street numbers on a road, a county shall cause notice of its action to be given to the local postmaster with jurisdiction over the road, to the Board of Transportation, and to any city within five miles of the road.

In the paragraph following 11.1.C, the applicant suggests omitting some words for the purpose of preventing unnecessary public hearings. Public hearings are required for the naming of private roads and for the renaming of roads. However, most roads are now created within subdivision housing developments. In these instances, the roads are named before the existence of multiple landowners which would require the need for petitioning and public hearings. The roads are named after a vetting process in which developers submit road names for approval. This process is described in Article 11.5.1 New Road Proposals. The applicant argues that removing "name or" and "or assign" in the first sentence, and removing "naming or" and ", or assigning" from the third sentence should prevent the possibility of dozens of yearly public hearings.

11.3 ROAD NAMING

11.3.1 New Road Names

B. When a public or private road provides access to more than three (3) addressable structures or combinations thereof, regardless of the length of such road, a road name shall be assigned.

1) If a private access easement is greater than two hundred (200) feet in length, the affected property owner(s) may petition the addressing coordinator to name the road.

Two additional lines are being proposed for Article 11.3.1 New Road Names. Article 11.6.F. requires that when structures are more than two hundred (200) feet from the road, it changes how a structure is to be addressed. While this section does not directly impact the proposed addition to the text, it was used as a guide for determining the length of road which may be named. Furthermore, there are many unnamed logging roads in the county which do not have the required number of structures in order to trigger a required name. This language can permit their naming and assist emergency personnel in the event of a backwoods emergency.

C. The property owners along such road shall provide a petition with the proposed road name to the Pender County Addressing Coordinator within thirty (30) days of written notice.

1) If a single property owner is the sole owner of a private road access or easement which meets the requirements for road naming, they alone shall petition the addressing coordinator for a new road name, whether neighboring properties are allowed to access the road or not.

Under the direction of Commissioner David Piepmeyer, there is proposed language which would allow for easements greater than two hundred (200) feet to be named by petition of the landowner. Another line states that if a single property owner owns the entirety of an unnamed easement, they alone shall be responsible for the naming of the road in conjunction with the Addressing Coordinator, even if other landowners are affected. The addition of a sentence to Article 11.4.1.B. Petition for Road Names would further reinforce this proposal.

11.4 ROAD NAME CHANGES

11.4.1 Petition for Road Names

B. If a petition is made for a road name change, the petition must be signed by a majority of the property owners along the road in question with each such person's mailing address and telephone number listed. The petition shall identify one of the signatories as spokesman for the applicants. If a road is solely owned by one entity, no others shall have input with the petition. Because of the cost involved and the confusion generated during this process, the county will follow a basic policy of

This proposed text further reinforces the changes proposed for Article 11.3.C.

11.4.3 Prohibited Road Names

A. The Pender County Addressing Coordinator shall not recommend newly proposed road names which fall under the following categories:

8) Streets having the same name but different **cardinal direction designations** ~~directionals~~ are considered duplicate names unless they are in continuous alignment and are intersected by another road.

Under 11.4.3.A. 8) Prohibited Road Names, there is a proposal to clear up some language. The applicant claims that "cardinal direction designations" is a more thorough term than "directionals" when describing duplicate and non-contiguous road names.

11.6 NUMERICAL ADDRESSING SYSTEM

11.6.1 Numerical Addressing Requirements

D. Addresses will be assigned during the building permit approval phase of development. ~~It is the policy of Pender County to assign addresses when the footing inspection has been approved or when there is a final site plan approval. The only deviation of this policy is when the structure is located in an approved subdivision where addresses have previously been assigned~~

1. Exceptions to this policy are permissible in the following situations:

a) When the structure is located in an approved subdivision where preliminary addresses have been assigned.

i) Small Business Administration (SBA) loans for housing following a catastrophe.

ii) In compliance with the provisions of the General Statutes of North Carolina, Chapter 153A-340(b), an address will be given to a bona fide farm upon completion of the Bona Fide Farm Determination and submission of a site plan or property sketch with the Pender County Addressing Coordinator.

iii) Any other address assignment that is deemed appropriate by the Addressing Coordinator given that it does not violate any other rule set forth within Article XI of this code.

Because of the permitting workflow created many years ago, Article 11.6.1.D Numerical Addressing Requirements has become obsolete. Addresses are no longer assigned during the "footing inspection' as is codified in the UDO, but rather during the building permit approval phase of development. The applicant also wishes to add exceptions to this. These exceptions include preliminary addresses in an approved subdivision, bona fide farm determinations, and unforeseen exceptions which the addressing coordinator finds appropriate. Another exception was made necessary in the

aftermath of Hurricane Florence. Small Business Administration (SBA) loans were used by many displaced persons after the storm. The SBA requires an address to process the loan well before Pender County usually assigns one. North Carolina General Statute Chapter 160D covers the requirements for bona fide farms.

L. ~~Garage apartments shall be given a new address. If there are no addresses available then a unit letter may be assigned (ex. 503A) as a last resort.~~ **An accessory residence, such as a garage apartment, or an accessory business, such as a commercial workshop on the same lot as a residence, shall be given a new address. If there are no more contiguous numerical** addresses available, then a unit letter may be assigned (ex. 503A) as a last resort.

Text regarding garage apartments exists in Article 11.6.1.L. The applicant wishes to expand this line to include anything that may be considered an accessory residence (e.g. A guest house) or a an accessory business (e.g. a business run out of an unattached garage or a workshop).

Q. A temporary address may be assigned to a temporary structure such as a fireworks stand, a FEMA trailer, or a construction trailer. Other temporary structures approved for addressing by the Addressing Coordinator may also be assigned temporary addresses.

Coming from situations which have happened to addressing coordinators in the past, the applicant wishes to add a line "Q' to Article 11.6.1. This language would permit giving temporary addresses to fireworks stands, FEMA trailers, and construction trailers. These situations occur, and the need for addresses is obvious because of potential emergency situations.

11.10 OFFICIAL LIST, OFFICIAL MAP, AND IDENTIFICATION

11.10.2 Identification

A sign showing the official name and state road number shall identify all public roads in the unincorporated areas of Pender County. **Private named roads shall have a sign showing the official name of the road.** These road signs shall be placed at all intersections.

In Article 11.10.2 Identification gives the requirements for road signs. However, this text only requires signs for public roads. The addition of a sentence fixes this safety issue to include privately-owned named roads.

11.11.1 Installation

The Pender County ~~Public Works~~ **Facilities and Fleet Services** Department shall be responsible for the provisions of installation of road signs, except in the case of subdivisions with proposed new roads wherein the developer in that case shall be responsible for the installation of said signs.

11.11.2 Maintenance

The Pender County ~~Public Works~~ **Facilities and Fleet Services** Department shall be responsible for repair and replacement of road signs.

In Articles 11.1.1 Installation and 11.1.2 Maintenance require the Public Works Department to install, repair, and replace road signs. However, the Facilities and Fleet Services Department has been doing these tasks for many years. The proposed edits will correspond with the actual situation.

Project Overview

Developer/Owner	Coastal Pine Solar, LLC, a subsidiary of Birch Creek Development will develop and own the project area land and project
Utility Connection	Duke Energy, Sutton Plant – Wallace 230 kilovolt transmission lines
Output	200 megawatts of clean energy, enough to power approximately 50,000 homes
Equipment	State-of-the-art equipment and "Tier 1" (highest rated) panels
Setbacks/buffers	100% compliance with or exceedance of county standards; some setbacks measured in thousands of feet
Streams/Wetlands	Strict compliance with all state and federal laws protecting stream buffers and wetlands and regulating stormwater and erosion control ensuring no adverse impacts to local waterways.
Health and Safety	No emissions into air, water, or ground
Battery storage	Not designed for battery storage
Capital Investment	An anticipated capital investment of $275 million
Economic Benefits	Approximately 300 jobs during construction phase, many of them local vendors and citizens; substantial increase in tax base (average increase is 2,000% higher than same land in agricultural or timber use)
Decommissioning	Will fully bond project decommissioning per County requirements

BIRCH CREEK

Deep Industry Experience

Birch Creek Development was founded in 2019 by a group of experienced solar industry executives seeking to leverage their experience developing, financing and constructing solar assets in the Southeast under a new platform.

Birch's deep bench of development expertise includes Vice President of Development ***Daniel Edelstein*** and Vice President of Development ***Peter Bruno***. Collectively, Peter and Daniel have developed over 1GW of utility scale solar projects in North and South Carolina, both at the distribution and transmission scale.

Max Whiticare, Executive Vice President of finance at Birch Creek has over a decade of experience in financing renewable projects. Having spent several years as both a lender providing capital and developer sourcing capital, I bring a unique understanding of the sensitivities each party brings to the closing table, which ultimately helps facilitate transactions. I've successfully closed financings for several hundred MWs of solar assets in NC, dating back to as early as 2012.

Will Mihill is Vice President of Finance at Birch. Prior to his role at Birch, Will worked in investment syndication for a tax credit asset management firm where he structured and financed over 200MM in federal and state tax credit transactions. Will's experience in tax credit investment syndication will assist Birch in executing on its Carolinas development strategy.

Successful Track Record

To date, Birch Creek has placed 28 projects in service, totaling 315MW of solar generation. Birch has an additional 6 projects that have completed NTP financing and are scheduled to be placed in service by the end of 2023, representing an additional 226MW of solar generation capacity. Some notable projects in the Carolinas include:

- Estill I Solar Farm | Hampton County, SC | 27MW |COD Q2 2017
- IS 54 Solar Farm | Lenoir County, NC | 73MW | COD Q3 2018
- Fox Creek Solar Farm | Louisburg, NC | 70MW | COD Q4 2018
- Brantley Solar Farm | Nash County, NC | 70MW | COD Q4 2018
- Buckleberry Solar Farm | Grifton NC | 70MW | COD Q4 2018

BIRCH CREEK

- Crooked Run Solar Farm | Pender County, NC | 105 MW | COD Q4 2019

Strong Pipeline

In addition to this proven track record, Birch Creek has a pipeline of 4.9GWs of solar and storage projects throughout the southeast, MISO, and PJM under active development.

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August 26, 2022

Dear Neighbor:

I write you on behalf of Coastal Pine Solar, LLC to let you know that Evergreen Timber Company has entered into a purchase agreement for Coastal Pine to purchase internal portions of a timber tract near you for a solar farm that you should not be able to see (in many places it will be impossible to see) and that you certainly will not be able to hear. Coastal Pine has applied for a "special use permit" to develop the solar farm, and we wanted you to have all the information in advance.

The two tracts involved generally lie west of Penderlea Highway and Horse Branch Road and north of Piney Woods Road. The parent tract will provide substantial natural buffers and setbacks, in places a few thousand feet wide. In a few places where the 6 to 8-foot high panels will be closer to adjoining properties, Coastal Pine will leave evergreen buffers and supplement them as necessary to create a thick visual screen. Portions of the parent tract not developed for solar will remain in agriculture and timber production.

Once in production, Coastal Pine will produce clean energy to supply electricity through Duke Energy to power approximately 20,000 homes – quietly, without traffic generation, and without placing emissions of any kind into the air, water, or soil.

To share more project details with you, we are hosting a neighborhood meetings where you can learn more about this project. The meeting will be at **5:30 to 7:00 p.m. on September 8th at the Burgaw Train Depot.** This will be a "drop-in" gathering at a time convenient to you. Several project consultants will be in attendance to answer questions not answered in this letter. There will be large maps where you can see the proposed location.

A Pennsylvania Limited Liability Partnership

California Colorado Delaware District of Columbia Florida Georgia Illinois Minnesota Nevada
New Jersey New York North Carolina Pennsylvania South Carolina Texas Virginia Washington

If you cannot attend this meeting but have questions, please feel free to contact me or James Bedrin at the numbers or email below. We will be more than happy to talk with you.

- Tom Terrell: tterrell@foxrothschild.com or 336-847-2000 (c)
- James Bedrin: bedrin@birchcreekdev.com or 607-727-0601

In the meantime, some commonly asked questions are answered below.

What is solar energy?

Solar energy is simply the conversion of sunlight into useable energy in the form of electricity. It is one of the many types of renewable energy that does not use fossil fuels.

Why solar energy?

All major American utility companies such as Duke Energy are incorporating solar and other renewable energy sources to diversify power generation portfolios, match local needs with local power resources, optimize the electric grid, and support a low-carbon future. From a land use perspective, cities and counties across the country are realizing that solar farms have far less impact on neighbors, especially from noise and traffic, than a subdivision or other types of use.

How does a solar facility work?

A more common (and colloquial) term for a solar facility is "solar farm." Solar farms use decades-old technology to convert the sun's rays into useable electricity that can help power homes, businesses, churches, and schools.

Generally described, solar panels are placed onto steel frames (called racks) that are driven into the ground so that very little land is disturbed. These panels passively receive the sun's light, which in turn causes electrons in the solar cells to move and collide. This movement generates a direct current that is converted at the site to alternating current before being transferred to the electrical grid. There are no fumes, emissions, or byproducts.

Are solar farms common in North Carolina?

Yes. The first phase of solar farms placed most of them in the eastern and south-central part of the state where land is generally flat, and soils allow easier construction. In the last 5 years, more facilities have been built in the north-central, Piedmont and lower mountain counties after Duke Energy assumed control of solar farms accepted into its program. To be accepted by Duke, a solar farm must be much larger than the small facilities first developed ten years ago.

Why do so many farm families want solar farms on their land?

There are tens of thousands of families in this state who own land that was once farmed or used for timber. Farming was their primary livelihood. They want to keep the land in their family, but they no longer can farm it or, in many cases, they are still trying to farm but farm income alone isn't sufficient.

Why would an agricultural or timber company want to have solar panels?

Agricultural and timber companies are very wisely diversifying portions of their land holdings so they are less vulnerable to (1) fluctuating markets, (2) overseas competition, and (3) pests, disease, drought, hurricanes and other weather conditions that could ruin an entire year's crop.

Do all farm families or companies have the option of developing a solar farm?

Far from it. In fact, very few areas qualify for solar development. Regional transmission lines have limited capacity to receive electricity from solar. Additionally, under new requirements established by Duke and other utility companies, it is difficult to assemble a sufficient number of parcels that are not challenged by streams and wetlands and that have a location suitable for a "point of interconnection" with the electric grid. Once suitable tracts are found, many of them are abandoned when lease negotiations are unsuccessful. To describe it a different way, companies that specialize in finding sites for potential solar development will describe their days as finding sites that don't work rather than finding sites that do.

Is this land permanently removed from timber or agricultural use?

No. In fact, the use is temporary, unlike, for example, homes, apartments, or subdivisions. Not only are solar farms set up through temporary leases (20 to 30 years) that allow the land to be returned one day to timber, pasture, or other farm use by the same family or company, but rural landowners are realizing that solar farms are peaceful, quiet land uses that don't create disturbances to their neighbors. One of the most common statements we hear in rural areas is that most people prefer a solar farm to a subdivision.

What about rural vistas?

This tract already has 110-foot transmission towers and transmission lines that run through it. We have never heard neighbors complain about the sight of regional transmission towers and lines or the 30-foot poles and overhead lines along the street in their front yards. By contrast, these solar panels will be unseen or, in a few places, barely seeable.

Will I be able to see the solar panels from my home or the road?

As stated above, although many of the low-to-the ground panels will concealed by 100s to 1,000s of feet of tree buffers, there are a few places where panels will be closer to roads or homes. In those few places, we believe concealment will be achieved by existing vegetation, supplemented if necessary by planted and maintained evergreens.

What cannot be shielded are the transmission lines and towers that have been there for decades. It is because these transmission lines are already there and provide a location for grid connection that makes this an ideal location for a solar farm.

Where will the energy go?

The energy will be sent onto the local electric grid through a "point of interconnection" at an existing transmission line at the property.

Has Duke Energy determined that solar energy should be part of its power generation?

Yes. Duke Energy has made a public commitment to diversity its energy production to include renewable sources, including solar energy, and questions regarding Duke's commitment can be found on its websites.

Will this facility eliminate or replace other forms of energy production?

Renewable energy only supplements other traditional forms of power production. It will not replace them.

Does inclusion of solar in a utility's portfolio reduce or stabilize your costs?

Once construction of a solar farm is paid for, it costs very little to run, and sunshine, unlike gas and other forms of production, is free. These basic elements allow an energy company such as Duke to enter into long-term power purchase agreements at set prices – something Duke cannot do with traditional forms of energy whose prices and means of production fluctuate. These set, long-term prices enable Duke (and other utility companies) to establish more stable pricing for consumers. If Duke's consumer charges go up, it won't be because of solar but because of other factors and costs in its production portfolio.

Is this new technology?

No. solar technology is not new or experimental. The basic technology we use today in solar is the same technology used for approximately five decades. Over the years, as in all industries, technological upgrades have occurred. Improvements in panels have been made to increase panel efficiency, placement of panels has tended to move from "fixed position" to "trackers" that follow the sun, and in some facilities batteries have been added so that electricity can be placed onto the grid when the sun goes down. If there are new technologies, they can be applied later within the same footprint of the facility.

What about groundwater?

Solar farms are designed to have minimal to no impact on both the host tract and surrounding tracts. Panels are placed so that rainwater that hits the panels is absorbed into the ground below, thereby protecting wells and groundwater supplies and avoiding erosion through runoff. If anything, a solar farm keeps other uses, such as more homes, from competing for the same groundwater sources.

Will streams or wetlands be harmed?

No. Broad and undisturbed buffers are left around each stream or wetland. During construction, the builder is required by law to use the same erosion and sedimentation control measures that would be used if the company were building a subdivision, a school, an industrial park, or a shopping center.

Are solar farms safe?

The EPA has tested solar panels extensively. It concludes that they are completely safe.

One common question relates to the electromagnetic fields, or EMF, generated by the solar farm. The shortest answer is that EMF exist anywhere there is electric current. The amount of EMF exposure to a neighbor on the outside of a solar farm is less than the person receives inside his or her own home from common appliances or cell phones.

For more information on this topic, the N.C. Clean Energy Technology Center at N.C. State has numerous resources. One such paper can be found at https://content.ces.ncsu.edu/health-and-safety-impacts-of-solar-photovoltaics.

Are solar panels "toxic?"

At a recent hearing a neighbor claimed the panels used would contain "arsenic, mercury, selenium, you name it." Claims such as this are both unfounded and untrue, and we vigorously correct them at public meetings. Nonetheless, you will likely continue to hear claims like this from people with good intentions who do not have access to full information.

Over 95% the components in today's panels are glass, tempered glass, aluminum, plastic, and silicon, but with a small amount of metal for current conduction around the panel. The *only* "hazardous" material potentially used in a solar panel today is the lead used in solder, although lead solder itself likely will not be used. To keep this in perspective, lead is present in the solder of many electrical appliances in every home, not to mention the lead that still exists in the paint in older houses and buildings. Lead solder in household appliances is not encapsulated like it would be in a solar panel, making household exposure to lead much higher.

Will the panels themselves come from China?

Probably not, because much more production of solar components has shifted to the United States, but it is possible because we live in a global economy where almost all American industries rely on buying and selling from or to overseas markets. Could the panels include parts that are from China? Possibly, depending upon markets and prices that exist at the time they are made. For some reason, the "China" question is asked about solar panels but not other products people commonly use.

But let's dig deeper into that question that occasionally comes up. If it asked by a person who drives the most popular vehicle in America, the Ford F-150, their truck contains and runs on numerous computer chips made in China, although they probably did not know it. If it being asked by a person who uses an iPhone, the majority of iPhones and iPads are made in Shenzen, China, with the rest being made in places like Singapore and Malaysia. If the question is asked by someone who uses a Samsung phone, there is a very high chance that the phone they researched this question on was assembled in China with parts from China and other Asian countries. Similarly, if they researched the question using a Lenovo laptop, Lenovo has its operational headquarter near Raleigh, but its global HQ is in Beijing, China.

All electronic products under the brand names Toshiba, TCL, Sharp, or even Westinghouse were likely made in China or with Chinese components. The point we make is that it is neither fair nor helpful for neighbors who use Chinese products daily to point fingers at solar developers whose components might have come from the same cities in Asian countries.

Do solar farms produce noise, traffic, light or odor?

No. The small "inverters" that convert DC to AC current produce a noise (generally less than the sound of a hissing air conditioning unit). From outside the facility, the inverters cannot be heard over ambient noises created by wind, birds, background traffic, etc. Storage batteries that are sometimes used in solar farms produce a sound similar to inverters, and they cannot be heard over the ambient noise where a listener might be standing.

The average solar farm requires someone to visit by vehicle two to three times *per month,* as contrasted with an average single-family home that generates 9.52 vehicle trips *per day* (Institute of Transportation Engineers, *Trip Generation Manual*, 9th ed.). One home, or a group of new homes on this tract, on the other hand, would generate traffic and suburban noise in the form of lawn mowers, leaf blowers, and common noises created whenever people gather.

Solar farms do not emit any light. There will be no artificial lighting at night. Additionally, the facility produces no odors or emissions of any kind. In other words, you won't be able to hear it, smell it, be aware of traffic generation, and in most places, it will be shielded from view.

Do solar farms harm property values?

Hundreds of studies have been done in North Carolina by certified and licensed appraisers using industry-standard methods. Many of these studies have been audited by independent appraisers. Most of the studies have used the standard paired sales analysis that uses actual market data to compare the sales price of a home adjoining a solar farm with the sale of a comparable home in the same general area and time period that does not adjoin a solar farm. These studies routinely show no harm to adjoining properties.

You might ask how this could be. The reason is that solar farms possess none of the characteristics that typically would cause harm to adjoining property values, such as excessive traffic generation, noise, odor, dust, or environmental hazards. Coastal Pine Solar's concealment and distance from homes creates an even stronger basis for concluding no impact.

How long do solar farms last?

Solar farms are anticipated to operate for the duration of the standard lease, which is often 20 years with a few 5-year extensions. Once the solar farm is no longer needed, it can be easily decommissioned by lifting out the panels and pulling up the steel posts holding the frames, and the land can be returned to its natural state. In other words, unlike a subdivision or a business, the land can easily be returned to timber production. Virtually all parts of the facility are recyclable.

Does the county receive more tax income from a solar farm?

Yes. Substantially more. Although there are reductions in the amount of personal and property taxes paid by solar facilities, local governments receive much more tax revenue from a solar facility than land under agricultural or forest tax exemptions. As one astute commissioner elsewhere recently said, "taxes on farmland don't build our schools."

A recent 2019 study looked at tax data from 50 North Carolina counties and tabulated the tax income to the county for the solar farm parcels in the year before each tract was converted, and the tax income to the county in the year after conversion to a solar farm. The average **increase** in tax income to each county was 2,000 percent for the land leased for solar.

In the aggregate, having a strong and diversified tax base is what enables the county to pay for schools, first responders, social services, public health, courthouse maintenance, and a variety of other necessary county needs.

Is this solar farm subsidized by the government?

No. Neither Coastal Pine nor its parent company will receive a penny from the government. The only assistance will be in the form of reduced property taxes. However, tax advantages are very common, and each person receiving this letter is likely a beneficiary of one or more tax reductions. For example, agriculture and timber lands have similar but more substantial reductions than solar. And anyone who borrows money to buy a home can deduct mortgage interest on their taxes.

Why is a subsidiary company involved?

Practically all forms of real estate development (e.g., subdivisions, shopping centers, cell towers, and industrial parks) are owned by site-specific LLCs (called "special purpose entities") to meet standard lending requirements. Coastal Pine Solar, LLC, for example, is owned by Birch Creek Development, a company with a substantial and growing North Carolina presence.

What is the approval process involved?

Adjoining owners should receive a letter informing them of a public hearing for a special use permit on September 19th.

Will we see you September 8th?

We hope so. In the meantime, please let us know if you have questions or concerns.

Sincerely,

Thomas E. Terrell, Jr.

TET/kwc

Frequently Asked Questions
About Solar Energy

What is solar energy?

Solar energy is simply the conversion of sunlight into useable energy in the form of electricity. It is one of the many types of renewable energy that does not use fossil fuels.

Why solar energy?

All major American utility companies such as Duke Energy are integrating renewable energy sources, such as solar, as a way to diversify power generation portfolios, match local needs with local power resources, optimize the electric grid, and support a low-carbon future. From a land use perspective, cities and counties across the country are realizing that solar farms have far less impact on neighbors, especially from noise and traffic, than a subdivision or other types of use.

How does a solar facility work?

A more common (and colloquial) term for a solar facility is "solar farm." Solar farms use decades-old technology to convert the sun's rays into useable electricity that can help power homes, businesses, churches, and schools.

Generally described, solar panels are placed onto steel frames (called racks) that are mounted to piles driven into the ground so that very little land is disturbed. These panels passively receive the sun's light, which in turn causes electrons in the solar cells to move and collide. This movement generates a direct current that is converted at the site to alternating current before being transferred to the electrical grid. There are no fumes, emissions, or byproducts.

Are solar farms common in North Carolina?

Yes. The first phase of solar farms placed most of them in the eastern and south-central part of the state where land is generally flat, and soils allow easier construction. In the last 4 years, many more facilities have been built in the north-central, Piedmont and lower mountain counties after Duke Energy assumed the control of solar farms accepted into its program and required larger facilities and facilities in more parts of the state. There were over 7,000 MW of solar power connected to the grid in NC at the end of 2020. That number has grown significantly.

Why do so many farm families want solar farms on their land?

There are tens of thousands of families in this state who own land that was once farmed or used for timber. Farming was their primary livelihood. They want to keep the land in their family, but they no longer can farm it or, in many cases, they are still trying to farm but farm income alone isn't sufficient or consistent.

Why are timber companies expanding into solar?

Better returns and diversification. Converting land from timber to solar provides higher returns on a steady basis with less costs. More importantly, leasing land for solar panels diversifies a landowner's portfolio in the event of infestation by pine beetles, changes in market demands, and drought.

Do all farm families have the option of developing a solar farm?

Far from it. In fact, very few areas qualify for solar development. Regional transmission lines have limited capacity to receive electricity from solar. Also, under new requirements established by Duke and other utility companies, it is difficult to assemble a sufficient number of parcels that are not challenged by streams and wetlands and that have a location suitable for a "point of interconnection" with the grid. Once suitable tracts are found, many of them are abandoned when lease negotiations are unsuccessful. To describe it a different way, companies that specialize in finding sites for potential solar development will describe their days as finding sites that don't work rather than finding sites that do.

Is this land permanently removed from agricultural or timber use?

No. The use is temporary, unlike, for example, homes and subdivisions. Not only are solar farms set up through temporary leases (20 to 30 years) that allow the land to be returned one day to timber, pasture, or other farm use by the same family, but rural landowners are realizing that solar farms are peaceful, quiet land uses that don't create disturbances to their neighbors. By far the most common statement we hear in rural areas is that most people prefer a solar farm to a subdivision.

What about rural vistas?

These tracts already have 90-foot transmission towers and transmission lines that run through the tract. We have never heard neighbors complain about the sight of regional transmission towers and lines or the 30-foot poles and overhead lines along the street in their front yards. By contrast, these solar panels will be well

concealed by evergreen vegetation. In some places, the closest neighbor will be thousands of feet away.

Where will the energy go?

The energy will be sent onto the local electric grid through a "point of interconnection" at an existing transmission line at the property.

Has Duke Energy determined that solar energy should be part of its power generation?

Yes. Duke Energy has made a public commitment to diversity its energy production to include renewable sources, including solar energy, and questions regarding Duke's commitment can be found on different websites, such as the following link: Solar Energy - Business - Duke Energy (duke-energy.com).

According to Stephen De May, Duke Energy's North Carolina President, "Solar power is a major focus for Duke Energy as we target 70 percent carbon reduction by 2030 in North Carolina and net-zero carbon emissions by 2050 under HB951. We expect solar to play a leading role in our clean energy future."

Will this facility eliminate or replace other forms of energy production?

Renewable energy supplements other traditional forms of power production. It will not replace them. Although Duke Energy is closing coal plants because they are too expensive to operate compared to solar and combined cycle gas turbines, the move towards solar energy in Duke's portfolio has not been a cause, direct or indirect, of Duke's decision to close coal plants.

Does inclusion of solar in a utility's portfolio reduce or stabilize your costs?

Once construction of a solar farm is paid for, it costs very little to run, and sunshine, unlike gas and other forms of energy production, is free. These basic elements allow an energy company such as Duke to enter into long-term power purchase agreements at set prices – something Duke cannot do with traditional forms of energy whose prices and means of production fluctuate. These set, long-term prices enable Duke (and other utility companies) to establish more stable pricing for consumers. If Duke's consumer charges go up, it won't be because of solar but because of other factors and costs in its production portfolio.

Should we wait to develop solar farms until the technology improves?

Of course not, just as we should not have waited over the decades (or centuries) on improvements in technology for energy from natural gas, hydro, nuclear power, and other energy sources.

More importantly, solar technology is not new or experimental. The basic technology we use today in solar is the same technology used for approximately 6 decades. Over the years, as in all industries, technological upgrades have occurred. Improvements in panels have been made to increase panel efficiency; placement of panels has tended to move from "fixed position" to "trackers" that follow the sun; and in some facilities, batteries have been added so that electricity can be placed onto the grid when the sun goes down. If there are new technologies, they can be applied later within the same footprint of the facility.

What about groundwater?

Solar farms are designed to have minimal to no impact on both the host tract and surrounding tracts. Panels are placed so that rainwater that hits the panels is absorbed into the ground below, thereby protecting wells and groundwater supplies and avoiding erosion through runoff.

Will streams be harmed?

No. Undisturbed minimum 50-foot buffers are left around each stream. During construction, the builder is required by law to use the same erosion and sedimentation control measures that would be used if the company were building a subdivision, a school, an industrial park, or a shopping center.

Are solar farms safe?

The EPA has tested solar panels extensively. It concludes that they are completely safe.

One common question relates to the electromagnetic fields, or EMF, generated by the solar farm. The shortest answer is that EMF exist anywhere there is electric current. The amount of EMF exposure to a neighbor on the outside of a solar farm is less than the person receives inside his or her own home from common appliances or cell phones.

For more information on this topic, the N.C. Clean Energy Technology Center at N.C. State has numerous resources. One such paper can be found at https://content.ces.ncsu.edu/health-and-safety-impacts-of-solar-photovoltaics.

Are solar panels "toxic?"

No. The vast majority of the components in today's panels are glass, tempered glass, aluminum, plastic, and silicon, but with a small amount of metal for current conduction around the panel. The *only* "hazardous" material that *might* be used in any of these panels is the lead used in solder. To keep this in perspective, lead is present in the solder of many electrical appliances in every home, not to mention the lead that still exists in the paint in older houses and buildings. Lead solder in household appliances is not encapsulated like it is in a solar panel, making household exposure to lead much higher. Therefore, solder poses no risk to human health.

Do solar farms produce noise, traffic, light or odor?

No. The small "inverters" that convert DC to AC current produce a noise (generally like the sound of a hissing air conditioning unit). From outside the facility, the inverters typically cannot be heard over ambient noises created by wind, birds, background traffic, etc. Storage batteries, that are increasingly being used in solar farms to store energy, are slightly louder than inverters, but they are placed deep enough into a site so that they cannot be heard over the ambient noise where a listener might be standing.

The average solar farm requires someone to visit by vehicle two to three times *per month,* as contrasted with an average single-family home that has 9.52 vehicle trips *per day* (Institute of Transportation Engineers, *Trip Generation Manual*, 9th ed.). One home, or a group of new homes on this tract, on the other hand, would generate traffic and suburban noise in the form of lawn mowers, leaf blowers, and common noises created whenever people gather.

Solar farms do not emit any light and only operate during the day. There will be no lighting at night. Additionally, the facility produces no odors or emissions of any kind. In other words, you won't be able to hear it, smell it, be aware of traffic generation, and it will be shielded from view.

Do solar farms harm property values?

Hundreds of studies have been done in North Carolina by certified and licensed appraisers using industry-standard methods. Many of these studies have been audited by independent appraisers. Most of the studies have used the standard paired sales analysis that uses actual market data to compare the sales price of a home adjoining a solar farm with sale of a comparable home in the same general area and time frame that does not adjoin a solar farm.

These studies conclude that solar farms possess none of the characteristics that typically would cause harm to adjoining property values, such as excessive traffic generation, noise, odor, dust, or environmental hazards – thus explaining why adjoining properties are not devalued. Coastal Pine Solar will also have evergreens around the perimeter, further emphasizing its low impact.

How long do solar farms last?

Solar farms are anticipated to operate for the duration of the standard lease, which is often 30 years with a few 5-year extensions. Once the solar farm is no longer needed, it can be easily decommissioned by lifting out the panels and pulling up the steel posts holding the frames, and the land can be returned to its natural state. In other words, unlike a subdivision or a business, the land can easily be returned to agriculture. Virtually all parts of the facility are recyclable.

Does the county receive more tax income from a solar farm?

Yes. Although there are reductions in the amount of personal and property taxes paid for solar facilities, local governments receive much more tax revenue from a solar facility than land under agricultural or forest tax exemptions.

A recent 2019 study looked at tax data from 50 North Carolina counties and tabulated the tax income to the county for the solar farm parcels in the year before each tract was converted, and the tax income to the county in the year after conversion to a solar farm. The average **increase** in taxable income to each county was 2,000 percent from these parcels.

In the aggregate, having a strong and diversified tax base is what enables the county to pay for schools, first responders, social services, public health, courthouse maintenance, and a variety of other necessary county needs.

Why is a subsidiary company involved?

Practically all forms of real estate development (e.g. subdivisions, shopping centers, cell towers, and industrial parks) are owned by site-specific LLCs to meet standard lending requirements. Coastal Pine Solar, LLC, for example, is owned by Birch Creek Development, a company with a substantial and growing North Carolina presence.

Pender County SUP Standards
UDO § 3.12.3(G)

The Board of Commissioners shall approve, modify, or deny the application for a Special Use Permit. In approving a Special Use Permit, the Board of Commissioners, with due regard to the nature and state of all adjacent structures and uses in the district within same is located, shall make written findings that the following are fulfilled:

1) The use requested is listed among the special uses in the district for which application is made, or is similar in character to those listed in that district;

2) The requested use will not impair the integrity or character of the surrounding or adjoining districts, nor adversely affect the safety, health, morals, or welfare of the community or of the immediate neighbors of the property;

3) The proposed use shall not constitute a nuisance or hazard;

4) The requested use will be in conformity with the Pender County Land Use Plan and other official plans, or policies adopted by the Board of County Commissioners;

5) Adequate utilities, access roads, drainage, sanitation or other necessary facilities have been or are being provided;

6) That adequate measures have been or will be taken to provide ingress and egress so designed as to minimize the traffic congestion in the public roads;

7) That the special use shall, in all other respects, conform to the applicable regulations of the district in which it is located; and

8) The proposed use shall not adversely affect surrounding uses and shall be placed on a lot of sufficient size to satisfy the space requirements of said use.

Summary of Law on Quasi-Judicial Proceedings

I. Hearings are based on *evidence*

Quasi-judicial proceedings are *based upon evidence*, not feelings, opinions, wishes, or personal preferences.

II. Evidence must meet three standards

- It must be *competent* (not based on hearsay)
- It must be *material* (directly addresses or is logically connected to the standard under consideration)
- It must be *substantial* (enough that a reasonable person could rely on it)

III. Requirements from State Statutes

A claim that (1) a use of land harms property values must be supported by actual market data, such as an appraisal or market impact study, and (2) a claim that public safety is threatened by a proposed use's traffic generation must be supported by data from a transportation engineer. N.C. Gen. Stat. §160D-1402(j)(3)(a) and (b)

IV. Entitlement to Permit

The inclusion of a use in the Table of Permitted Uses as being allowed in a certain zoning is a legislative finding that the use is acceptable in that district, subject to an applicant meeting the requirements of a SUP.

An applicant who presents competent, material, and substantial evidence that he meets the standards specified is *entitled* to the permit unless opponents present competent, material, and substantial evidence to the contrary.

"When an applicant has produced competent, material, and substantial evidence tending to establish the existence of the facts and conditions which the ordinance requires for the issuance of a special use permit, *prima facie he is entitled to it."Humble Oil & Ref. Co. v. Bd. of Aldermen of Town of Chapel Hill*, 284 N.C. 458, 468, 202 S.E.2d 129, 136 (1974).

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"When an applicant for a conditional use permit produces competent, material, and substantial evidence of compliance with all ordinance requirements, the applicant

has made a *prima facie* showing of entitlement to a permit. Material evidence is [e]vidence having some logical connection with the facts of consequence or the issues. Substantial evidence is evidence a reasonable mind might accept as adequate to support a conclusion." *Dellinger v. Lincoln Cty.*, 248 N.C. App. 317, 324, 789 S.E.2d 21, 27 (2016)

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"When an applicant for a conditional use permit produces competent, material, and substantial evidence of compliance with all ordinance requirements, the applicant has made a *prima facie* showing of entitlement to a permit." *Howard v. City of Kinston*, 148 N.C. App. 238, 246, 558 S.E.2d 221, 227 (2002) (emphasis in original) (citation and quotation marks omitted); *see also Innovative 55, LLC v. Robeson Cty.*, 253 N.C. App. 714, 720, 801 S.E.2d 671, 676 (2017); Little River, LLC v. Lee Cty., 257 N.C. App. 55, 61, 809 S.E.2d 42, 48 (2017); *Ecoplexus Inc. v. Cty. of Currituck, Bd. of Commissioners,* 257 N.C. App. 9, 15, 809 S.E.2d 148, 154 (2017).

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"As an initial matter, the local governmental body must determine whether an applicant has produced competent, material, and substantial evidence ***tending to establish*** the existence of the facts and conditions which the ordinance requires for the issuance of a [conditional] use permit. In the event that the applicant satisfies this initial burden of production, then *prima facie* he is entitled to the issuance of the requested permit." *PHG Asheville, LLC v. City of Asheville,* 374 N.C. 133, 149, 839 S.E.2d 755, 765–66 (2020) (emphasis in original) (citations and quotation marks omitted).

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"Moreover, when an applicant for a special or conditional use permit produces competent, material, and substantial evidence of compliance with all ordinance requirements, the applicant has made a *prima facie* showing of entitlement to a permit." *SBA, Inc. v. City of Asheville City Council,* 141 N.C. App. 19, 27, 539 S.E.2d 18, 22 (2000) (citations omitted).

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Board members cannot appoint themselves experts on a subject and use their own knowledge to override the evidence presented by the parties. *PHG Asheville, LLC v. City of Asheville,* 374 N.C. 133, 839 S.E.2d 755 (2020). See also, David W. Owens Land Use Law in North Carolina (3rd. ed.) ("credible quantitative evidence [in a quasi-judicial proceeding] cannot be rebutted by generalized contradictory testimony, be it from opposing experts, lay witnesses, or the board itself." Id. p. 278

V. A "generalized fear" or a "generalized concern" is not evidence.

North Carolina courts have repeatedly stated that "generalized fears are not evidence. Such fears or concerns include, for example, a fear that a use will cause the environment to suffer (*Little River v. Lee County,* 257 N.C. App. 55, 809 S.E.2d 42 (2017), a fear or concern that crime will increase (*Clark v. City of Asheboro,* 136 N.C. App. 114, 524 S.E.2d 46 (1999), fear of potential runoff from stormwater and herbicides (*Ecoplexus v. Currituck County,* 257 N.C. App. 9, 809 S.E. 2d 148 (2017), and that a cell tower would harm public health (*Blair Investments v. Roanoke Rapids,* 231 N.C. App 318, 752 S.E. 2d 524 (2013).

VI. Safety and health matters regulated at the State level is evidence that a use will not materially endanger public health or safety if a State permit ultimately is issued.

A local board may not make decisions related to health and safety that have been relegated expressly to State agencies. *Little River v. Lee County* (Id.). Also, *Craig v. Chatham County*, 356 N.C. 40, 565 S.E. 2d 172 (2002).

VII. Claims that a use will affect "public interest"

When issuing a CUP, a board "cannot deny applicants a permit in their unguided discretion or, stated differently, refuse it solely because, in their view, [the use would' `adversely affect the public interest.' "*In re Application of Ellis,* 277 N.C. 419, 425, 178 S.E.2d 77, 81 (1970)

VIII. The Burden Shifts to Opponents

"Once an applicant has produced competent, material, and substantial evidence tending to establish compliance with all applicable ordinance requirements for the issuance of a CUP, "[t]he burden of establishing that the approval of a [CUP] would endanger the public health, safety, and welfare falls upon those who oppose the issuance of the permit." *Id.* After a prima facie showing, "[d]enial of a [CUP] must [also] be based upon findings which are supported *by competent, material, and substantial evidence* appearing in the record." *Id.* (emphasis supplied).

SUP Standard (G)(1)

The use requested is listed among the special uses in the district for which application is made, or is similar in character to those listed in that district

The site is zoned RA (Rural Agricultural). The chart below shows that electric power generating facilities are allowed in RA zoning districts subject to meeting the standards of a special use permit.

TABLE OF PERMITTED USES P=Permitted Use D=Permitted w/ Use Standards S=Special Use Approval Required SD=Special Use Approval Required w/ Additional Standards PM=Permitted in conjunction w/ the MDP process											
Use Category Specific Use Type		Residential				Mixed Use	Commercial		Industrial		Special Purpose
		Zoning Districts									
Use Type	Ref NAICS	RA	RP	RM	MH	PD	GB	OI	IT	GI	EC
Sector 22: UTILITIES											
Fossil Fuel Electric Power Generation	221112									S	
Other Electric Power Generation	221119	S	S			S			P	P	
Electric Bulk Power Transmission & Control	221121	S	S	S	S	S	S	S	P	P	
Natural Gas Distribution Except Transmission Lines	221210									P	
Water Supply Facilities*	221310		S			PM				P	

SUP Standard # (G)(2)

The requested use will not impair the integrity or character of the surrounding or adjoining districts, nor adversely affect the safety, health, morals, or welfare of the community or of the immediate neighbors of the property.

Coastal Pine will address each aspect of this standard in following tabs with the following evidence:

1. A photo essay showing the character of the surrounding area;
2. A Market Impact Study prepared by MAI appraiser, Rich Kirkland;[1]
3. A report on public safety by engineer Thomas Cleveland; and
4. A report on health and safety by engineer Christopher Sandifer.

Each of these consultants' reports show, based on industry-accepted data and evidence, that solar farms have not been shown to harm property values and are not a danger to health or safety. Additionally, there will be no harm to the surrounding area because it will not be seen, nor will it generate audible noise, have lighting, or generate more than three or four vehicle trips per month – less than one single family generates in a day.

[1] Coastal Pine Solar presents a market impact study as a point of interest even though the Pender County SUP standards do not require an applicant to present evidence of no harm to adjoining or nearby properties.

SUP Standard 2

The requested use will not impair the integrity or character of the surrounding or adjoining districts

A Photo Essay

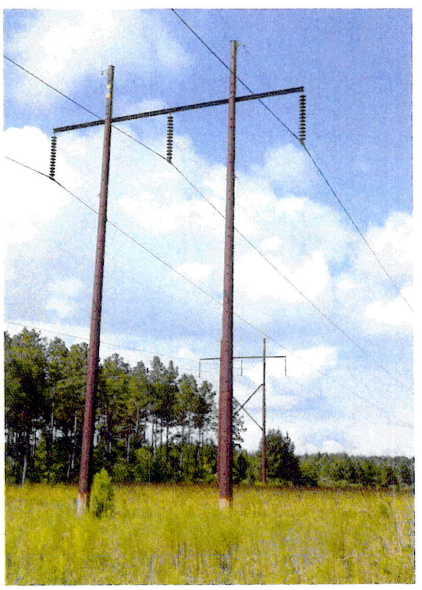
The "integrity and character" of surrounding districts can best be illustrated by photos showing (1) the types of uses in the vicinity or on adjoining parcels, and (2) the buffers that will conceal this project from motorist and residential neighbors.

A. Existing and Highly Visible Electric Infrastructure

The electrical infrastructure in this part of the county includes the regional transmission lines, two prominent substations, and local transmission lines that exist in front of homes and businesses. Regional transmission lines make this facility possible and establish a tone for what is regularly seen and taken for granted in the surrounding community.

The regional transmission lines are illustrated in photos below:





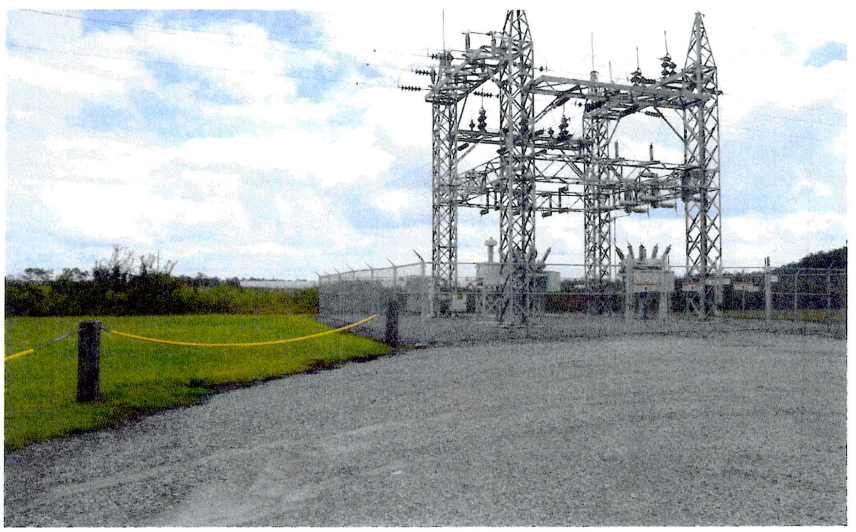


2

Below are photos of local transmission lines and two electric substations, the first on Piney Woods Road and the second at the corner of Penderlea Highway and Shiloh Road, both near the site. Unlike the solar panels which will not be seen, these substations are highly visible and have no vegetative buffers.









B. Surrounding Agricultural Uses

Agriculture is a foundational component of the Pender County economy, but a short drive through the immediate area provides a quick lesson in the county's economic diversity that is driven by opportunity and market forces that change over time. Although part of the agricultural economy is represented by planted fields, other parts are illustrated by metal structures, silos, and buildings such as chicken houses. In fact, two poultry operations adjacent to the site off Penderlea Highway (shown below) have roofs that look, from a distance, like solar panels.





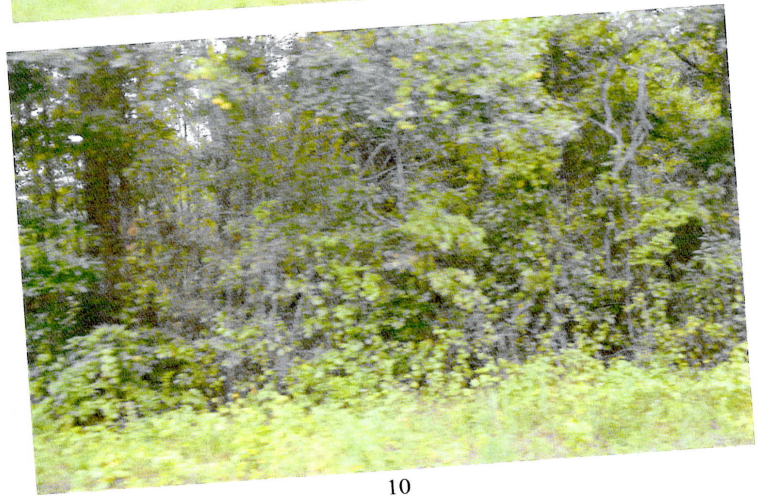




C. Buffers to Residential Uses

The site plan submitted with these materials has an aerial overlay showing adjacent uses and the vegetative buffer that will separate and shield homes and passing cars from the sight of panels. In some cases, these buffers are hundreds to thousands of feet wide, but in a few places, they will simply meet or exceed the buffers determined to be adequate by the County's ordinance. The photos below show roadside buffers along Piney Wood and Penderlea Highway. On Piney Wood, the vegetative buffer will consist of existing evergreens and undergrowth at a width more than twice county requirements.









11





The trees on this site needed to remain as buffers because of adjacency to homes or other properties will now remain, but otherwise would have been cut because that is their

essential purpose. Photos below show internal portions of the site that recently have been cut.





Kirkland Appraisals, LLC

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Raleigh, North Carolina 27603
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September 15, 2022

Mr. James Bedrin
Birch Creek Development
880 Apollo Street, Suite 333
El Segundo, CA 90245

RE: Proposed Carolina Pine Solar, Shiloh Road, Burgaw, Pender County, NC

Mr. Bedrin

At your request, I have considered the impact of a 200 MW solar farm proposed to be constructed on a portion of a parent tract of 6,580 acres located on Shiloh Road, Burgaw, Pender County, North Carolina. Specifically, I have been asked to give my professional opinion on whether the proposed solar farm will have any impact on adjoining property value and whether "the location and character of the use, if developed according to the plan as submitted and approved, will be in harmony with the area in which it is to be located."

To form an opinion on these issues, I have researched and visited existing and proposed solar farms in North Carolina, researched articles through the Appraisal Institute and other studies, and discussed the likely impact with other real estate professionals. I have not been asked to assign any value to any specific property.

This letter is a limited report of a real property appraisal consulting assignment and subject to the limiting conditions attached to this letter. My client is Birch Creek Development represented to me by Mr. James Bedrin. My findings support the conditional use application. The effective date of this consultation is September 15, 2022.

Conclusion

The matched pair analysis in the attached report shows no impact in home values due to abutting or adjoining a solar farm as well as no impact to abutting or adjacent vacant residential or agricultural land where there are sufficient setbacks and buffering as identified in the analysis. The criteria that typically correlates with downward adjustments on property values such as noise, odor, and traffic all indicate that a solar farm is a compatible use for rural/residential transition areas and that it would function in a harmonious manner with this area.

Very similar solar farms in very similar areas have been found by hundreds of towns and counties not to have a substantial injury to abutting or adjoining properties, and many of those findings of no impact have been upheld by N.C. Courts or overturned by N.C. Courts when a board found otherwise (see, for example *Dellinger v. Lincoln County*). Similar solar farms have been approved adjoining agricultural uses, schools, churches, and residential developments. Industrial uses rarely absorb negative impacts from adjoining uses. This same pattern of development has been identified in this report showing that this is not a local phenomenon, but found in Virginia, North Carolina, Maryland, Tennessee, and Florida as representative of the Mid-Atlantic and Southeastern U.S.

Based on the data and analysis in this report, it is my professional opinion that the solar farm proposed at the subject property will have no impact on the value of adjoining or abutting property and that the proposed use is in harmony with the area in which it is located. I note that some of the positive implications of a solar farm that have been expressed by people living next to solar farms include protection from future development of residential developments or other more intrusive uses, reduced dust, odor and chemicals from former farming operations, protection from light pollution at night, it's quiet, and there is no traffic.

If you have any questions please call me any time.

Sincerely,

Richard C. Kirkland, Jr., MAI
State Certified General Appraiser

Nicholas D. Kirkland
State Certified General Appraiser

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I. Proposed Project and Adjoining Uses

Proposed Use Description

This 200 MW solar farm proposed to be constructed on a portion of a parent tract of 6,580 acres located on Shiloh Road, Burgaw, Pender County, North Carolina. Adjoining land is primarily a mix of residential and agricultural uses, which is very typical of solar farm sites.

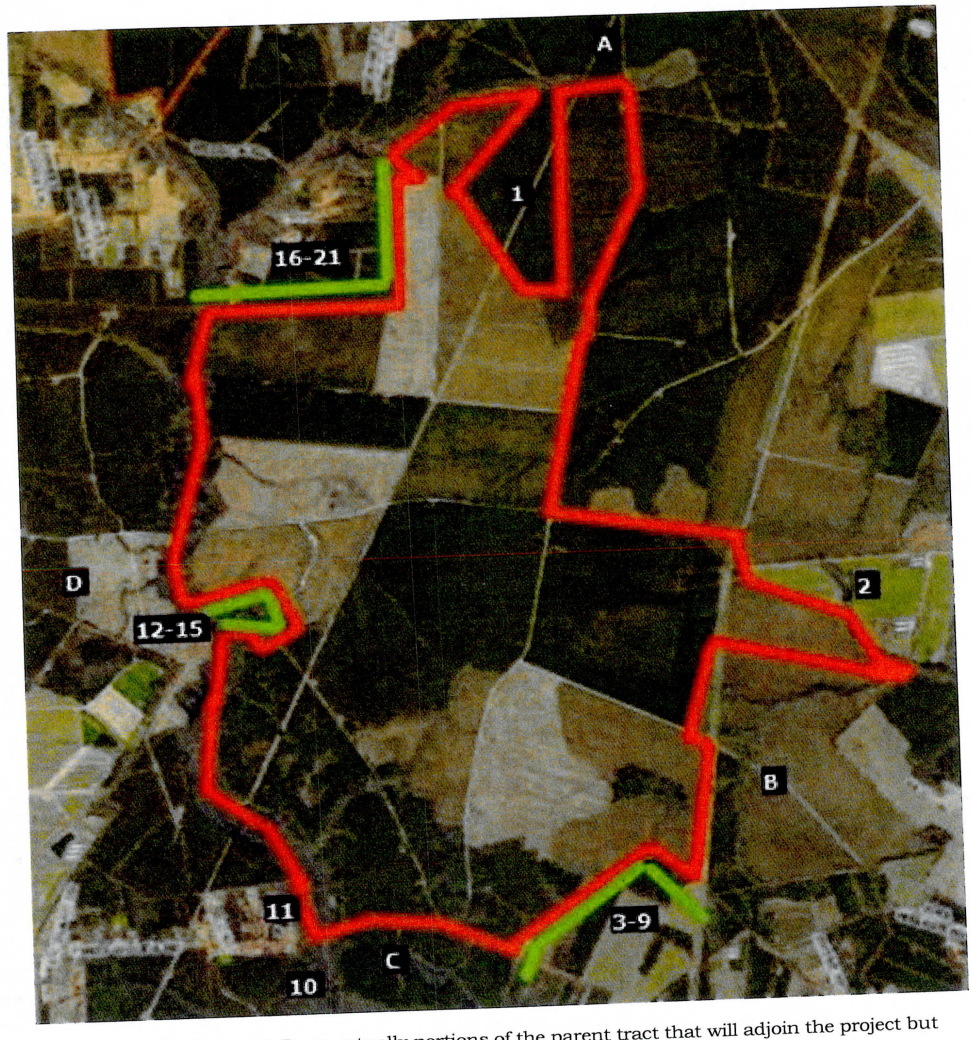
Adjoining Properties

I have considered adjoining uses and included a map to identify each parcel's location. The closest adjoining home is proposed to be 835 feet from the closest solar panel, the average distance is 1,308 feet. I only identified 3 adjoining homes.

The breakdown of those uses by acreage and number of parcels is summarized below.

Adjoining Use Breakdown

	Acreage	Parcels
Residential	23.49%	71.43%
Agricultural	72.88%	23.81%
Agri/Res	3.63%	4.76%
Total	**100.00%**	**100.00%**



The areas identified as A-D are actually portions of the parent tract that will adjoin the project but are not part of the project.

The areas identified as 1-21 are adjoining parcels with unrelated ownership to the parent tract.

#	MAP ID	Owner	GIS Data Acres	Present Use	Adjoin Acres	Adjoin Parcels	Distance (ft) Home/Panel
1	2391-22-1562-0000	Mckiney	110.00	Agricultural	17.85%	4.76%	N/A
2	2390-74-9513-0000	Barnhill	88.33	Agricultural	14.33%	4.76%	N/A
3	2299-48-6435-0000	Simpson	33.25	Agricultural	5.40%	4.76%	N/A
4	2299-49-0365-0000	Lamb	17.46	Residential	2.83%	4.76%	N/A
5	2299-38-1302-0000	Humphrey	17.50	Residential	2.84%	4.76%	N/A
6	2299-28-7325-0000	Dixon	10.22	Residential	1.66%	4.76%	N/A
7	2299-28-4242-0000	Cawthorn	7.00	Residential	1.14%	4.76%	N/A
8	2299-28-1188-0000	Dixon	4.95	Residential	0.80%	4.76%	1,030
9	2299-17-6370-0000	Wheeler	12.61	Residential	2.05%	4.76%	835
10	2289-66-9502-0000	Evergreen	123.00	Agricultural	19.96%	4.76%	N/A
11	2289-78-6820-0000	Humphrey	22.40	Agri/Res	3.63%	4.76%	2,060
12	2380-74-4394-0000	Zearfoss	12.12	Residential	1.97%	4.76%	N/A
13	2380-73-3999-0000	Messick	2.58	Residential	0.42%	4.76%	N/A
14	2380-74-1569-0000	Messick	8.49	Residential	1.38%	4.76%	N/A
15	2380-64-9831-0000	Wheeler	8.84	Residential	1.43%	4.76%	N/A
16	2381-70-9766-0000	Adohi	94.52	Agricultural	15.34%	4.76%	N/A
17	2381-91-2650-0000	Wolfe	16.51	Residential	2.68%	4.76%	N/A
18	2381-91-6997-0000	Bautista	1.75	Residential	0.28%	4.76%	N/A
19	2381-92-6194-0000	Bledose	1.32	Residential	0.21%	4.76%	N/A
20	2381-92-7450-0000	Bledose	3.70	Residential	0.60%	4.76%	N/A
21	2381-93-2012-0000	Merrit	19.70	Residential	3.20%	4.76%	N/A
		Total	**616.250**		**100.00%**	**100.00%**	1,308

Demographics Around Subject Property

I have pulled demographic data around a 1-mile, 3-mile and 5-mile radius from the middle of the project as shown on the following pages.



Housing Profile

28478, Willard, North Carolina
Ring: 1 mile radius

Prepared by Esri

Population	
2010 Total Population	13
2020 Total Population	13
2022 Total Population	13
2027 Total Population	13
2022-2027 Annual Rate	0.00%

Households	
2022 Median Household Income	$60,354
2027 Median Household Income	$60,354
2022-2027 Annual Rate	0.00%

	Census 2010		2022		2027	
Housing Units by Occupancy Status and Tenure	Number	Percent	Number	Percent	Number	Percent
Total Housing Units	7	100.0%	7	100.0%	7	100.0%
Occupied	7	100.0%	7	100.0%	8	114.3%
Owner	5	71.4%	5	71.4%	6	85.7%
Renter	2	28.6%	2	28.6%	2	28.6%
Vacant	0	0.0%	0	0.0%	0	0.0%

	2022		2027	
Owner Occupied Housing Units by Value	Number	Percent	Number	Percent
Total	5	100.0%	4	100.0%
<$50,000	0	0.0%	0	0.0%
$50,000-$99,999	1	20.0%	0	0.0%
$100,000-$149,999	2	40.0%	1	25.0%
$150,000-$199,999	1	20.0%	1	25.0%
$200,000-$249,999	0	0.0%	0	0.0%
$250,000-$299,999	0	0.0%	0	0.0%
$300,000-$399,999	1	20.0%	2	50.0%
$400,000-$499,999	0	0.0%	0	0.0%
$500,000-$749,999	0	0.0%	0	0.0%
$750,000-$999,999	0	0.0%	0	0.0%
$1,000,000-$1,499,999	0	0.0%	0	0.0%
$1,500,000-$1,999,999	0	0.0%	0	0.0%
$2,000,000+	0	0.0%	0	0.0%
Median Value	$137,500		$250,000	
Average Value	$170,000		$250,000	

Census 2010 Housing Units	Number	Percent
Total	7	100.0%
In Urbanized Areas	0	0.0%
In Urban Clusters	2	28.6%
Rural Housing Units	5	71.4%

Data Note: Persons of Hispanic Origin may be of any race.
Source: Esri forecasts for 2022 and 2027. U.S. Census Bureau 2010 decennial Census data converted by Esri into 2020 geography.

September 15, 2022

esri

Housing Profile

28478, Willard, North Carolina
Ring: 3 mile radius

Prepared by Esri

Population	
2010 Total Population	876
2020 Total Population	801
2022 Total Population	801
2027 Total Population	812
2022-2027 Annual Rate	0.27%

Households	
2022 Median Household Income	$49,416
2027 Median Household Income	$56,062
2022-2027 Annual Rate	2.56%

	Census 2010		2022		2027	
Housing Units by Occupancy Status and Tenure	Number	Percent	Number	Percent	Number	Percent
Total Housing Units	400	100.0%	381	100.0%	388	100.0%
Occupied	329	82.2%	301	79.0%	305	78.6%
Owner	255	63.8%	236	61.9%	242	62.4%
Renter	74	18.5%	65	17.1%	63	16.2%
Vacant	71	17.8%	80	21.0%	83	21.4%

	2022		2027	
Owner Occupied Housing Units by Value	Number	Percent	Number	Percent
Total	236	100.0%	243	100.0%
<$50,000	22	9.3%	13	5.3%
$50,000-$99,999	39	16.5%	17	7.0%
$100,000-$149,999	49	20.8%	24	9.9%
$150,000-$199,999	50	21.2%	39	16.0%
$200,000-$249,999	11	4.7%	14	5.8%
$250,000-$299,999	14	5.9%	25	10.3%
$300,000-$399,999	39	16.5%	84	34.6%
$400,000-$499,999	1	0.4%	4	1.6%
$500,000-$749,999	4	1.7%	10	4.1%
$750,000-$999,999	4	1.7%	8	3.3%
$1,000,000-$1,499,999	1	0.4%	2	0.8%
$1,500,000-$1,999,999	0	0.0%	0	0.0%
$2,000,000+	2	0.8%	3	1.2%
Median Value	$158,000		$279,000	
Average Value	$214,089		$309,259	

Census 2010 Housing Units	Number	Percent
Total	400	100.0%
In Urbanized Areas	0	0.0%
In Urban Clusters	51	12.8%
Rural Housing Units	349	87.2%

Data Note: Persons of Hispanic Origin may be of any race.
Source: Esri forecasts for 2022 and 2027. U.S. Census Bureau 2010 decennial Census data converted by Esri into 2020 geography.

September 15, 2022

Housing Profile

28478, Willard, North Carolina
Ring: 5 mile radius

Prepared by Esri

Population	
2010 Total Population	3,091
2020 Total Population	2,819
2022 Total Population	2,813
2027 Total Population	2,865
2022-2027 Annual Rate	0.37%

Households	
2022 Median Household Income	$48,754
2027 Median Household Income	$56,229
2022-2027 Annual Rate	2.89%

Housing Units by Occupancy Status and Tenure	Census 2010 Number	Census 2010 Percent	2022 Number	2022 Percent	2027 Number	2027 Percent
Total Housing Units	1,347	100.0%	1,284	100.0%	1,312	100.0%
Occupied	1,202	89.2%	1,104	86.0%	1,124	85.7%
Owner	894	66.4%	860	67.0%	885	67.5%
Renter	308	22.9%	244	19.0%	239	18.2%
Vacant	144	10.7%	180	14.0%	188	14.3%

Owner Occupied Housing Units by Value	2022 Number	2022 Percent	2027 Number	2027 Percent
Total	862	100.0%	886	100.0%
<$50,000	82	9.5%	46	5.2%
$50,000-$99,999	135	15.7%	57	6.4%
$100,000-$149,999	165	19.1%	79	8.9%
$150,000-$199,999	178	20.6%	137	15.5%
$200,000-$249,999	42	4.9%	52	5.9%
$250,000-$299,999	53	6.1%	91	10.3%
$300,000-$399,999	131	15.2%	277	31.3%
$400,000-$499,999	6	0.7%	15	1.7%
$500,000-$749,999	45	5.2%	85	9.6%
$750,000-$999,999	15	1.7%	31	3.5%
$1,000,000-$1,499,999	2	0.2%	5	0.6%
$1,500,000-$1,999,999	0	0.0%	0	0.0%
$2,000,000+	8	0.9%	11	1.2%
Median Value	$163,764		$289,560	
Average Value	$230,017		$328,386	

Census 2010 Housing Units	Number	Percent
Total	1,347	100.0%
In Urbanized Areas	0	0.0%
In Urban Clusters	222	16.5%
Rural Housing Units	1,124	83.4%

Data Note: Persons of Hispanic Origin may be of any race.
Source: Esri forecasts for 2022 and 2027. U.S. Census Bureau 2010 decennial Census data converted by Esri into 2020 geography.

September 15, 2022

II. Methodology and Discussion of Issues

Standards and Methodology

I conducted this analysis using the standards and practices established by the Appraisal Institute and that conform to the Uniform Standards of Professional Appraisal Practice. The analyses and methodologies contained in this report are accepted by all major lending institutions, and they are used in Virginia and across the country as the industry standard by certified appraisers conducting appraisals, market analyses, or impact studies and are considered adequate to form an opinion of the impact of a land use on neighboring properties. These standards and practices have also been accepted by the courts at the trial and appellate levels and by federal courts throughout the country as adequate to reach conclusions about the likely impact a use will have on adjoining or abutting properties.

The aforementioned standards compare property uses in the same market and generally within the same calendar year so that fluctuating markets do not alter study results. Although these standards do not require a linear study that examines adjoining property values before and after a new use (e.g. a solar farm) is developed, some of these studies do in fact employ this type of analysis. Comparative studies, as used in this report, are considered an industry standard.

The type of analysis employed is a Matched Pair Analysis or Paired Sales Analysis. This methodology is outlined in **The Appraisal of Real Estate**, Twelfth Edition by the Appraisal Institute pages 438-439. It is further detailed in **Real Estate Damages**, Third Edition, pages 33-36 by Randall Bell PhD, MAI. Paired sales analysis is used to support adjustments in appraisal work for factors ranging from the impact of having a garage, golf course view, or additional bedrooms. It is an appropriate methodology for addressing the question of impact of an adjoining solar farm. The paired sales analysis is based on the theory that when two properties are in all other respects equivalent, a single difference can be measured to indicate the difference in price between them. Dr. Bell describes it as comparing a test area to control areas. In the example provided by Dr. Bell he shows five paired sales in the test area compared to 1 to 3 sales in the control areas to determine a difference. I have used 3 sales in the control areas in my analysis for each sale developed into a matched pair.

Determining what is an External Obsolescence

An external obsolescence is a use of property that, because of its characteristics, might have a negative impact on the value of adjacent or nearby properties because of identifiable impacts. Determining whether a use would be considered an external obsolescence requires a study that isolates that use, eliminates any other causing factors, and then studies the sales of nearby versus distant comparable properties. The presence of one or a combination of key factors does not mean the use will be an external obsolescence, but a combination of these factors tends to be present when market data reflects that a use is an external obsolescence.

External obsolescence is evaluated by appraisers based on several factors. These factors include but are not limited to:

1) Traffic. Solar Farms are not traffic generators.

2) Odor. Solar farms do not produce odor.

3) Noise. Solar farms generate no noise concerns and are silent at night.

4) Environmental. Solar farms do not produce toxic or hazardous waste. Grass is maintained underneath the panels so there is minimal impervious surface area.

5) Appearance/Viewshed. This is the one area that potentially applies to solar farms. However, solar farms are generally required to provide significant setbacks and landscaping buffers to address that concern. Furthermore, any consideration of appearance of viewshed impacts has to be considered in comparison with currently allowed uses on that site. For example if a residential subdivision is already an allowed use, the question becomes in what way does the appearance impact adjoining property owners above and beyond the appearance of that allowed subdivision or other similar allowed uses.

6) Other factors. I have observed and studied many solar farms and have never observed any characteristic about such facilities that prevents or impedes neighbors from fully using their homes or farms or businesses for the use intended.

Relative Solar Farm Sizes

Solar farms have been increasing in size in recent years. Much of the data collected is from existing, older solar farms of smaller size, but there are numerous examples of sales adjoining 75 to 80 MW facilities that show a similar trend as the smaller solar farms. This is understandable given that the primary concern relative to a solar farm is the appearance or view of the solar farm, which is typically addressed through setbacks and landscaping buffers. The relevance of data from smaller solar farms to larger solar farms is due to the primary question being one of appearance. If the solar farm is properly screened, then little of the solar farm would be seen from adjoining property regardless of how many acres are involved.

Larger solar farms are often set up in sections where any adjoining owner would only be able to see a small section of the project even if there were no landscaping screen. Once a landscaping screen is in place, the primary view is effectively the same whether adjoining a 5 MW, 20 MW or 100 MW facility.

I have split out the data for the matched pairs adjoining larger solar farms only to illustrate the similarities later in this report.

Steps Involved in the Analysis

The paired sales analysis employed in this report follows the following process:

1. Identify sales of property adjoining existing solar farms.
2. Compare those sales to similar property that does not adjoin an existing solar farm.
3. Confirmation of sales are noted in the analysis write ups.
4. Distances from the homes to panels are included as a measure of the setbacks.
5. Topographic differences across the solar farms themselves are likewise noted along with demographic data for comparing similar areas.

There are a number of Sale/Resale comparables included in the write ups, but most of the data shown is for sales of homes after a solar farm has been announced (where noted) or after a solar farm has been constructed.

III. Research on Solar Farms

A. Appraisal Market Studies

I have also considered a number of impact studies completed by other appraisers as detailed below.

CohnReznick – Property Value Impact Study: Adjacent Property Values Solar Impact Study: A Study of Eight Existing Solar Facilities

Patricia McGarr, MAI, CRE, FRICS, CRA and Andrew R. Lines, MAI with CohnReznick completed an impact study for a proposed solar farm in Cheboygan County, Michigan completed on June 10, 2020. I am familiar with this study as well as a number of similar such studies completed by CohnReznick. I have not included all of these studies but I submit this one as representative of those studies.

This study addresses impacts on value from eight different solar farms in Michigan, Minnesota, Indiana, Illinois, Virginia and North Carolina. These solar farms are 19.6 MW, 100 MW, 11.9 MW, 23 MW, 71 MW, 61 MW, 40 MW, and 19 MW for a range from 11.9 MW to 100 MW with an average of 31 MW and a median of 31.5 MW. They analyzed a total of 24 adjoining property sales in the Test Area and 81 comparable sales in the Control Area over a five-year period.

The conclusion of this study is that there is no evidence of any negative impact on adjoining property values based on sales prices, conditions of sales, overall marketability, potential for new development or rate of appreciation.

Christian P. Kaila & Associates – Property Impact Analysis – Proposed Solar Power Plant Guthrie Road, Stuarts Draft, Augusta County, Virginia

Christian P. Kaila, MAI, SRA and George J. Finley, MAI developed an impact study as referenced above dated June 16, 2020. This was for a proposed 83 MW facility on 886 acres.

Mr. Kaila interviewed appraisers who had conducted studies and reviewed university studies and discussed the comparable impacts of other development that was allowed in the area for a comparative analysis of other impacts that could impact viewshed based on existing allowed uses for the site. He also discussed in detail the various other impacts that could cause a negative impact and how solar farms do not have such characteristics.

Mr. Kaila also interviewed county planners and real estate assessors in eight different Virginia counties with none of the assessor's identifying any negative impacts observed for existing solar projects.

Mr. Kaila concludes on a finding of no impact on property values adjoining the indicated solar farm.

Fred Beck, MAI, CCIM – Impact Analysis in Lincoln County 2013

Mr. Fred Beck, MAI, CCIM completed an impact analysis in 2013 for a proposed solar farm that concluded on a negative impact on value. That report relied on a single cancelled contract for an adjoining parcel where the contracted buyers indicated that the solar farm was the reason for the cancellation. It also relied on the activities of an assessment impact that was applied in a nearby county.

Mr. Beck was interviewed as part of the Christian Kalia study noted above. From that I quote "Mr. Beck concluded on no effect on moderate priced homes, and only a 5% change in his limited

research of higher priced homes. His one sale that fell through is hardly a reliable sample. It also was misleading on Mr. Beck's part to report the lower re-assessments since the primary cause of the re-assessments were based on the County Official, who lived adjacent to the solar farm, appeal to the assessor for reductions with his own home." In that Clay County Case study the noted lack of lot sales after announcement of the solar farm also coincided with the recession in 2008/2009 and lack of lot sales effectively defined that area during that time.

I further note, that I was present at the hearing where Mr. Beck presented these findings and the predominance of his argument before the Lincoln County Board of Commissioner's was based on the one cancelled sale as well as a matched pair analysis of high-end homes adjoining a four-story call center. He hypothesized that a similar impact from that example could be compared to being adjacent solar farm without explaining the significant difference in view, setbacks, landscaping, traffic, light, and noise. Furthermore, Mr. Beck did have matched pairs adjoining a solar farm in his study that he put in the back of his report and then ignored as they showed no impact on property value.

Also noted in the Christian Kalia interview notes is a response from Mr. Beck indicating that in his opinion "the homes were higher priced homes and had full view of the solar farm." Based on a description of screening so that "the solar farm would not be in full view to adjoining property owners. Mr. Beck said in that case, he would not see any drop in property value."

NorthStar Appraisal Company – Impact Analysis for Nichomus Run Solar, Pilesgrove, NJ, September 16, 2020

Mr. William J. Sapio, MAI with NorthStar Appraisal Company considered a matched pair analysis for the potential impact on adjoining property values to this proposed 150 MW solar farm. Mr. Sapio considered sales activity in a subdivision known as Point of Woods in South Brunswick Township and identified two recent new homes that were constructed and sold adjoining a 13 MW solar farm and compared them to similar homes in that subdivision that did not adjoin the solar farm. These homes sold in the $1,290,450 to $1,336,613 price range and these homes were roughly 200 feet from the closest solar panel.

Based on this analysis, he concluded that the adjoining solar farm had no impact on adjoining property value.

Mary McClinton Clay, MAI – McCracken County Solar Project Value Impact Report, July 10, 2021

Ms. Mary Clay, MAI reviewed a report by Kirkland Appraisals in this case and also provided a differing opinion of impact. She cites a number of other appraisal studies and interestingly finds fault with heavily researched opinions, while praising the results of poorly researched studies that found the opposing view.

Her analysis includes details from solar farms that show no impact on value, but she dismisses those.

She cites the University of Texas study noted later in this report, but she cites only isolated portions of that study to conclude the opposite of what that study specifically concludes.

She cites the University of Rhode Island study noted alter in this report, but specifically excludes the conclusion of that study that in rural areas they found no impact on property value.

She cites lot sales near Spotsylvania Solar without confirming the purchase prices with brokers as indicative of market impact and has made no attempt to compare lot prices that are contemporaneous. In her 5 lot sales that she identifies, all of the lot prices decline with time from

2015 through 2019. This includes the 3 lot sales prior to the approval of the solar farm. The decrease in lot values shown in this chart are more indicative of the trend in the market, than of any impact related to the solar farm. Otherwise, how does she explain the drop in price from 2015 to 2017 prior to the solar farm approval.

She considers data at McBride Place Solar Farm and does a sale/resale analysis based on Zillow Home Value Index, which is not a reliable indication for appreciation in the market. She then adjusted her initial sales prior to the solar farm over 7 years to determine what she believes the home should have appreciated by and then compares that to an actual sale. She has run no tests or any analysis to show that the appreciation rates she is using are consistent with the market but more importantly she has not attempted to confirm any of these sales with market participants. I have spoken with brokers active in the sales that she cites and they have all indicated that the solar farm was not a negative factor in marketing or selling those homes.

She has considered lot sales at Sunshine Farms in Grandy, NC. She indicates that the lots next to the solar farm are selling for less than lots not near the solar farm, but she is actually using lot sales next to the solar farm prior to the solar farm being approved. She also ignores recent home sales adjoining this solar farm after it was built that show no impact on property value.

She also notes a couple of situations where solar developers have purchased adjoining homes and resold them or where a neighbor agreement was paid as proof of a negative impact on property value. Given that there are over 2,500 solar farms in the USA as of 2018 according to the U.S. Energy Information Administration and there are only a handful of such examples, this is clearly not an industry standard but a business decision. Furthermore, solar developers are not in the business of flipping homes and are in a position very similar to a bank that acquires a home as OREO (Other Real Estate Owned), where homes are frequently sold at discounted prices, not because of any drop in value, but because they are not a typically motivated seller. Market value requires an analysis of a typically motivated buyer and seller. So these are not good indicators of market value impacts.

The comments throughout this study are heavy in adjectives, avoids stating facts contrary to the conclusion and shows a strong selection bias.

Conclusion of Impact Studies

Of the five studies noted two included actual sales data to derive an opinion of no impact on value. The two studies to conclude on a negative impact includes the Fred Beck study based on no actual sales data, and he has since indicated that with landscaping screens he would not conclude on a negative impact. The other study by Mary Clay shows improper adjustments for time, a lack of confirmation of sales comparables, and exclusion of data that does not support her position.

I have relied on these studies as additional support for the findings in this impact analysis.

B. Articles

I have also considered a number of articles on this subject as well as conclusions and analysis as noted below.

Farm Journal Guest Editor, March 22, 2021 – Solar's Impact on Rural Property Values

Andy Ames, ASFMRA (American Society of Farm Managers and Rural Appraisers) published this article that includes a discussion of his survey of appraisers and studies on the question of property value related to solar farms. He discusses the university studies that I have cited as well as Patricia McGarr, MAI.

He also discusses the findings of Donald A. Fisher, ARA, who served six years at the Chair of the ASFMRA's National Appraisal Review Committee. He is also the Executive Vice President of the CNY Pomeroy Appraiser and has conducted several market studies on solar farms and property impact. He is quoted in the article as saying, "Most of the locations were in either suburban or rural areas, and all of those studies found either a neutral impact, or ironically, a positive impact, where values on properties after installation of solar farms went up higher than time trends."

Howard Halderman, AFM, President and CEO of Halderman Real Estate and Farm Management attended the ASFMRA solar talk hosted by the Indiana Chapter of the ASFMRA and he concludes that other rural properties would likely see no impact and farmers and landowners shown even consider possible benefits. "In some cases, farmers who rent land to a solar company will insure the viability of their farming operation for a longer time period. This makes them better long-term tenants or land buyers so one can argue that higher rents and land values will follow due to the positive impact the solar leases offer."

National Renewable Energy Laboratory – Top Five Large-Scale Solar Myths, February 3, 2016

Megan Day reports form NREL regarding a number of concerns neighbors often express. Myth #4 regarding property value impacts addresses specifically the numerous studies on wind farms that show no impact on property value and that solar farms have a significantly reduced visual impact from wind farms. She highlights that the appearance can be addressed through mitigation measures to reduce visual impacts of solar farms through vegetative screening. Such mitigations are not available to wind farms given the height of the windmills and again, those studies show no impact on value adjoining wind farms.

North Carolina State University: NC Clean Energy Technology Center White Paper: Balancing Agricultural Productivity with Ground-Based Solar Photovoltaic (PV) Development (Version 2), May 2019

Tommy Cleveland and David Sarkisian wrote a white paper for NCSU NC Clean Energy Technology Center regarding the potential impacts to agricultural productivity from a solar farm use. I have interviewed Tommy Cleveland on numerous occasions and I have also heard him speak on these issues at length as well. He addresses many of the common questions regarding how solar farms work and a detailed explanation of how solar farms do not cause significant impacts on the soils, erosion and other such concerns. This is a heavily researched paper with the references included.

North Carolina State University: NC Clean Energy Technology Center White Paper: Health and Safety Impacts of Solar Photovoltaics, May 2017

Tommy Cleveland wrote a white paper for NCSU NC Clean Energy Technology Center regarding the health and safety impacts to address common questions and concerns related to solar farms. This is a heavily researched white paper addressing questions ranging from EMFs, fire safety, as well as vegetation control and the breakdown of how a solar farm works.

C. Broker Commentary

In the process of working up the matched pairs used later in this report, I have collected comments from brokers who have actually sold homes adjoining solar farms indicating that the solar farm had no impact on the marketing, timing, or sales price for the adjoining homes. I have comments from 12 such brokers within this report including brokers from Kentucky, Virginia, Tennessee, and North Carolina.

I have additional commentary from other states including New Jersey and Michigan that provide the same conclusion.

IV. University Studies

I have also considered the following studies completed by four different universities related to solar farms and impacts on property values.

A. *University of Texas at Austin, May 2018*

An Exploration of Property-Value Impacts Near Utility-Scale Solar Installations

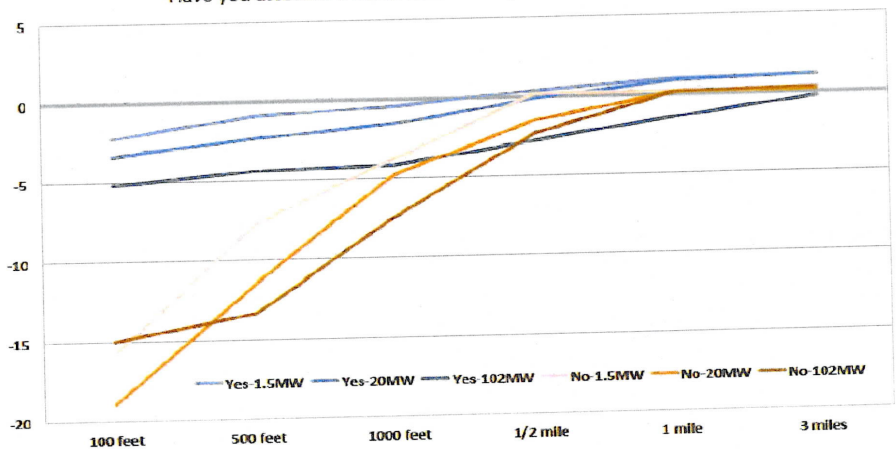
This study considers solar farms from two angles. First it looks at where solar farms are being located and concludes that they are being located primarily in low density residential areas where there are fewer homes than in urban or suburban areas.

The second part is more applicable in that they conducted a survey of appraisers/assessors on their opinions of the possible impacts of proximity to a solar farm. They consider the question in terms of size of the adjoining solar farm and how close the adjoining home is to the solar farm. I am very familiar with this part of the study as I was interviewed by the researchers multiple times as they were developing this. One very important question that they ask within the survey is very illustrative. They asked if the appraiser being surveyed had ever appraised a property next to a solar farm. There is a very noticeable divide in the answers provided by appraisers who have experience appraising property next to a solar farm versus appraisers who self-identify as having no experience or knowledge related to that use.

On Page 16 of that study they have a chart showing the responses from appraisers related to proximity to a facility and size of the facility, but they separate the answers as shown below with appraisers with experience in appraising properties next to a solar farm shown in blue and those inexperienced shown in brown. Even within 100 feet of a 102 MW facility the response from experienced appraisers were -5% at most on impact. While inexperienced appraisers came up with significantly higher impacts. This chart clearly shows that an uninformed response widely diverges from the sales data available on this subject.

Chart B.2 - Estimates of Property Value Impacts (%) by Size of Facility, Distance, & Respondent Type

Have you assessed a home near a utility-scale solar installation?



Furthermore, the question cited above does not consider any mitigating factors such as landscaping buffers or screens which would presumably reduce the minor impacts noted by experienced appraisers on this subject.

The conclusion of the researchers is shown on Page 23 indicated that "Results from our survey of residential home assessors show that the majority of respondents believe that proximity to a solar installation has either no impact or a positive impact on home values."

This analysis supports the conclusion of this report that the data supports no impact on adjoining property values.

B. University of Rhode Island, September 2020

Property Value Impacts of Commercial-Scale Solar Energy in Massachusetts and Rhode Island

The University of Rhode Island published a study entitled **Property Value Impacts of Commercial-Scale Solar Energy in Massachusetts and Rhode Island** on September 29, 2020 with lead researchers being Vasundhara Gaur and Corey Lang. I have read that study and interviewed Mr. Corey Lang related to that study. This study is often cited by opponents of solar farms but the findings of that study have some very specific caveats according to the report itself as well as Mr. Lang from the interview.

While that study does state in the Abstract that they found depreciation of homes within 1-mile of a solar farm, that impact is limited to non-rural locations. On Pages 16-18 of that study under Section 5.3 Heterogeneity in treatment effect they indicate that the impact that they found was limited to non-rural locations with the impact in rural locations effectively being zero. For the study they defined "rural" as a municipality/township with less than 850 population per square mile.

They further tested the robustness of that finding and even in areas up to 2,000 population per square mile they found no statistically significant data to suggest a negative impact. They have not specifically defined a point at which they found negative impacts to begin, as the sensitivity study stopped checking at the 2,000-population dataset.

Where they did find negative impacts was in high population density areas that was largely a factor of running the study in Massachusetts and Rhode Island which the study specifically cites as being the 2nd and 3rd most population dense states in the USA. Mr. Lang in conversation as well as in recorded presentations has indicated that the impact in these heavily populated areas may reflect a loss in value due to the scarce greenery in those areas and not specifically related to the solar farm itself. In other words, any development of that site might have a similar impact on property value.

Based on this study I have checked the population for the Union Township of Pender County. Union Township has a population of 3,860 people for 2021 based on hometownlocator.com and a total area of 89.76 square miles for an indication population density of 43 people per square mile. This is well below the threshold indicated by the Rhode Island Study for a finding of no impact on property value.

I therefore conclude that the Rhode Island Study supports the indication of no impact on adjoining properties for the proposed solar farm project.

Township Of Union Data & Demographics (As of July 1, 2022)

POPULATION	
Total Population	3,860 (100%)
Population in Households	3,849 (99.7%)
Population in Families	3,145 (81.5%)
Population in Group Quarters[1]	11 (0.3%)
Population Density	43
Diversity Index[2]	58

HOUSING	
Total HU (Housing Units)	1,890 (100%)
Owner Occupied HU	1,240 (65.6%)
Renter Occupied HU	350 (18.5%)
Vacant Housing Units	300 (15.9%)
Median Home Value	$146,362
Average Home Value	$204,815
Housing Affordability Index[3]	169

INCOME	
Median Household Income	$50,106
Average Household Income	$67,727
% of Income for Mortgage[4]	15%
Per Capita Income	$27,655
Wealth Index[5]	57

HOUSEHOLDS	
Total Households	1,590
Average Household Size	2.42
Family Households	1,054
Average Family Size	3

C. *Georgia Institute of Technology, October 2020*

Utility-Scale Solar Farms and Agricultural Land Values

This study was completed by Nino Abashidze as Post-Doctoral Research Associate of Health Economics and Analytics Labe (HEAL), School of Economics, Georgia Institute of Technology. This research was started at North Carolina State University and analyzes properties near 451 utility-

scale ground-mount solar installations in NC that generate at least 1 MW of electric power. A total of 1,676 land sales within 5-miles of solar farms were considered in the analysis.

This analysis concludes on Page 21 of the study "Although there are no direct effects of solar farms on nearby agricultural land values, we do find evidence that suggests construction of a solar farm may create a small, positive, option -value for land owners that is capitalized into land prices. Specifically, after construction of a nearby solar farm, we find that agricultural land that is also located near transmission infrastructure may increase modestly in value."

This study supports a finding of no impact on adjoining agricultural property values and in some cases could support a modest increase in value.

D. Master's Thesis: ECU by Zachary Dickerson July 2018

A Solar Farm in *My* Backyard? Resident Perspectives of Utility-Scale Solar in Eastern North Carolina

This study was completed as part of a Master of Science in Geography Master's Thesis by Zachary Dickerson in July 2018. This study sets out to address three questions:

1. Are there different aspects that affect resident satisfaction regarding solar farms?
2. Are there variations in satisfaction for residents among different geographic settings, e.g. neighborhoods adjacent to the solar farms or distances from the solar farms?
3. How can insight from both the utility and planning sectors, combined with knowledge gained from residents, fill gaps in communication and policy writing in regard to solar farms?

This was done through survey and interview with adjacent and nearby neighbors of existing solar farms. The positive to neutral comments regarding the solar farms were significantly higher than negative. The researcher specifically indicates on Page 46 "The results show that respondents generally do not believe the solar farms pose a threat to their property values."

The most negative comments regarding the solar farms were about the lack of information about the approval process and the solar farm project prior to construction.

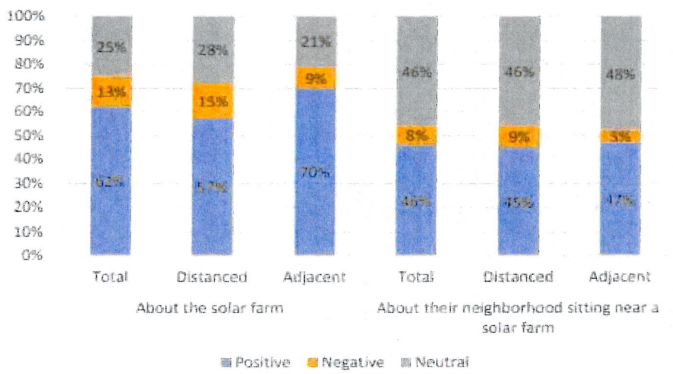


Figure 11: Residents' positive/negative word choices by geographic setting for both questions

V. Assessor Surveys

I have attempted to contact all of the assessor departments in North Carolina to determine how local assessors are handling solar farms and adjoining property values. I have spoken personally with a number of assessors, but much of this data was obtained via email. I have 39 counties in NC that have both responded to these questions on property value and also have solar farms in that county. I have excluded responses from assessors from counties where there are no current solar farms.

As can be seen in the chart below, of the 39 responses all of the responses have indicated that they make no adjustment to properties adjoining solar farms. Several assessors indicated that it would require an adjoining property owner to appeal their property value with data showing a negative impact before they would make any adjustment and to date they have not had that happen.

I also point out specifically Clay County. I spoke with the assessor there specifically about adjustments that were applied to some properties near a solar farm back in 2008/2011. She was unaware of the details of that event as she was not in this position at that time. As discussed earlier in this report the lower re-assessments at that solar farm were based on a County Official, who owned property adjacent to the solar farm, who made an appeal to the assessor for reductions for his own property. The noted lack of lot sales after announcement of the solar farm however coincided with the recession in 2009 and lack of lot sales effectively defined that area during that time, but without relying on any data the assessor made that change in that time frame based on conversations with the assessor. Since then, Clay County has confirmed that they do not currently make any changes to adjoining property values and the current county assessor was not even aware that they had in the past done so.

NC Assessor Survey on Solar Farm Property Value Impacts

County	Assessor's Name	Number of Farms	Change in Adjacent Property Value
Alexander	Doug Fox	3	No
Buncombe	Lisa Kirbo	1	No
Burke	Daniel Isenhour	3, 2 on 1 parcel, 1 on 3 parcels	No
Cabarrus	Justin	less than 10, more in the works	No
Caldwell	Monty Woods	3 small	No, but will look at data in 2025
Catawba	Lori Ray	14	No
Chatham	Jenny Williams	13	No
Cherokee	Kathy Killian	9	No
Chowan	Melissa Radke	3, I almost operational	No
Clay	Bonnie L. Lyvers		No
Davidson	Libby	1	No
Duplin	Gary Rose	34, 2 more in planning	No
Franklin	Marion Cascone	11	No
Gaston	Traci Hovis	3	No
Gates	Chris Hill	3	No
Granville	Jenny Griffin	8	No
Halifax	C. Shane Lynch	Multiple	No
Hoke	Mandi Davis	4	No
Hyde	Donnie Shumate	1 to supplement egg processing plant	No
Iredell	Wes Long	2, 3 others approved	No
Lee	Lisa Faulkner	8	No
Lincoln	Susan Sain	2	No
Moore	Michael Howery	10	No
New Hanover	Rhonda Garner	35	No
Orange	Chad Phillip	2 or 7 depending on breakdown	No
Pender	Kayla Bolick Futrell	6	No
Person	Russell Jones	9	No
Pitt	Russell D. Hill	8, 1 in planning	No
Randolph	Mark Frick	19	No
Rockingham	Mark C McClintock	6	No
Rutherford	Kim Aldridge	20	No
Sampson	Jim Johnson	9, 1 in construction	No
Scotland	James Brown	15, 1 in process	No
Stokes	Richard Brim	2	No
Surry	Penny Harrison	4, 2 more in process	No
Union	Robin E. Merry	6	No
Vance	Cathy E. Renn	13	No
Warren	John Preston	7	No
Wayne	Alan Lumpkin	32	No
Wilson	William (Witt) Putney	~16	No, mass appraisal standards applied

Responses: 39
Negative Impact on Adjoining Value = Yes: 0
Negative Impact on Adjoining Value = No: 39

I have also been working on a survey of Virginia Assessors regarding property values related to solar farms and whether or not the local assessors have found any data to support any changes to value on property adjoining solar farms. In this process I have contacted every assessor's office by email and I have received responses by email and by phone from a number of these counties. Many of the counties in Virginia rely on outside firms to assist in gathering data for the assessments and where that is the case, we have contacted the outside firms regarding the question of whether or not the assessors are currently making any adjustments to properties adjoining solar farms.

I currently have response from 16 counties that have solar farms in them and of those 16 responses none of the assessors are currently applying a negative impact on property value. One response suggested that adjoining values may go up.

I did speak with Randy Willis with Pearson Assessors. His company assists in the assessments in many of the counties south of Richmond. He indicated that they had found no data to suggest a

negative impact on property value and they have looked as they were concerned about that issue. He indicated that they would make no negative impact adjustments and that he recognizes that there are a number of agricultural adjoining uses that have a greater impact on adjoining properties in terms of noise, dust and odor than a solar farm would have. He did indicate that there could be situations where an individual home might have a greater visual impact and those should be looked at on a case-by-case basis, but he also agreed that many allowed agricultural uses could have similar visual impacts on such properties as well.

VIRGINIA Commissioner of the Revenue

County	Assessor Name	Number of Farms in Operation	Change in adjacent property value
Appomattox	Sara Henderson	1, plus one in process	No
Augusta	W. Jean Shrewsbury	no operational	No
Buckingham	Stephanie D. Love	1	No
Charlotte	Naisha Pridgen Carter	1, several others in the works	No
Clarke	Donna Peake	1	No
Frederick	Seth T. Thatcher	none, 2 appoved for 2022	No, assuming compatible with rural area
Goochland	Mary Ann Davis		No
Hanover	Ed Burnett	1	No
Louisa	Stacey C. Fletcher	2 operational by end of year	No, only if supported by market data
Mecklenburg	Joseph E. "Ed" Taylor		No
Nottoway	Randy Willis with Pearson Assessors		No
Powhatan	Charles Everest	2 approved, 1 built	Likely increase in value
Rockingham	Dan Cullers	no operational	Likely no
Southampton	Amy B. Carr	1	Not normally
Surry	Jonathan F. Judkins	1	None at this time
Westmoreland	William K. Hoover	4	No

Responses: 16
Negative Impact on Adjoining Value = Yes: 0
Negative Impact on Adjoining Value = No: 16

VI. Market Analysis of the Impact on Value from Solar Farms

I have researched hundreds of solar farms in numerous states to determine the impact of these facilities on the value of adjoining property. This research has primarily been in North Carolina, but I have also conducted market impact analyses in Virginia, South Carolina, Tennessee, Texas, Oregon, Mississippi, Maryland, New York, California, Missouri, Florida, Montana, Georgia, Louisiana, and New Jersey.

Wherever I have looked at solar farms, I have derived a breakdown of the adjoining uses to show what adjoining uses are typical for solar farms and what uses would likely be considered consistent with a solar farm use similar to the breakdown that I've shown for the subject property on the previous page. A summary showing the results of compiling that data over hundreds of solar farms is shown later in the Scope of Research section of this report.

I also consider whether the properties adjoining a solar farm in one location have characteristics similar to the properties abutting or adjoining the proposed site so that I can make an assessment of market impact on each proposed site. Notably, in most cases solar farms are placed in areas very similar to the site in question, which is surrounded by low density residential and agricultural uses. In my over 750 studies, I have found a striking repetition of that same typical adjoining use mix in over 90% of the solar farms I have looked at. Matched pair results in multiple states are strikingly similar, and all indicate that solar farms – which generate very little traffic, and do not generate noise, dust or have other harmful effects – do not negatively impact the value of adjoining or abutting properties.

On the following pages I have considered matched pair data specific to North Carolina.

In the next section I have considered matched pair data throughout the Southeast of the United States as being the most similar states that would most readily compare to North Carolina. This includes data from Florida, Georgia, South Carolina, North Carolina, Tennessee, Virginia and Maryland. I focused on projects of 5 MW and larger though I have significant supplemental data on solar farms just smaller than that in North Carolina that show similar results. This data is available in my files.

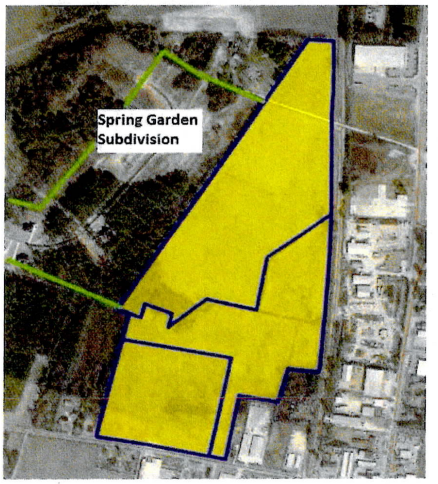
I have additional supporting information from other states in my files that show a consistent pattern across the United States, but again, I have focused on the Southeast in this analysis.

A. North Carolina Data

The following pages detail the matched pairs and how they were derived.

1. Matched Pair – AM Best Solar Farm, Goldsboro, NC

This 5 MW solar farm adjoins Spring Garden Subdivision which had new homes and lots available for new construction during the approval and construction of the solar farm. The recent home sales have ranged from $200,000 to $250,000. This subdivision sold out the last homes in late 2014. The solar farm is clearly visible particularly along the north end of this street where there is only a thin line of trees separating the solar farm from the single-family homes.



Homes backing up to the solar farm are selling at the same price for the same floor plan as the homes that do not back up to the solar farm in this subdivision. According to the builder, the solar farm has been a complete non-factor. Not only do the sales show no difference in the price paid for the various homes adjoining the solar farm versus not adjoining the solar farm, but there are actually more recent sales along the solar farm than not. There is no impact on the sellout rate, or time to sell for the homes adjoining the solar farm.

I spoke with a number of owners who adjoin the solar farm and none of them expressed any concern over the solar farm impacting their property value.

The data presented on the following page shows multiple homes that have sold in 2013 and 2014 adjoining the solar farm at prices similar to those not along the solar farm. These series of sales indicate that the solar farm has no impact on the adjoining residential use.

The homes that were marketed at Spring Garden are shown below.



The homes adjoining the solar farm are considered to have a light landscaping screen as it is a narrow row of existing pine trees supplemented with evergreen plantings.

Matched Pairs
As of Date: 9/3/2014

Adjoining Sales After Solar Farm Completed

TAX ID	Owner	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	Style
3600195570	Helm	0.76	Sep-13	$250,000	2013	3,292	$75.94	2 Story
3600195361	Leak	1.49	Sep-13	$260,000	2013	3,652	$71.19	2 Story
3600199891	McBrayer	2.24	Jul-14	$250,000	2014	3,292	$75.94	2 Story
3600198632	Foresman	1.13	Aug-14	$253,000	2014	3,400	$74.41	2 Story
3600196656	Hinson	0.75	Dec-13	$255,000	2013	3,453	$73.85	2 Story
	Average	1.27		$253,600	2013.4	3,418	$74.27	
	Median	1.13		$253,000	2013	3,400	$74.41	

Adjoining Sales After Solar Farm Announced

TAX ID	Owner	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	Style
0	Feddersen	1.56	Feb-13	$247,000	2012	3,427	$72.07	Ranch
0	Gentry	1.42	Apr-13	$245,000	2013	3,400	$72.06	2 Story
	Average	1.49		$246,000	2012.5	3,414	$72.07	
	Median	1.49		$246,000	2012.5	3,414	$72.07	

Adjoining Sales Before Solar Farm Announced

TAX ID	Owner	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	Style
3600183905	Carter	1.57	Dec-12	$240,000	2012	3,347	$71.71	1.5 Story
3600193097	Kelly	1.61	Sep-12	$198,000	2012	2,532	$78.20	2 Story
3600194189	Hadwan	1.55	Nov-12	$240,000	2012	3,433	$69.91	1.5 Story
	Average	1.59		$219,000	2012	2,940	$74.95	
	Median	1.59		$219,000	2012	2,940	$74.95	

Nearby Sales After Solar Farm Completed

TAX ID	Owner	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	Style
3600193710	Barnes	1.12	Oct-13	$248,000	2013	3,400	$72.94	2 Story
3601105180	Nackley	0.95	Dec-13	$253,000	2013	3,400	$74.41	2 Story
3600192528	Mattheis	1.12	Oct-13	$238,000	2013	3,194	$74.51	2 Story
3600198928	Beckman	0.93	Mar-14	$250,000	2014	3,292	$75.94	2 Story
3600196965	Hough	0.81	Jun-14	$224,000	2014	2,434	$92.03	2 Story
3600193914	Preskitt	0.67	Jun-14	$242,000	2014	2,825	$85.66	2 Story
3600194813	Bordner	0.91	Apr-14	$258,000	2014	3,511	$73.48	2 Story
3601104147	Shaffer	0.73	Apr-14	$255,000	2014	3,453	$73.85	2 Story
	Average	0.91		$246,000	2013.625	3,189	$77.85	
	Median	0.92		$249,000	2014	3,346	$74.46	

Nearby Sales Before Solar Farm Announced

TAX ID	Owner	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	Style
3600191437	Thomas	1.12	Sep-12	$225,000	2012	3,276	$68.68	2 Story
3600087968	Lilley	1.15	Jan-13	$238,000	2012	3,421	$69.57	1.5 Story
3600087654	Burke	1.26	Sep-12	$240,000	2012	3,543	$67.74	2 Story
3600088796	Hobbs	0.73	Sep-12	$228,000	2012	3,254	$70.07	2 Story
	Average	1.07		$232,750	2012	3,374	$69.01	
	Median	1.14		$233,000	2012	3,349	$69.13	

Matched Pair Summary

	Adjoins Solar Farm		Nearby Solar Farm	
	Average	**Median**	**Average**	**Median**
Sales Price	$253,600	$253,000	$246,000	$249,000
Year Built	2013	2013	2014	2014
Size	3,418	3,400	3,189	3,346
Price/SF	$74.27	$74.41	$77.85	$74.46

Percentage Differences

Median Price	-2%
Median Size	-2%
Median Price/SF	0%

I note that 2308 Granville Drive sold again in November 2015 for $267,500, or $7,500 more than when it was purchased new from the builder two years earlier (Tax ID 3600195361, Owner: Leak). The neighborhood is clearly showing appreciation for homes adjoining the solar farm.

The Median Price is the best indicator to follow in any analysis as it avoids outlying samples that would otherwise skew the results. The median sizes and median prices are all consistent throughout the sales both before and after the solar farm whether you look at sites adjoining or nearby to the solar farm. The average size for the homes nearby the solar farm shows a smaller building size and a higher price per square foot. This reflects a common occurrence in real estate where the price per square foot goes up as the size goes down. So even comparing averages the indication is for no impact, but I rely on the median rates as the most reliable indication for any such analysis.

I have also considered four more recent resales of homes in this community as shown on the following page. These comparable sales adjoin the solar farm at distances ranging from 315 to 400 feet. The matched pairs show a range from -9% to +6%. The range of the average difference is -2% to +1% with an average of 0% and a median of +0.5%. These comparable sales support a finding of no impact on property value.

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Distance
	Adjoins	103 Granville Pl	1.42	7/27/2018	$265,000	2013	3,292	$80.50	4/3.5	2-Car	2-Story		385
	Not	2219 Granville	1.15	1/8/2018	$260,000	2012	3,292	$78.98	4/3.5	2-Car	2-Story		
	Not	634 Friendly	0.96	7/31/2019	$267,000	2018	3,053	$87.45	4/4.5	2-Car	2-Story		
	Not	2403 Granville	0.69	4/23/2019	$265,000	2014	2,816	$94.11	5/3.5	2-Car	2-Story		

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	103 Granville Pl								$265,000		-2%
Not	2219 Granville	$4,382		$1,300	$0				$265,682	0%	
Not	634 Friendly	-$8,303		-$6,675	$16,721	-$10,000			$258,744	2%	
Not	2403 Granville	-$6,029		-$1,325	$31,356				$289,001	-9%	

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Distance
	Adjoins	104 Erin	2.24	6/19/2017	$280,000	2014	3,549	$78.90	5/3.5	2-Car	2-Story		315
	Not	2219 Granville	1.15	1/8/2018	$260,000	2012	3,292	$78.98	4/3.5	2-Car	2-Story		
	Not	634 Friendly	0.96	7/31/2019	$267,000	2018	3,053	$87.45	4/4.5	2-Car	2-Story		
	Not	2403 Granville	0.69	4/23/2019	$265,000	2014	2,816	$94.11	5/3.5	2-Car	2-Story		

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	104 Erin								$280,000		0%
Not	2219 Granville	-$4,448		$2,600	$16,238				$274,390	2%	
Not	634 Friendly	-$17,370		-$5,340	$34,702	-$10,000			$268,992	4%	
Not	2403 Granville	-$15,029		$0	$48,285				$298,256	-7%	

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Distance
	Adjoins	2312 Granville	0.75	5/1/2018	$284,900	2013	3,453	$82.51	5/3.5	2-Car	2-Story		400
	Not	2219 Granville	1.15	1/8/2018	$260,000	2012	3,292	$78.98	4/3.5	2-Car	2-Story		
	Not	634 Friendly	0.96	7/31/2019	$267,000	2018	3,053	$87.45	4/4.5	2-Car	2-Story		
	Not	2403 Granville	0.69	4/23/2019	$265,000	2014	2,816	$94.11	5/3.5	2-Car	2-Story		

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	2312 Granville								$284,900		1%
Not	2219 Granville	$2,476		$1,300	$10,173				$273,948	4%	
Not	634 Friendly	-$10,260		-$6,675	$27,986	-$10,000			$268,051	6%	
Not	2403 Granville	-$7,972		-$1,325	$47,956				$303,659	-7%	

Adjoining Residential Sales After Solar Farm Approved

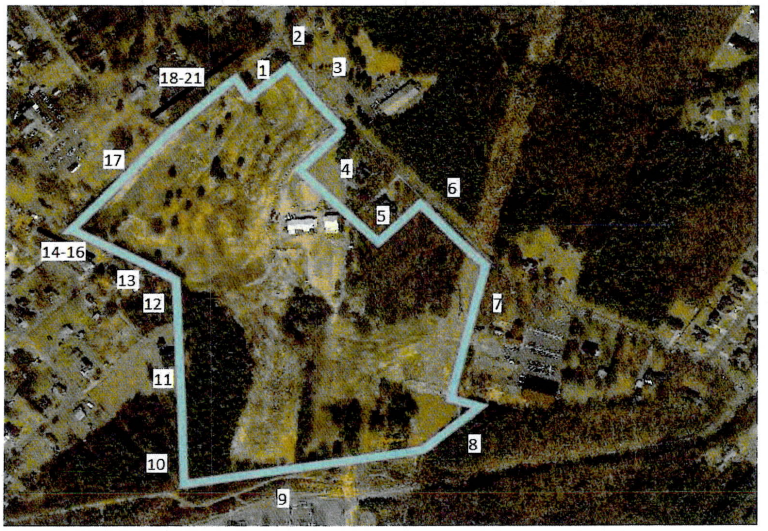
Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Distance
	Adjoins	2310 Granville	0.76	5/14/2019	$280,000	2013	3,292	$85.05	5/3.5	2-Car	2-Story		400
	Not	2219 Granville	1.15	1/8/2018	$260,000	2012	3,292	$78.98	4/3.5	2-Car	2-Story		
	Not	634 Friendly	0.96	7/31/2019	$267,000	2018	3,053	$87.45	4/4.5	2-Car	2-Story		
	Not	2403 Granville	0.69	4/23/2019	$265,000	2014	2,816	$94.11	5/3.5	2-Car	2-Story		

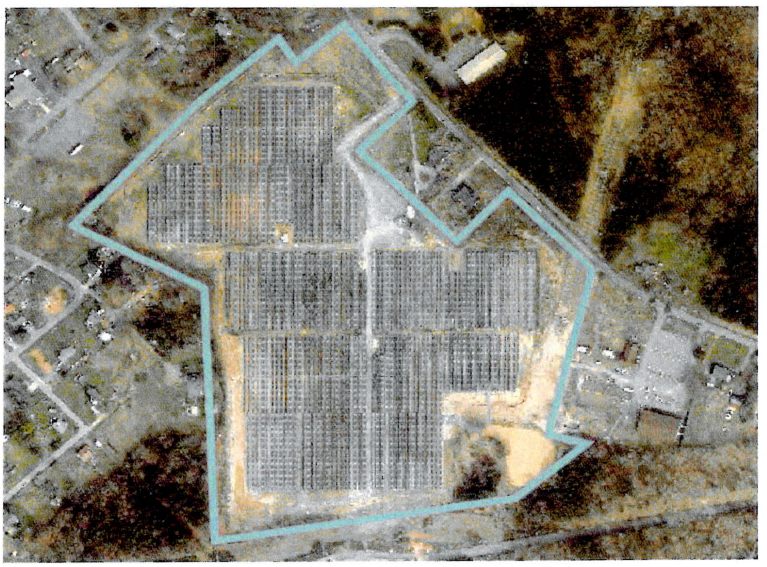
Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	2310 Granville								$280,000		1%
Not	2219 Granville	$10,758		$1,300	$0				$272,058	3%	
Not	634 Friendly	-$1,755		-$6,675	$16,721	-$10,000			$265,291	5%	
Not	2403 Granville	$469		-$1,325	$31,356				$295,500	-6%	

I have also considered the original sales prices in this subdivision relative to the recent resale values as shown in the chart below. This rate of appreciation is right at 2.5% over the last 6 years. Zillow indicates that the average home value within the 27530-zip code as of January 2014 was $101,300 and as of January 2020 that average is $118,100. This indicates an average increase in the market of 2.37%. I conclude that the appreciation of the homes adjoining the solar farm are not impacted by the presence of the solar farm based on this data.

	Address	Initial Sale Date	Price	Second Sale Date	Price	Year Diff	Apprec.	% Apprec.	Apprec. %/Year
1	103 Granville Pl	4/1/2013	$245,000	7/27/2018	$265,000	5.32	$20,000	8.16%	1.53%
2	105 Erin	7/1/2014	$250,000	6/19/2017	$280,000	2.97	$30,000	12.00%	4.04%
3	2312 Granville	12/1/2013	$255,000	5/1/2015	$262,000	1.41	$7,000	2.75%	1.94%
4	2312 Granville	5/1/2015	$262,000	5/1/2018	$284,900	3.00	$22,900	8.74%	2.91%
5	2310 Granville	8/1/2013	$250,000	5/14/2019	$280,000	5.79	$30,000	12.00%	2.07%
6	2308 Granville	9/1/2013	$260,000	11/12/2015	$267,500	2.20	$7,500	2.88%	1.31%
7	2304 Granville	9/1/2012	$198,000	6/1/2017	$225,000	4.75	$27,000	13.64%	2.87%
8	102 Erin	8/1/2014	$253,000	11/1/2016	$270,000	2.25	$17,000	6.72%	2.98%
								Average	2.46%
								Median	2.47%

2. Matched Pair – Gastonia SC Solar, Gastonia, NC





This 5 MW project is located on the south side of Neal Hawkins Road just outside of Gastonia. The property identified above as Parcel 4 was listed for sale while this solar farm project was going through the approval process. The property was put under contract during the permitting process with the permit being approved while the due diligence period was still ongoing. After the permit was approved the property closed with no concerns from the buyer. I spoke with Jennifer Bouvier, the broker listing the property and she indicated that the solar farm had no impact at all on the sales price. She considered some nearby sales to set the price and the closing price was very similar to the asking price within the typical range for the market. The buyer was aware that the solar farm was coming and they had no concerns.

This two-story brick dwelling was sold on March 20, 2017 for $270,000 for a 3,437 square foot dwelling built in 1934 in average condition on 1.42 acres. The property has four bedrooms and two bathrooms. The landscaping screen is light for this adjoining home due to it being a new planted landscaping buffer.

Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
Adjoins	609 Neal Hawkins	1.42	3/20/2017	$270,000	1934	3,427	$78.79	4/2	Open	2-Brick	
Not	1418 N Modena	4.81	4/17/2018	$225,000	1930	2,906	$77.43	3/3	2-Crprt	2-Brick	
Not	363 Dallas Bess	2.90	11/29/2018	$265,500	1968	2,964	$89.57	3/3	Open	FinBsmt	
Not	1612 Dallas Chry	2.74	9/17/2018	$245,000	1951	3,443	$71.16	3/2	Open	2-Brick	Unfin bath

Adjoining Sales Adjusted

Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
609 Neal Hawkins								$270,000			225
1418 N Modena	$7,319		$2,700	$32,271		-$10,000		$257,290	5%		
363 Dallas Bess	$746		-$27,081	$33,179	-$10,000		$53,100	$262,456	3%		
1612 Dallas Chry	$4,110		-$12,495	-$911			$10,000	$235,704	13%		
										7%	

I also considered the newer adjoining home identified as Parcel 5 that sold later in 2017 and it likewise shows no negative impact on property value. This is also considered a light landscaping buffer.

Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style
Adjoins	611 Neal Hawkins	0.78	7/6/2017	$288,000	1991	2,256	$127.66	5/3	2-Gar	1.5 Brick
Not	1211 Still Frst	0.51	7/30/2018	$280,000	1989	2,249	$124.50	3/3	2-Gar	Br Rnch
Not	2867 Colony Wds	0.52	8/14/2018	$242,000	1990	2,006	$120.64	3/3	2-Gar	Br Rnch
Not	1010 Strawberry	1.00	10/4/2018	$315,000	2002	2,330	$135.19	3/2.5	2-Gar	1.5 Brick

Adjoining Sales Adjusted

Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
611 Neal Hawkins								$288,000			145
1211 Still Frst	$1,341		$2,800	$697				$284,838	1%		
2867 Colony Wds	$7,714		$1,210	$24,128				$275,052	4%		
1010 Strawberry	-$4,555		-$17,325	-$8,003	$5,000			$290,116	-1%		
										2%	

3. Matched Pair – Summit/Ranchlands Solar, Moyock, NC



This project is located at 1374 Caritoke Highway, Moyock, NC. This is an 80 MW facility on a parent tract of 2,034 acres. Parcels Number 48 and 53 as shown in the map above were sold in 2016. The project was under construction during the time period of the first of the matched pair sales and the permit was approved well prior to that in 2015.

I looked at multiple sales of adjoining and nearby homes and compared each to multiple comparables to show a range of impacts from -10% up to +11% with an average of +2% and a median of +3%. These ranges are well within typical real estate variation and supports an indication of no impact on property value.

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Distance
48	Adjoins	129 Pinto	4.29	4/15/2016	$170,000	1985	1,559	$109.04	3/2	Drive	MFG		1,060
	Not	102 Timber	1.30	4/1/2016	$175,500	2009	1,352	$129.81	3/2	Drive	MFG		
	Not	120 Ranchland	0.99	10/1/2014	$170,000	2002	1,501	$113.26	3/2	Drive	MFG		

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	129 Pinto								$170,000		-3%
Not	102 Timber	$276	$10,000	-$29,484	$18,809				$175,101	-3%	
Not	120 Ranchland	$10,735	$10,000	-$20,230	$4,598				$175,103	-3%	

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
Adjoins	105 Pinto	4.99	12/16/2016	$206,000	1978	1,484	$138.81	3/2	Det G	Ranch	
Not	111 Spur	1.15	2/1/2016	$193,000	1985	2,013	$95.88	4/2	Gar	Ranch	
Not	103 Marshall	1.07	3/29/2017	$196,000	2003	1,620	$120.99	3/2	Drive	Ranch	
Not	127 Ranchland	0.00	6/9/2015	$219,900	1988	1,910	$115.13	3/2	Gar/3Det	Ranch	

Adjoining Sales Adjusted

Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
105 Pinto								$206,000			980
111 Spur	$6,747	$10,000	-$6,755	-$25,359				$177,633	14%		
103 Marshall	-$2,212	$10,000	-$24,500	-$8,227		$5,000		$176,212	14%		
127 Ranchland	$13,399	$10,000	-$10,995	-$24,523		-$10,000		$197,781	4%		
										11%	

Adjoining Residential Sales After Solar Farm Built

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Distance
15	Adjoins	318 Green View	0.44	9/15/2019	$357,000	2005	3,460	$103.18	4/4	2-Car	1.5 Brick		570
	Not	195 St Andrews	0.55	6/17/2018	$314,000	2002	3,561	$88.18	5/3	2-Car	2.0 Brick		
	Not	336 Green View	0.64	1/13/2019	$365,000	2006	3,790	$96.31	6/4	3-Car	2.0 Brick		
	Not	275 Green View	0.36	8/15/2019	$312,000	2003	3,100	$100.65	5/3	2-Car	2.0 Brick		

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	318 Green View								$357,000		4%
Not	195 St Andrews	$12,040		$4,710	-$7,125	$10,000			$333,625	7%	
Not	336 Green View	$7,536		-$1,825	-$25,425			-$5,000	$340,286	5%	
Not	275 Green View	$815		$3,120	$28,986	$10,000			$354,921	1%	

Adjoining Residential Sales After Solar Farm Built

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Distance
29	Adjoins	164 Ranchland	1.01	4/30/2019	$169,000	1999	2,052	$82.36	4/2	Gar	MFG		440
	Not	150 Pinto	0.94	3/27/2018	$168,000	2017	1,920	$87.50	4/2	Drive	MFG		
	Not	105 Longhorn	1.90	10/10/2017	$184,500	2002	1,944	$94.91	3/2	Drive	MFG		
	Not	112 Pinto	1.00	7/27/2018	$180,000	2002	1,836	$98.04	3/2	Drive	MFG	Fenced	

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	164 Ranchland								$169,000		-10%
Not	150 Pinto	$5,649		-$21,168	$8,085			$5,000	$165,566	2%	
Not	105 Longhorn	$8,816	-$10,000	-$3,875	$7,175			$5,000	$191,616	-13%	
Not	112 Pinto	$4,202		-$3,780	$14,824			$5,000	$200,245	-18%	

Adjoining Residential Sales After Solar Farm Built

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Distance
	Adjoins	358 Oxford	10.03	9/16/2019	$478,000	2008	2,726	$175.35	3/3	2 Gar	Ranch		635
	Not	276 Summit	10.01	12/20/2017	$355,000	2006	1,985	$178.84	3/2	2 Gar	Ranch		
	Not	176 Providence	6.19	5/6/2019	$425,000	1990	2,549	$166.73	3/3	4 Gar	Ranch	Brick	
	Not	1601 B Caratoke	12.20	9/26/2019	$440,000	2016	3,100	$141.94	4/3.5	5 Gar	Ranch	Pool	

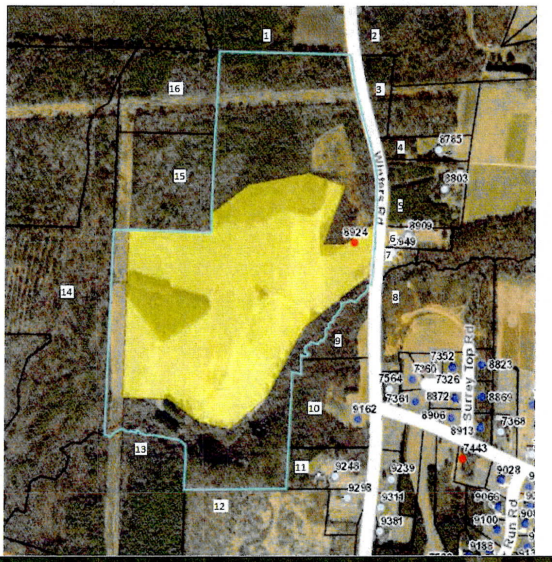
Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	358 Oxford								$478,000		5%
Not	276 Summit	$18,996		$3,550	$106,017	$10,000			$493,564	-3%	
Not	176 Providence	$4,763		$38,250	$23,609		-$10,000	-$25,000	$456,623	4%	
Not	1601 B Caratoke	-$371	$50,000	-$17,600	-$42,467	-$5,000	-$10,000		$414,562	13%	

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Distance
	Nearby	343 Oxford	10.01	3/9/2017	$490,000	2016	3,753	$130.56	3/3	2 Gar	1.5 Story	Pool	970
	Not	287 Oxford	10.01	9/4/2017	$600,000	2013	4,341	$138.22	5/4.5	8-Gar	1.5 Story	Pool	
	Not	301 Oxford	10.00	4/23/2018	$434,000	2013	3,393	$127.91	5/3	2 Gar	1.5 Story		
	Not	218 Oxford	10.01	4/4/2017	$525,000	2006	4,215	$124.56	4/3	4 Gar	1.5 Story	VG Barn	

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	343 Oxford								$490,000		3%
Not	287 Oxford	-$9,051		$9,000	-$65,017	-$15,000	-$25,000		$494,932	-1%	
Not	301 Oxford	-$14,995	-$10,000	$6,510	$36,838				$452,353	8%	
Not	218 Oxford	-$1,150		$26,250	-$46,036		-$10,000	-$10,000	$484,064	1%	

4. Matched Pair – Tracy Solar, Bailey, NC





This project is located in rural Nash County on Winters Road with a 5 MW facility that was built in 2016 on 50 acres. A local builder acquired parcels 9 and 10 following construction as shown below at rates comparable to other tracts in the area. They then built a custom home for an owner and sold that at a price similar to other nearby homes as shown in the matched pair data below. The retained woods provide a heavy landscaped buffer for this homesite.

Adjoining Land Sales After Solar Farm Completed

#	Solar Farm	TAX ID	Grantor	Grantee	Address	Acres	Date Sold	Sales Price	$/AC	Other
9 &10	Adjoins	316003 & 316004	Cozart	Kingsmill	9162 Winters	13.22	7/21/2016	$70,000	$5,295	
	Not	6056	Billingsly		427 Young	41	10/21/2016	$164,000	$4,000	
	Not	33211	Fulcher	Weikel	10533 Cone	23.46	7/18/2017	$137,000	$5,840	Doublewide, structures
	Not	106807	Perry	Gardner	Claude Lewis	11.22	8/10/2017	$79,000	$7,041	Gravel drive for sub, cleared
	Not	3437	Vaughan	N/A	11354 Old Lewis Sch	18.73	Listing	$79,900	$4,266	Small cemetery,wooded

Adjoining Sales Adjusted

Time	Acres	Location	Other	Adj $/Ac	% Diff
				$5,295	
$0	$400	$0	$0	$4,400	17%
-$292	$292	$0	-$500	$5,340	-1%
-$352	$0	$0	-$1,000	$5,689	-7%
-$213	$0	$0	$213	$4,266	19%
				Average	7%

Adjoining Residential Sales After Solar Farm Completed

#	Solar Farm	Address	Acres	Date Sold	Sales Price	Built	GLA	$/GLA	BR/BA	Style	Other
9 &10	Adjoins	9162 Winters	13.22	1/5/2017	$255,000	2016	1,616	$157.80	3/2	Ranch	1296 sf wrkshp
	Not	7352 Red Fox	0.93	6/30/2016	$176,000	2010	1,529	$115.11	3/2	2-story	

Adjoining Sales Adjusted

Time	Acres	YB	GLA	Style	Other	Total	% Diff
						$255,000	
$0	$44,000	$7,392	$5,007	$5,000	$15,000	$252,399	1%

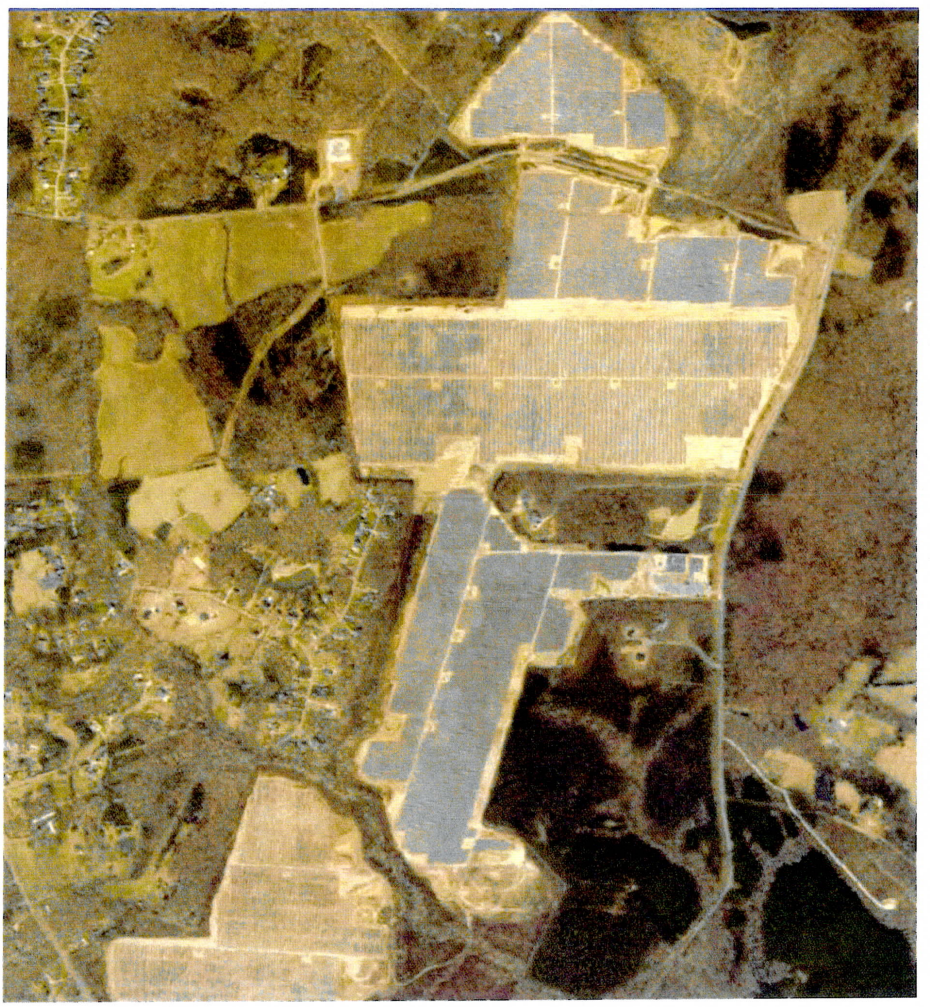
The comparables for the land show either a significant positive relationship or a mild negative relationship to having and adjoining solar farm, but when averaged together they show no negative impact. The wild divergence is due to the difficulty in comping out this tract of land and the wide variety of comparables used. The two comparables that show mild negative influences include a property that was partly developed as a residential subdivision and the other included a doublewide with some value and accessory agricultural structures. The tax assessed value on the improvements were valued at $60,000. So both of those comparables have some limitations for comparison. The two that show significant enhancement due to adjacency includes a property with a cemetery located in the middle and the other is a tract almost twice as large. Still that larger tract after adjustment provides the best matched pair as it required the least adjustment. I therefore conclude that there is no negative impact due to adjacency to the solar farm shown by this matched pair.

The dwelling that was built on the site was a build-to-suit and was compared to a nearby homesale of a property on a smaller parcel of land. I adjusted for that differenced based on a $25,000 value for a 1-acre home site versus the $70,000 purchase price of the larger subject tract. The other adjustments are typical and show no impact due to the adjacency to the solar farm.

The closest solar panel to the home is 780 feet away.

I note that the representative for Kingsmill Homes indicated that the solar farm was never a concern in purchasing the land or selling the home. He also indicated that they had built a number of nearby homes across the street and it had never come up as an issue.

5. Matched Pair – McBride Place Solar Farm, Midland, NC



This project is located on Mount Pleasant Road, Midland, North Carolina. The property is on 627 acres on an assemblage of 974.59 acres. The solar farm was approved in early 2017 for a 74.9 MW facility.

I have considered the sale of 4380 Joyner Road which adjoins the proposed solar farm near the northwest section. This property was appraised in April of 2017 for a value of $317,000 with no consideration of any impact due to the solar farm in that figure. The property sold in November 2018 for $325,000 with the buyer fully aware of the proposed solar farm. The landscaping buffer relative to Joyner Road, Hayden Way, Chanel Court and Kristi Lane is considered medium, while the landscaping for the home at the north end of Chanel Court is considered very light.

I have considered the following matched pairs to the subject property.

Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	4380 Joyner	12.00	11/22/2017	$325,000	1979	1,598	$203.38	3/2	2xGar	Ranch	Outbldg
Not	3870 Elkwood	5.50	8/24/2016	$250,000	1986	1,551	$161.19	3/2.5	Det 2xGar	Craft	
Not	8121 Lower Rocky	18.00	2/8/2017	$355,000	1977	1,274	$278.65	2/2	2xCarprt	Ranch	Eq. Fac.
Not	13531 Cabarrus	7.89	5/20/2016	$267,750	1981	2,300	$116.41	3/2	2xGar	Ranch	

Adjoining Sales Adjusted

Time	Acres	YB	Condition	GLA	BR/BA	Park	Other	Total	% Diff
								$325,000	
$7,500	$52,000	-$12,250	$10,000	$2,273	-$2,000	$2,500	$7,500	$317,523	2%
$7,100	-$48,000	$4,970		$23,156	$0	$3,000	-$15,000	$330,226	-2%
$8,033	$33,000	-$3,749	$20,000	-$35,832	$0	$0	$7,500	$296,702	9%
								Average	3%

The home at 4380 Joyner Road is 275 feet from the closest solar panel.

I also considered the recent sale of a lot at 5800 Kristi Lane that is on the east side of the proposed solar farm. This 4.22-acre lot sold in December 2017 for $94,000. A home was built on this lot in 2019 with the closest point from home to panel at 689 feet. The home site is heavily wooded and their remains a wooded buffer between the solar panels and the home. I spoke with the broker, Margaret Dabbs, who indicated that the solar farm was considered a positive by both buyer and seller as it ensures no subdivision will be happening in that area. Buyers in this market are looking for privacy and seclusion.

The breakdown of recent lot sales on Kristi are shown below with the lowest price paid for the lot with no solar farm exposure, though that lot has exposure to Mt Pleasant Road South. Still the older lot sales have exposure to the solar farm and sold for higher prices than the front lot and adjusting for time would only increase that difference.

Adjoining Lot Sales After Solar Farm Built

Parcel	Solar	Address	Acres	Date Sold	Sales Price	$/AC	$/Lot
	Adjoins	5811 Kristi	3.74	5/1/2018	$100,000	$26,738	$100,000
	Adjoins	5800 Kristi	4.22	12/1/2017	$94,000	$22,275	$94,000
	Not	5822 Kristi	3.43	2/24/2020	$90,000	$26,239	$90,000

The lot at 5811 Kristi Lane sold in May 2018 for $100,000 for a 3.74-acre lot. The home that was built later in 2018 is 505 feet to the closest solar panel. This home then sold to a homeowner for $530,000 in April 2020. I have compared this home sale to other properties in the area as shown below.

Adjoining Residential Sales After Solar Farm Built

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	5811 Kristi	3.74	3/31/2020	$530,000	2018	3,858	$137.38	5/3.5	2 Gar	2-story	Cement Ext
Not	3915 Tania	1.68	12/9/2019	$495,000	2007	3,919	$126.31	3/3.5	2 Gar	2-story	3Det Gar
Not	6782 Manatee	1.33	3/8/2020	$460,000	1998	3,776	$121.82	4/2/2h	2 Gar	2-story	Water
Not	314 Old Hickory	1.24	9/20/2019	$492,500	2017	3,903	$126.18	6/4.5	2 Gar	2-story	

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	5811 Kristi								$530,000		5%
Not	3915 Tania	$6,285		$27,225	-$3,852		-$20,000		$504,657	5%	
Not	6782 Manatee	$1,189		$46,000	$4,995	$5,000			$517,183	2%	
Not	314 Old Hickory	$10,680		$2,463	-$2,839	-$10,000			$492,803	7%	

After adjusting the comparables, I found that the average adjusted value shows a slight increase in value for the subject property adjoining a solar farm. As in the other cases, this is a mild positive impact on value but within the typical range of real estate transactions.

I also looked at 5833 Kristi Lane that sold on 9/14/2020 for $625,000. This home is 470 feet from the closest panel.

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
Nearby	5833 Kristi	4.05	9/14/2020	$625,000	2008	4,373	$142.92	5/4	3-Car	2-Brick	
Not	4055 Dakeita	4.90	12/30/2020	$629,000	2005	4,427	$142.08	4/4	4-Car	2-Brick	4DetGar/Stable
Not	9615 Bales	2.16	6/30/2020	$620,000	2007	4,139	$149.79	4/5	3-Car	2-Stone	2DetGar
Not	9522 Bales	1.47	6/18/2020	$600,000	2007	4,014	$149.48	4/4.5	3-Car	2-Stone	

Adjoining Sales Adjusted

Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
5833 Kristi								$625,000			470
4055 Dakeita	-$9,220		$5,661	-$6,138		-$25,000		$594,303	5%		
9615 Bales	$6,455		$1,860	$28,042	-$10,000	-$15,000		$631,356	-1%		
9522 Bales	$7,233		$1,800	$42,930	-$5,000			$646,963	-4%		
										0%	

The average difference is 0% impact and the differences are all within a close range with this set of comparables and supports a finding of no impact on property value.

I have also looked at 4504 Chanel Court. This home sold on January 1, 2020 for $393,500 for this 3,010 square foot home built in 2004 with 3 bedrooms, 3.5 bathrooms, and a 3-car garage. This home includes a full partially finished basement that significantly complicates comparing this to other sales. This home previously sold on January 23, 2017 for $399,000. This was during the time that the solar farm was a known factor as the solar farm was approved in early 2017 and public discussions had already commenced. I spoke with Rachelle Killman with Real Estate Realty, LLC the buyer's agent for this transaction and she indicated that the solar farm was not a factor or consideration for the buyer. She noted that you could see the panels sort of through the trees, but it wasn't a concern for the buyer. She was not familiar with the earlier 2017 sale, but indicated that it was likely too high. This again goes back to the partially finished basement issue. The basement has a fireplace, and an installed 3/4 bathroom but otherwise bare studs and concrete floors with different buyers assigning varying value to that partly finished space. I also reached out to Don Gomez with Don Anthony Realty, LLC as he was the listing agent.

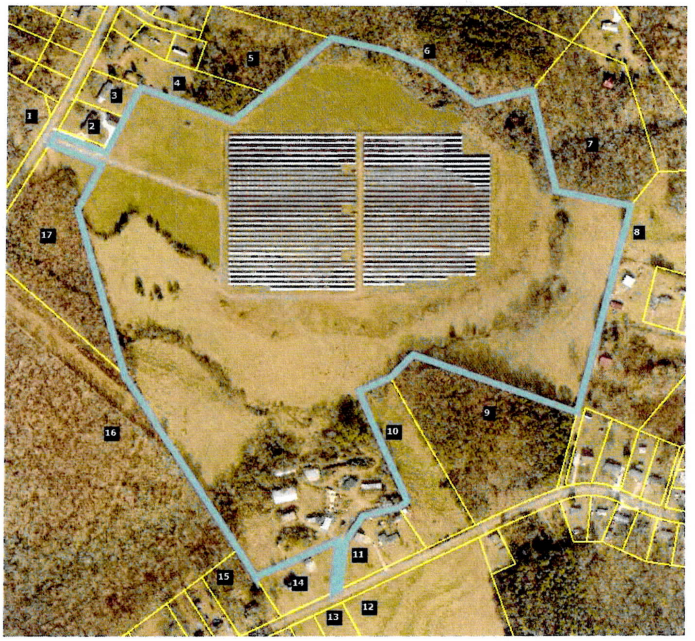
I also looked at the recent sale of 4599 Chanel Court. This home is within 310 feet of solar panels but notably does not have a good landscaping screen in place as shown in the photo below. The plantings appear to be less than 3-feet in height and only a narrow, limited screen of existing hardwoods were kept. The photograph is from the listing.

According to Scott David with Better Homes and Gardens Paracle Realty, this property was under contract for $550,000 contingent on the buyer being able to sell their former home. The former home was apparently overpriced and did not sell and the contract stretched out over 2.5 months. The seller was in a bind as they had a home they were trying to buy contingent on this closing and were about to lose that opportunity. A cash buyer offered them a quick close at $500,000 and the seller accepted that offer in order to not lose the home they were trying to buy. According to Mr. David, the original contracted buyer and the actual cash buyer never considered the solar farm as a negative. In fact Mr. David noted that the actual buyer saw it as a great opportunity to purchase a home where a new subdivision could not be built behind his house. I therefore conclude that this property supports a finding of no impact on adjoining property, even where the landscaping screen still requires time to grow in for a year-round screen.

I also considered a sale/resale analysis on this property. This same home sold on September 15, 2015 for $462,000. Adjusting this upward by 5% per year for the five years between these sales dates suggests a value of $577,500. Comparing that to the $550,000 contract that suggests a 5% downward impact, which is within a typical market variation. Given that the broker noted no negative impact from the solar farm and the analysis above, I conclude this sale supports a finding of no impact on value.



6. Matched Pair – Mariposa Solar, Gaston County, NC



This project is a 5 MW facility located on 35.80 acres out of a parent tract of 87.61 acres at 517 Blacksnake Road, Stanley that was built in 2016.

I have considered a number of recent sales around this facility as shown below.

The first is identified in the map above as Parcel 1, which is 215 Mariposa Road. This is an older dwelling on large acreage with only one bathroom. I've compared it to similar nearby homes as shown below. The landscaping buffer for this home is considered light.

Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style
Adjoins	215 Mariposa	17.74	12/12/2017	$249,000	1958	1,551	$160.54	3/1	Garage	Br/Rnch
Not	249 Mariposa	0.48	3/1/2019	$153,000	1974	1,792	$85.38	4/2	Garage	Br/Rnch
Not	110 Airport	0.83	5/10/2016	$166,000	1962	2,165	$76.67	3/2	Crprt	Br/Rnch
Not	1249 Blacksnake	5.01	9/20/2018	$242,500	1980	2,156	$112.48	3/2	Drive	1.5
Not	1201 Abernathy	27.00	5/3/2018	$390,000	1970	2,190	$178.08	3/2	Crprt	Br/Rnch

Adjoining Residential Sales After Solar Farm Approved					Adjoining Sales Adjusted								
Solar	Address	Acres	Date Sold	Sales Price	Time	YB	Acres	GLA	BR/BA	Park	Other	Total	% Diff
Adjoins	215 Mariposa	17.74	12/12/2017	$249,000								$249,000	
Not	249 Mariposa	0.48	3/1/2019	$153,000	-$5,583	-$17,136	$129,450	-$20,576	-$10,000			$229,154	8%
Not	110 Airport	0.83	5/10/2016	$166,000	$7,927	-$4,648	$126,825	-$47,078	-$10,000			$239,026	4%
Not	1249 Blacksnake	5.01	9/20/2018	$242,500	-$5,621	-$37,345	$95,475	-$68,048	-$10,000	$5,000		$221,961	11%
Not	1201 Abernathy	27.00	5/3/2018	$390,000	-$4,552	-$32,760	-$69,450	-$60,705	-$10,000			$212,533	15%
												Average	9%

The average difference after adjusting for all factors is +9% on average, which suggests an enhancement due to the solar farm across the street. Given the large adjustments for acreage and size, I will focus on the low end of the adjusted range at 4%, which is within the typical deviation and therefore suggests no impact on value.

I have also considered Parcel 4 that sold after the solar farm was approved but before it had been constructed in 2016. The landscaping buffer for this parcel is considered light.

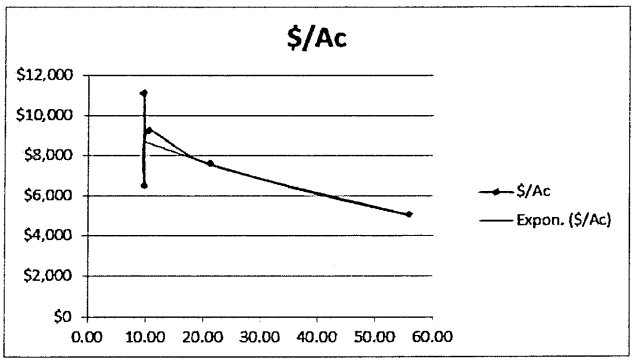
Adjoining Residential Sales After Solar Farm Approved											
Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	242 Mariposa	2.91	9/21/2015	$180,000	1962	1,880	$95.74	3/2	Carport	Br/Rnch	Det Wrkshop
Not	249 Mariposa	0.48	3/1/2019	$153,000	1974	1,792	$85.38	4/2	Garage	Br/Rnch	
Not	110 Airport	0.83	5/10/2016	$166,000	1962	2,165	$76.67	3/2	Crprt	Br/Rnch	
Not	1249 Blacksnake	5.01	9/20/2018	$242,500	1980	2,156	$112.48	3/2	Drive	1.5	

Adjoining Residential Sales After Solar Farm Approved					Adjoining Sales Adjusted								
Solar	Address	Acres	Date Sold	Sales Price	Time	YB	Acres	GLA	BR/BA	Park	Other	Total	% Diff
Adjoins	242 Mariposa	2.91	9/21/2015	$180,000								$180,000	
Not	249 Mariposa	0.48	3/1/2019	$153,000	-$15,807	-$12,852	$18,468	$7,513		-$3,000	$25,000	$172,322	4%
Not	110 Airport	0.83	5/10/2016	$166,000	-$3,165	$0	$15,808	-$28,600			$25,000	$175,043	3%
Not	1249 Blacksnake	5.01	9/20/2018	$242,500	-$21,825	-$30,555	-$15,960	-$40,942		$2,000	$25,000	$160,218	11%
												Average	6%

The average difference after adjusting for all factors is +6%, which is again suggests a mild increase in value due to the adjoining solar farm use. The median is a 4% adjustment, which is within a standard deviation and suggests no impact on property value.

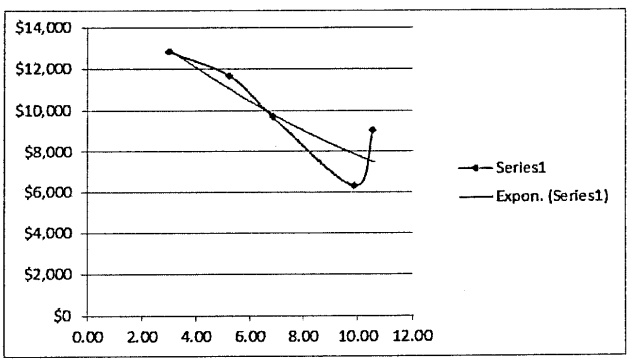
I have also considered the recent sale of Parcel 13 that is located on Blacksnake Road south of the project. I was unable to find good land sales in the same 20-acre range, so I have considered sales of larger and smaller acreage. I adjusted each of those land sales for time. I then applied the price per acre to a trendline to show where the expected price per acre would be for 20 acres. As can be seen in the chart below, this lines up exactly with the purchase of the subject property. I therefore conclude that there is no impact on Parcel 13 due to proximity to the solar farm.

Adjoining Residential Land Sales After Solar Farm Approved						Adjoining Sales Adjusted	
Solar	Tax/Street	Acres	Date Sold	Sales Price	$/Ac	Time	$/Ac
Adjoins	174339/Blacksnake	21.15	6/29/2018	$160,000	$7,565		$7,565
Not	227852/Abernathy	10.57	5/9/2018	$97,000	$9,177	$38	$9,215
Not	17443/Legion	9.87	9/7/2018	$64,000	$6,484	-$37	$6,447
Not	164243/Alexis	9.75	2/1/2019	$110,000	$11,282	-$201	$11,081
Not	176884/Bowden	55.77	6/13/2018	$280,000	$5,021	$7	$5,027



Finally, I have considered the recent sale of Parcel 17 that sold as vacant land. I was unable to find good land sales in the same 7-acre range, so I have considered sales of larger and smaller acreage. I adjusted each of those land sales for time. I then applied the price per acre to a trendline to show where the expected price per acre would be for 7 acres. As can be seen in the chart below, this lines up with the trendline running right through the purchase price for the subject property. I therefore conclude that there is no impact on Parcel 13 due to proximity to the solar farm. I note that this property was improved with a 3,196 square foot ranch built in 2018 following the land purchase, which shows that development near the solar farm was unimpeded.

Adjoining Residential Land Sales After Solar Farm Approved						Adjoining Sales Adjusted		
Solar	**Tax/Street**	**Acres**	**Date Sold**	**Sales Price**	**$/Ac**	**Time**	**Location**	**$/Ac**
Adjoins	227039/Mariposa	6.86	12/6/2017	$66,500	$9,694			$9,694
Not	227852/Abernathy	10.57	5/9/2018	$97,000	$9,177	-$116		$9,061
Not	17443/Legion	9.87	9/7/2018	$64,000	$6,484	-$147		$6,338
Not	177322/Robinson	5.23	5/12/2017	$66,500	$12,715	$217	-$1,272	$11,661
Not	203386/Carousel	2.99	7/13/2018	$43,500	$14,548	-$262	-$1,455	$12,832



7. Matched Pair – Candace Solar, Princeton, NC





This 5 MW solar farm is located at 4839 US 70 Highway just east of Herring Road. This solar farm was completed on October 25, 2016.

I identified three adjoining sales to this tract after development of the solar farm with frontage on US 70. I did not attempt to analyze those sales as they have exposure to an adjacent highway and railroad track. Those homes are therefore problematic for a matched pair analysis unless I have similar homes fronting on a similar corridor.

I did consider a land sale and a home sale on adjoining parcels without those complications.

The lot at 499 Herring Road sold to Paradise Homes of Johnston County of NC, Inc. for $30,000 in May 2017 and a modular home was placed there and sold to Karen and Jason Toole on September 29, 2017. I considered the lot sale first as shown below and then the home sale that followed. The landscaping buffer relative to this parcel is considered medium.

Adjoining Land Sales After Solar Farm Approved							Adjoining Sales Adjusted				
Parcel	Solar	Address	Acres	Date Sold	Sales Price	Other	Time	Site	Other	Total	% Diff
16	Adjoins	499 Herring	2.03	5/1/2017	$30,000					$30,000	
	Not	37 Becky	0.87	7/23/2019	$24,500	Sub/Pwr	-$1,679	$4,900		$27,721	8%
	Not	5858 Bizzell	0.88	8/17/2016	$18,000		$390	$3,600		$21,990	27%
	Not	488 Herring	2.13	12/20/2016	$35,000		$389			$35,389	-18%
										Average	5%

Following the land purchase, the modular home was placed on the site and sold. I have compared this modular home to the following sales to determine if the solar farm had any impact on the purchase price.

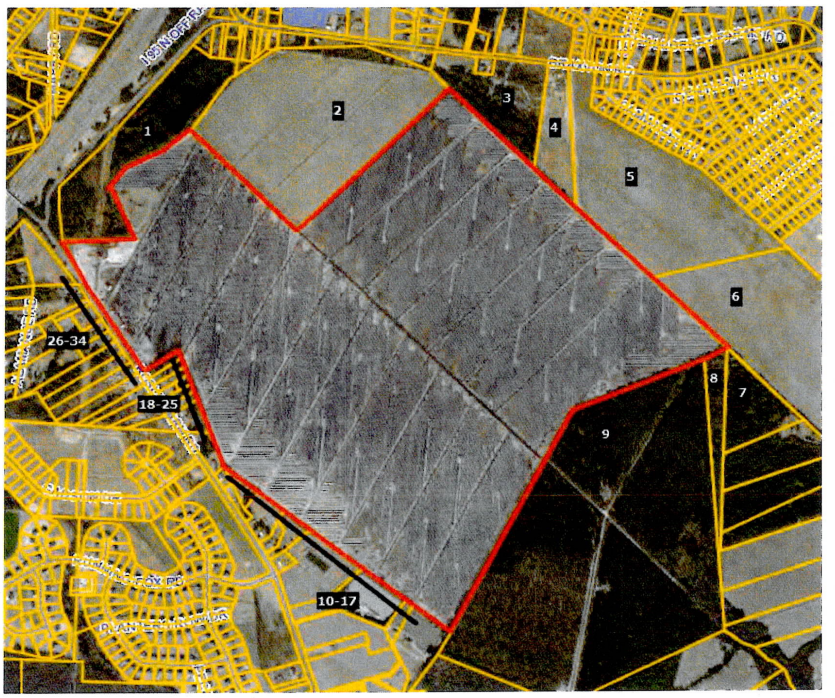
Adjoining Residential Sales After Solar Farm Approved												
Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
16	Adjoins	499 Herring	2.03	9/27/2017	$215,000	2017	2,356	$91.26	4/3	Drive	Modular	
	Not	678 WC	6.32	3/8/2019	$226,000	1995	1,848	$122.29	3/2.5	Det Gar	Mobile	Ag bldgs
	Not	1810 Bay V	8.70	3/26/2018	$170,000	2003	2,356	$72.16	3/2	Drive	Mobile	Ag bldgs
	Not	1795 Bay V	1.78	12/1/2017	$194,000	2017	1,982	$97.88	4/3	Drive	Modular	

Adjoining Residential Sales Af			Adjoining Sales Adjusted									Avg	
Parcel	Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	% Diff	Distance
16	Adjoins	499 Herring								$215,000			488
	Not	678 WC	-$10,037	-$25,000	$24,860	$37,275	-$5,000	-$7,500	-$20,000	$220,599	-3%		
	Not	1810 Bay V	-$2,579	-$20,000	$11,900	$0				$159,321	26%		
	Not	1795 Bay V	-$1,063		$0	$21,964				$214,902	0%		
												8%	

The best comparable is 1795 Bay Valley as it required the least adjustment and was therefore most similar, which shows a 0% impact. This signifies no impact related to the solar farm.

The range of impact identified by these matched pairs ranges are therefore -3% to +26% with an average of +8% for the home and an average of +4% for the lot, though the best indicator for the lot shows a $5,000 difference in the lot value due to the proximity to the solar farm or a -12% impact.

8. Matched Pair – Innovative Solar 46, Roslin Farm Rd, Hope Mills, NC



This project was built in 2016 and located on 532 acres for a 78.5 MW solar farm with the closest home at 125 feet from the closest solar panel with an average distance of 423 feet.

I considered the recent sale of a home on Roslin Farm Road just north of Running Fox Road as shown below. This sale supports an indication of no impact on property value. The landscaping buffer is considered light.

Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Distance
Adjoins	6849 Roslin Farm	1.00	2/18/2019	$155,000	1967	1,610	$96.27	3/3	Drive	Ranch	Brick	435
Not	6592 Sim Canady	2.43	9/5/2017	$185,000	1974	2,195	$84.28	3/2	Gar	Ranch	Brick	
Not	1614 Joe Hall	1.63	9/3/2019	$145,000	1974	1,674	$86.62	3/2	Det Gar	Ranch	Brick	
Not	109 Bledsoe	0.68	1/17/2019	$150,000	1973	1,663	$90.20	3/2	Gar	Ranch	Brick	

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	6849 Roslin Farm								$155,000		5%
Not	6592 Sim Canady	$8,278		-$6,475	-$39,444	$10,000	-$5,000		$152,359	2%	
Not	1614 Joe Hall	-$2,407		-$5,075	-$3,881	$10,000	-$2,500		$141,137	9%	
Not	109 Bledsoe	$404	$10,000	-$4,500	-$3,346		-$5,000		$147,558	5%	

9. Matched Pair – Innovative Solar 42, County Line Rd, Fayetteville, NC



This project was built in 2017 and located on 413.99 acres for a 71 MW with the closest home at 135 feet from the closest solar panel with an average distance of 375 feet.

I considered the recent sales identified on the map above as Parcels 2 and 3, which is directly across the street these homes are 330 and 340 feet away. Parcel 2 includes an older home built in 1976, while Parcel 3 is a new home built in 2019. So the presence of the solar farm had no impact on new construction in the area.

The matched pairs for each of these are shown below. The landscaping buffer relative to these parcels is considered light.

Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Distance
Adjoins	2923 County Ln	8.98	2/28/2019	$385,000	1976	2,905	$132.53	3/3	2-Car	Ranch	Brick/Pond	340
Not	1928 Shaw Mill	17.00	7/3/2019	$290,000	1977	3,001	$96.63	4/4	2-Car	Ranch	Brick/Pond/Rental	
Not	2109 John McM.	7.78	4/25/2018	$320,000	1978	2,474	$129.35	3/2	Det Gar	Ranch	Vinyl/Pool,Stable	

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	2923 County Ln								$385,000		3%
Not	1928 Shaw Mill	-$3,055	$100,000	-$1,450	-$7,422	-$10,000			$368,074	4%	
Not	2109 John McM.	$8,333		-$3,200	$39,023	$10,000		$5,000	$379,156	2%	

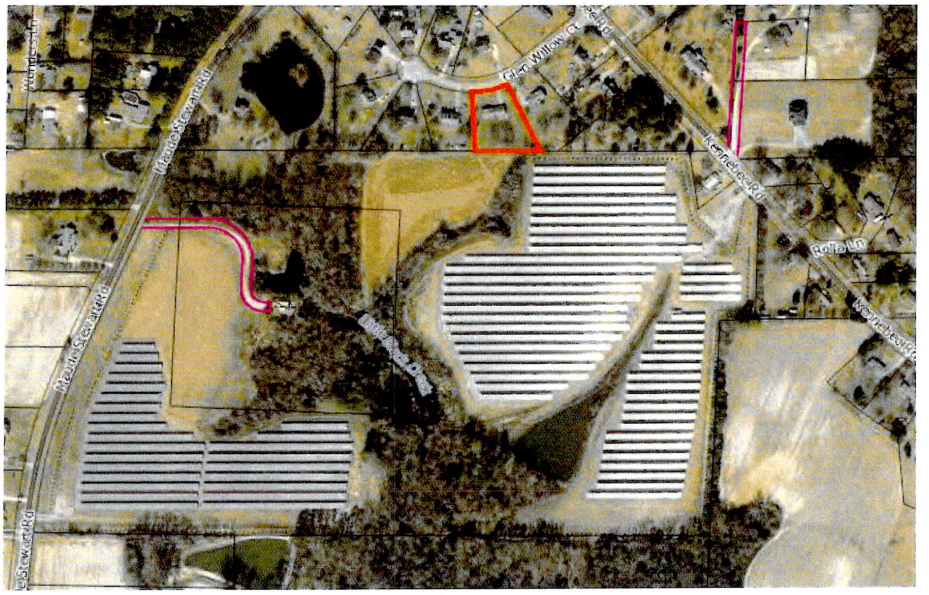
Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Distance
Adjoins	2935 County Ln	1.19	6/18/2019	$266,000	2019	2,401	$110.79	4/3	Gar	2-Story		330
Not	3005 Hemingway	1.17	5/16/2019	$269,000	2018	2,601	$103.42	4/3	Gar	2-Story		
Not	7031 Glynn Mill	0.60	5/8/2018	$255,000	2017	2,423	$105.24	4/3	Gar	2-Story		
Not	5213 Bree Brdg	0.92	5/7/2019	$260,000	2018	2,400	$108.33	4/3	3-Gar	2-Story		

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	2935 County Ln								$266,000		3%
Not	3005 Hemingway	$748		$1,345	-$16,547				$254,546	4%	
Not	7031 Glynn Mill	$8,724		$2,550	-$1,852				$264,422	1%	
Not	5213 Bree Brdg	$920		$1,300	$76			-$10,000	$252,296	5%	

Both of these matched pairs adjust to an average of +3% on impact for the adjoining solar farm, meaning there is a slight positive impact due to proximity to the solar farm. This is within the standard +/- of typical real estate transactions, which strongly suggests no impact on property value. I noted specifically that for 2923 County Line Road, the best comparable is 2109 John McMillan as it does not have the additional rental unit on it. I made no adjustment to the other sale for the value of that rental unit, which would have pushed the impact on that comparable downward – meaning there would have been a more significant positive impact.

10. Matched Pair – Sunfish Farm, Keenebec Rd, Willow Spring, NC



This project was built in 2015 and located on 49.6 acres (with an inset 11.25-acre parcel) for a 6.4 MW project with the closest home at 135 feet with an average distance of 105 feet.

I considered the 2017 sale identified on the map above, which is 205 feet away from the closest panel. The matched pairs for each of these are shown below followed by a more recent map showing the panels at this site. The average difference in the three comparables and the subject property is +3% after adjusting for differences in the sales date, year built, gross living area, and other minor differences. This data is supported by the comments from the broker Brian Schroepfer with Keller Williams that the solar farm had no impact on the purchase price. The landscaping screen is considered light.

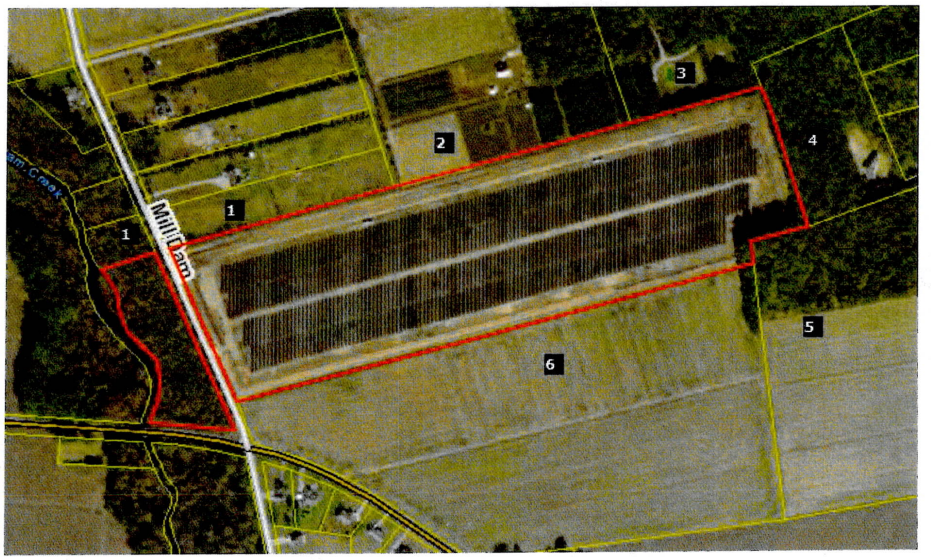
Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style
	Adjoins	7513 Glen Willow	0.79	9/1/2017	$185,000	1989	1,492	$123.99	3/2	Gar	BR/Rnch
	Not	2968 Tram	0.69	7/17/2017	$155,000	1984	1,323	$117.16	3/2	Drive	BR/Rnch
	Not	205 Pine Burr	0.97	12/29/2017	$191,000	1991	1,593	$119.90	3/2.5	Drive	BR/Rnch
	Not	1217 Old Honeycutt	1.00	12/15/2017	$176,000	1978	1,558	$112.97	3/2.5	2Carprt	VY/Rnch

Adjustments

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	7513 Glen Willow								$185,000		
Not	2968 Tram	$601		$3,875	$15,840		$10,000		$185,316	0%	
Not	205 Pine Burr	-$1,915		-$1,910	-$9,688	-$5,000			$172,487	7%	
Not	1217 Old Honeycut	-$1,557		$9,680	-$5,965	-$5,000		$5,280	$178,438	4%	
											3%

11. Matched Pair – Camden Dam, Camden, NC



This 5 MW project was built in 2019 and located on a portion of 49.83 acres.

Parcel 1 noted above along with the home on the adjoining parcel to the north of that parcel sold in late 2018 after this solar farm was approved but prior to construction being completed in 2019. I have considered this sale as shown below. The landscaping screen is considered light.

The comparable at 548 Trotman is the most similar and required the least adjustment shows no impact on property value. The other two comparables were adjusted consistently with one showing significant enhancement and another as showing a mild negative. The best indication is the one requiring the least adjustment. The other two sales required significant site adjustments which make them less reliable. The best comparable and the average of these comparables support a finding of no impact on property value.

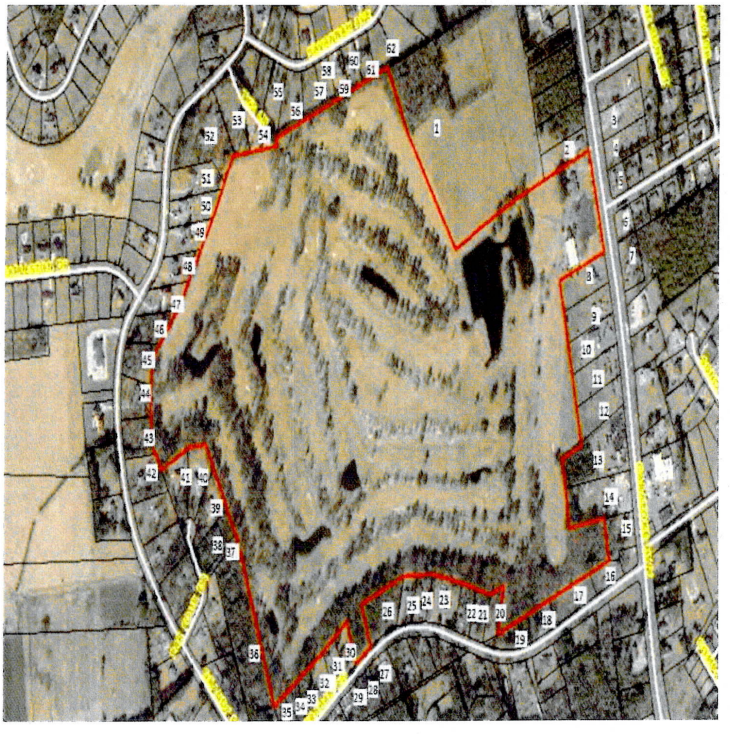
Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
Adjoins	122 N Mill Dam	12.19	11/29/2018	$350,000	2005	2,334	$149.96	3/3.5	3-Gar	Ranch	
Not	548 Trotman	12.10	5/31/2018	$309,000	2007	1,960	$157.65	4/2	Det2G	Ranch	Wrkshp
Not	198 Sand Hills	2.00	12/22/2017	$235,000	2007	2,324	$101.12	4/3	Open	Ranch	
Not	140 Sleepy Hlw	2.05	8/12/2019	$330,000	2010	2,643	$124.86	4/3	1-Gar	1.5 Story	

Adjoining Sales Adjusted

Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
122 N Mill Dam								$350,000			342
548 Trotman	$6,163		-$3,090	$35,377	$5,000			$352,450	-1%		
198 Sand Hills	$8,808	$45,000	-$2,350	$607		$30,000		$317,064	9%		
140 Sleepy Hlw	-$9,258	$45,000	-$8,250	-$23,149	$5,000	$30,000		$369,343	-6%		
										1%	

12. Matched Pair – Grandy Solar, Grandy, NC



This 20 MW project was built in 2019 and located on a portion of 121 acres.

Parcels 40 and 50 have sold since construction began on this solar farm. I have considered both in matched pair analysis below. I note that the marketing for Parcel 40 (120 Par Four) identified the lack of homes behind the house as a feature in the listing. The marketing for Parcel 50 (269 Grandy) identified the property as "very private." Landscaping for both of these parcels is considered light.

Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
Adjoins	120 Par Four	0.92	8/17/2019	$315,000	2006	2,188	$143.97	4/3	2-Gar	1.5 Story	Pool
Not	102 Teague	0.69	1/5/2020	$300,000	2005	2,177	$137.80	3/2	Det 3G	Ranch	
Not	112 Meadow Lk	0.92	2/28/2019	$265,000	1992	2,301	$115.17	3/2	Gar	1.5 Story	
Not	116 Barefoot	0.78	9/29/2020	$290,000	2004	2,192	$132.30	4/3	2-Gar	2 Story	

Adjoining Sales Adjusted

Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
120 Par Four								$315,000			405
102 Teague	-$4,636		$1,500	$910	$10,000		$20,000	$327,774	-4%		
112 Meadow Lk	$4,937		$18,550	-$7,808	$10,000	$10,000	$20,000	$320,679	-2%		
116 Barefoot	-$12,998		$2,900	-$318			$20,000	$299,584	5%		
										0%	

Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GLA	BR/BA	Park	Style	Other
Adjoins	269 Grandy	0.78	5/7/2019	$275,000	2019	1,535	$179.15	3/2.5	2-Gar	Ranch	
Not	307 Grandy	1.04	10/8/2018	$240,000	2002	1,634	$146.88	3/2	Gar	1.5 Story	
Not	103 Branch	0.95	4/22/2020	$230,000	2000	1,532	$150.13	4/2	2-Gar	1.5 Story	
Not	103 Spring Lf	1.07	8/14/2018	$270,000	2002	1,635	$165.14	3/2	2-Gar	Ranch	Pool

Adjoining Sales Adjusted

Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
269 Grandy								$275,000			477
307 Grandy	$5,550		$20,400	-$8,725	$5,000	$10,000		$272,225	1%		
103 Branch	-$8,847		$21,850	$270				$243,273	12%		
103 Spring Lf	$7,871		$22,950	-$9,908	$5,000		-$20,000	$275,912	0%		
										4%	

Both of these matched pairs support a finding of no impact on value. This is reinforced by the listings for both properties identifying the privacy due to no housing in the rear of the property as part of the marketing for these homes.

Conclusion – NC Data

Matched Pair Summary						Adj. Uses By Acreage				1 mile Radius (2020-2022 Data)			
	Name	City	Acres	MW	Topo Shift	Res	Ag	Ag/Res	Com	Pop.	Med. Income	Avg. Housing Unit	Veg. Buffer
1	AM Best	Goldsboro	38	5.00	2	38%	23%	0%	39%	1,523	$37,358	$148,375	Light
2	Gaston SC	Gastonia	35	5.00	48	33%	23%	0%	44%	4,689	$35,057	$126,562	Light
3	Summit	Moyock	2034	80.00	4	4%	94%	0%	2%	382	$79,114	$281,731	Light
4	Tracy	Bailey	50	5.00	10	29%	71%	0%	0%	312	$43,940	$99,219	Heavy
5	McBride	Midland	627	75.00	140	12%	78%	10%	0%	398	$63,678	$256,306	Lt to Med
6	Mariposa	Stanley	36	5.00	96	48%	52%	0%	0%	1,716	$36,439	$137,884	Light
7	Candace	Princeton	54	5.00	22	76%	0%	24%	0%	448	$51,002	$107,171	Medium
8	Innov 46	Hope Mills	532	78.50	0	17%	0%	83%	0%	2,247	$58,688	$183,435	Light
9	Innov 42	Fayetteville	414	71.00	0	41%	0%	59%	0%	568	$60,037	$276,347	Light
10	Sunfish	Willow Spring	50	6.40	30	35%	30%	35%	0%	1,515	$63,652	$253,138	Light
11	Camden Dam	Camden	50	5.00	0	17%	11%	72%	0%	403	$84,426	$230,288	Light
12	Grandy	Grandy	121	20.00	10	55%	0%	24%	21%	949	$50,355	$231,408	Light
	Average		337	30.08	30	34%	32%	26%	9%	1263	$55,312	$194,322	
	Median		52	5.70	10	34%	23%	17%	0%	759	$54,845	$206,862	
	High		2,034	80.00	140	76%	94%	83%	44%	4,689	$84,426	$281,731	
	Low		35	5.00	0	4%	0%	0%	0%	312	$35,057	$99,219	
	Coastal Pines												
	1-Mile		2360	200.00	50	23%	73%	4%	0%	13	$60,354	$170,000	
	3-Mile		2360	200.00	50	23%	73%	4%	0%	801	$49,416	$214,089	
	5-Mile		2360	200.00	50	23%	73%	4%	0%	2813	$48,754	$230,017	

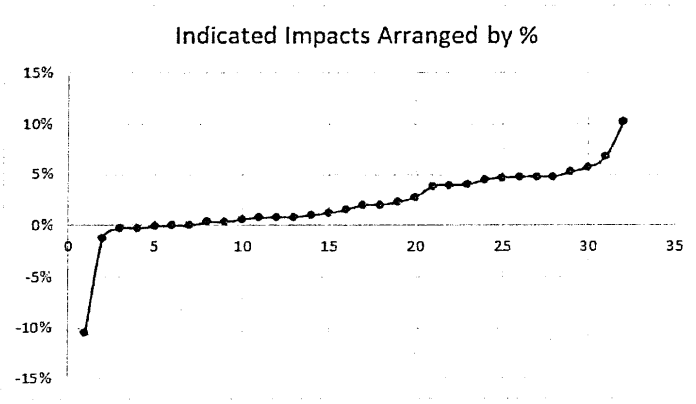
The solar farm matched pairs shown above have similar characteristics to each other in terms of population, but with several outliers showing solar farms in farm more urban areas. The median income for the population within 1 mile of a solar farm is $54,845 with a median housing unit value of $206,862. Most of the comparables are under $300,000 in the home price, though I have matched pairs in multiple states over $1,000,000 adjoining solar farms. The adjoining uses show that residential and agricultural uses are the predominant adjoining uses. These figures are in line with the larger set of solar farms that I have looked at with the predominant adjoining uses being residential and agricultural and similar to the solar farm breakdown shown for the southeast as shown later in this report.

Based on the similarity of adjoining uses and demographic data between these sites and the subject property, I consider it reasonable to compare these sites to the subject property.

I have pulled 32 matched pairs from the above referenced solar farms to provide the following summary of home sale matched pairs and land sales next to solar farms. The summary shows that the range of differences is from -10% to +10% with an average of +2% and median of +2%. This means that the average and median impact is for a slight positive impact due to adjacency to a solar farm. However, this +2% to rate is within the typical variability I would expect from real estate. I therefore conclude that this data shows no negative or positive impact due to adjacency to a solar farm.

While the range is seemingly wide, the graph below clearly shows that the vast majority of the data falls between 0% and +5%. There were only 2 indicators showing an impact below zero and they were -1% and -10%. The other thirty results ranged from zero to +10%.

I therefore conclude that these matched pairs support a finding of no impact on value at the subject property for the proposed project, which as proposed will include a landscaped buffer to screen adjoining residential properties.


Indicated Impacts Arranged by %
15%
10%
5%
0%
-5%
-10%
-15%
0
5
10
15
20
25
30
35

B. Southeastern USA Data – Over 5 MW

I have also considered a number of projects throughout the southeast which includes a number of solar farms much larger than those considered in just North Carolina. I have shown the results below. The full write-ups similar to the NC write-ups are available in my files.

Conclusion – Southeast Over 5 MW

Southeast USA Over 5 MW
Matched Pair Summary

						Adj. Uses By Acreage					1 mile Radius (2010-2020 Data)			
	Name	City	State	Acres	MW	Topo Shift	Res	Ag	Ag/Res	Com/Ind	Pop.	Med. Income	Avg. Housing Unit	Veg. Buffer
1	AM Best	Goldsboro	NC	38	5.00	2	38%	0%	23%	39%	1,523	$37,358	$148,375	Light
2	Mulberry	Selmer	TN	160	5.00	60	13%	73%	10%	3%	467	$40,936	$171,746	Lt to Med
3	Leonard	Hughesville	MD	47	5.00	20	18%	75%	0%	6%	525	$106,550	$350,000	Light
4	Gastonia SC	Gastonia	NC	35	5.00	48	33%	0%	23%	44%	4,689	$35,057	$126,562	Light
5	Summit	Moyock	NC	2,034	80.00	4	4%	0%	94%	2%	382	$79,114	$281,731	Light
6	Tracy	Bailey	NC	50	5.00	10	29%	0%	71%	0%	312	$43,940	$99,219	Heavy
7	Manatee	Parrish	FL	1,180	75.00	20	2%	97%	1%	0%	48	$75,000	$291,667	Heavy
8	McBride	Midland	NC	627	75.00	140	12%	10%	78%	0%	398	$63,678	$256,306	Lt to Med
9	Mariposa	Stanley	NC	36	5.00	96	48%	0%	52%	0%	1,716	$36,439	$137,884	Light
10	Clarke Cnty	White Post	VA	234	20.00	70	14%	39%	46%	1%	578	$81,022	$374,453	Light
11	Simon	Social Circle	GA	237	30.00	71	1%	63%	36%	0%	203	$76,155	$269,922	Medium
12	Candace	Princeton	NC	54	5.00	22	76%	24%	0%	0%	448	$51,002	$107,171	Medium
13	Walker	Barhamsville	VA	485	20.00	N/A	12%	68%	20%	0%	203	$80,773	$320,076	Light
14	Innov 46	Hope Mills	NC	532	78.50	0	17%	83%	0%	0%	2,247	$58,688	$183,435	Light
15	Innov 42	Fayetteville	NC	414	71.00	0	41%	59%	0%	0%	568	$60,037	$276,347	Light
16	Sunfish	Willow Spring	NC	50	6.40	30	35%	35%	30%	0%	1,515	$63,652	$253,138	Light
17	Sappony	Stony Crk	VA	322	20.00	N/A	2%	98%	0%	0%	74	$51,410	$155,208	Light
18	Camden Dam	Camden	NC	50	5.00	0	17%	72%	11%	0%	403	$84,426	$230,288	Light
19	Grandy	Grandy	NC	121	20.00	10	55%	24%	0%	21%	949	$50,355	$231,408	Light
20	Champion	Pelion	SC	100	10.00	N/A	4%	70%	8%	18%	1,336	$46,867	$171,939	Light
21	Barefoot Bay	Barefoot Bay	FL	504	74.50	0	11%	87%	0%	3%	2,446	$36,737	$143,320	Lt to Med
22	Miami-Dade	Miami	FL	347	74.50	0	26%	74%	0%	0%	127	$90,909	$403,571	Light
23	Spotyslvania	Paytes	VA	3,500	617.00	160	37%	52%	11%	0%	74	$120,861	$483,333	Md to Hvy
	Average			485	57.04	38	24%	48%	22%	6%	923	$63,955	$237,700	
	Median			234	20.00	20	17%	59%	11%	0%	467	$60,037	$231,408	
	High			3,500	617.00	160	76%	98%	94%	44%	4,689	$120,861	$483,333	
	Low			35	5.00	0	1%	0%	0%	0%	48	$35,057	$99,219	

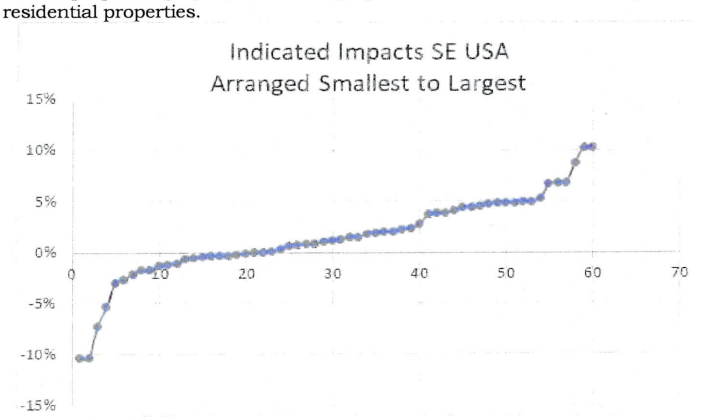
The solar farm matched pairs shown above have similar characteristics to each other in terms of population, but with several outliers showing solar farms in farm more urban areas. The median income for the population within 1 mile of a solar farm is $60,037 with a median housing unit value of $231,408. Most of the comparables are under $300,000 in the home price, with $483,333 being the high end of the set, though I have matched pairs in multiple states over $1,000,000 adjoining solar farms. The adjoining uses show that residential and agricultural uses are the predominant adjoining uses. These figures are in line with the larger set of solar farms that I have looked at with the predominant adjoining uses being residential and agricultural and similar to the solar farm breakdown shown for Virginia and adjoining states as well as the proposed subject property.

Based on the similarity of adjoining uses and demographic data between these sites and the subject property, I consider it reasonable to compare these sites to the subject property.

I have pulled 56 matched pairs from the above referenced solar farms to provide the following summary of home sale matched pairs and land sales next to solar farms. The summary shows that the range of differences is from -10% to +10% with an average of +1% and median of +1%. This means that the average and median impact is for a slight positive impact due to adjacency to a solar farm. However, this +1 to rate is within the typical variability I would expect from real estate. I therefore conclude that this data shows no negative or positive impact due to adjacency to a solar farm.

While the range is seemingly wide, the graph below clearly shows that the vast majority of the data falls between -5% and +5% and most of those are clearly in the 0 to +5% range. This data strongly supports an indication of no impact on adjoining residential uses to a solar farm.

I therefore conclude that these matched pairs support a finding of no impact on value at the subject property for the proposed project, which as proposed will include a landscaped buffer to screen adjoining residential properties.



Residential Dwelling Matched Pairs Adjoining Solar Farms

Pair	Solar Farm	City	State	MW	Approx Distance	Tax ID/Address	Date	Sale Price	Adj. Sale Price	% Diff	Veg. Buffer
1	AM Best	Goldsboro	NC	5	280	3600195570	Sep-13	$250,000			Light
						3600198928	Mar-14	$250,000	$250,000	0%	
2	AM Best	Goldsboro	NC	5	280	3600195361	Sep-13	$260,000			Light
						3600194813	Apr-14	$258,000	$258,000	1%	
3	AM Best	Goldsboro	NC	5	280	3600199891	Jul-14	$250,000			Light
						3600198928	Mar-14	$250,000	$250,000	0%	
4	AM Best	Goldsboro	NC	5	280	3600198632	Aug-14	$253,000			Light
						3600193710	Oct-13	$248,000	$248,000	2%	
5	AM Best	Goldsboro	NC	5	280	3600196656	Dec-13	$255,000			Light
						3601105180	Dec-13	$253,000	$253,000	1%	
6	AM Best	Goldsboro	NC	5	280	3600182511	Feb-13	$247,000			Light
						3600183905	Dec-12	$240,000	$245,000	1%	
7	AM Best	Goldsboro	NC	5	280	3600182784	Apr-13	$245,000			Light
						3600193710	Oct-13	$248,000	$248,000	-1%	
8	AM Best	Goldsboro	NC	5	280	3600195361	Nov-15	$267,500			Light
						3600195361	Sep-13	$260,000	$267,800	0%	
9	Mulberry	Selmer	TN	5	400	0900A011	Jul-14	$130,000			Light
						099CA043	Feb-15	$148,900	$136,988	-5%	
10	Mulberry	Selmer	TN	5	400	099CA002	Jul-15	$130,000			Light
						0990NA040	Mar-15	$120,000	$121,200	7%	
11	Mulberry	Selmer	TN	5	480	491 Dusty	Oct-16	$176,000			Light
						35 April	Aug-16	$185,000	$178,283	-1%	
12	Mulberry	Selmer	TN	5	650	297 Country	Sep-16	$150,000			Medium
						53 Glen	Mar-17	$126,000	$144,460	4%	
13	Mulberry	Selmer	TN	5	685	57 Cooper	Feb-19	$163,000			Medium
						191 Amelia	Aug-18	$132,000	$155,947	4%	
14	Leonard Rd	Hughesville	MD	5.5	230	14595 Box Elder	Feb-16	$291,000			Light
						15313 Bassford Rd	Jul-16	$329,800	$292,760	-1%	
15	Neal Hawkins	Gastonia	NC	5	225	609 Neal Hawkins	Mar-17	$270,000			Light
						1418 N Modena	Apr-18	$225,000	$242,520	10%	
16	Summit	Moyock	NC	80	1,060	129 Pinto	Apr-16	$170,000			Light
						102 Timber	Apr-16	$175,500	$175,101	-3%	
17	Summit	Moyock	NC	80	980	105 Pinto	Dec-16	$206,000			Light
						127 Ranchland	Jun-15	$219,900	$198,120	4%	
18	Tracy	Bailey	NC	5	780	9162 Winters	Jan-17	$255,000			Heavy
						7352 Red Fox	Jun-16	$176,000	$252,399	1%	
19	Manatee	Parrish	FL	75	1180	13670 Highland	Aug-18	$255,000			Heavy
						13851 Highland	Sep-18	$240,000	$255,825	0%	
20	McBride Place	Midland	NC	75	275	4380 Joyner	Nov-17	$325,000			Medium
						3870 Elkwood	Aug-16	$250,000	$317,523	2%	
21	McBride Place	Midland	NC	75	505	5811 Kristi	Mar-20	$530,000			Medium
						3915 Tania	Dec-19	$495,000	$504,657	5%	
22	Mariposa	Stanley	NC	5	1155	215 Mariposa	Dec-17	$249,000			Light
						110 Airport	May-16	$166,000	$239,026	4%	
23	Mariposa	Stanley	NC	5	570	242 Mariposa	Sep-15	$180,000			Light
						110 Airport	Apr-16	$166,000	$175,043	3%	
24	Clarke Cnty	White Post	VA	20	1230	833 Nations Spr	Jan-17	$295,000			Light
						6801 Middle	Dec-17	$249,999	$296,157	0%	
25	Candace	Princeton	NC	5	488	499 Herring	Sep-17	$215,000			Medium
						1795 Bay Valley	Dec-17	$194,000	$214,902	0%	
26	Walker	Barhamsville	VA	20	250	5241 Barham	Oct-18	$264,000			Light
						9252 Ordinary	Jun-19	$277,000	$246,581	7%	
27	AM Best	Goldsboro	NC	5	385	103 Granville Pl	Jul-18	$265,000			Light
						2219 Granville	Jan-18	$260,000	$265,682	0%	
28	AM Best	Goldsboro	NC	5	315	104 Erin	Jun-17	$280,000			Light
						2219 Granville	Jan-18	$265,000	$274,390	2%	
29	AM Best	Goldsboro	NC	5	400	2312 Granville	May-18	$284,900			Light
						2219 Granville	Jan-18	$265,000	$273,948	4%	

Residential Dwelling Matched Pairs Adjoining Solar Farms

Pair	Solar Farm	City	State	MW	Approx Distance	Tax ID/Address	Date	Sale Price	Adj. Sale Price	% Diff	Veg. Buffer
30	AM Best	Goldsboro	NC	5	400	2310 Granville	May-19	$280,000			Light
						634 Friendly	Jul-19	$267,000	$265,291	5%	
31	Summit	Moyock	NC	80	570	318 Green View	Sep-19	$357,000			Light
						336 Green View	Jan-19	$365,000	$340,286	5%	
32	Summit	Moyock	NC	80	440	164 Ranchland	Apr-19	$169,000			Light
						105 Longhorn	Oct-17	$184,500	$186,616	-10%	
33	Summit	Moyock	NC	80	635	358 Oxford	Sep-19	$478,000			Light
						176 Providence	Sep-19	$425,000	$456,623	4%	
34	Summit	Moyock	NC	80	970	343 Oxford	Mar-17	$490,000			Light
						218 Oxford	Apr-17	$525,000	$484,064	1%	
35	Innov 46	Hope Mills	NC	78.5	435	6849 Roslin Farm	Feb-19	$155,000			Light
						109 Bledsoe	Jan-19	$150,000	$147,558	5%	
36	Innov 42	Fayetteville	NC	71	340	2923 County Line	Feb-19	$385,000			Light
						2109 John McMillan	Apr-18	$320,000	$379,156	2%	
37	Innov 42	Fayetteville	NC	71	330	2935 County Line	Jun-19	$266,000			Light
						7031 Glynn Mill	May-18	$255,000	$264,422	1%	
38	Sunfish	Willow Sprng	NC	6.4	205	7513 Glen Willow	Sep-17	$185,000			Light
						205 Pine Burr	Dec-17	$191,000	$172,487	7%	
39	Neal Hawkins	Gastonia	NC	5	145	611 Neal Hawkins	Jun-17	$288,000			Light
						1211 Still Forrest	Jul-18	$280,000	$274,319	5%	
40	Clarke Cnty	White Post	VA	20	1230	833 Nations Spr	Aug-19	$385,000			Light
						2393 Old Chapel	Aug-20	$330,000	$389,286	-1%	
41	Sappony	Stony Creek	VA	20	1425	12511 Palestine	Jul-18	$128,400			Medium
						6494 Rocky Branch	Nov-18	$100,000	$131,842	-3%	
42	Camden Dam	Camden	NC	5	342	122 N Mill Dam	Nov-18	$350,000			Light
						548 Trotman	May-18	$309,000	$352,450	-1%	
43	Grandy	Grandy	NC	20	405	120 Par Four	Aug-19	$315,000			Light
						116 Barefoot	Sep-20	$290,000	$299,584	5%	
44	Grandy	Grandy	NC	20	477	269 Grandy	May-19	$275,000			Light
						103 Spring Leaf	Aug-18	$270,000	$275,912	0%	
45	Champion	Pelion	SC	10	505	517 Old Charleston	Aug-20	$110,000			Light
						1429 Laurel	Feb-19	$126,000	$107,856	2%	
46	Barefoot Bay	Barefoot Bay	FL	74.5	765	465 Papaya	Jul-19	$155,000			Medium
						1132 Waterway	Jul-20	$129,000	$141,618	9%	
47	Barefoot Bay	Barefoot Bay	FL	74.5	750	455 Papaya	Sep-20	$183,500			Medium
						904 Fir	Sep-20	$192,500	$186,697	-2%	
48	Barefoot Bay	Barefoot Bay	FL	74.5	690	419 Papaya	Jul-19	$127,500			Medium
						865 Tamarind	Feb-19	$133,900	$124,613	2%	
49	Barefoot Bay	Barefoot Bay	FL	74.5	690	413 Papaya	Jul-20	$130,000			Medium
						1367 Barefoot	Jan-21	$130,500	$139,507	-7%	
50	Barefoot Bay	Barefoot Bay	FL	74.5	690	343 Papaya	Dec-19	$145,000			Light
						865 Tamarind	Feb-19	$133,900	$142,403	2%	
51	Barefoot Bay	Barefoot Bay	FL	74.5	710	335 Papaya	Apr-18	$110,000			Light
						865 Tamarind	Feb-19	$133,900	$110,517	0%	
52	Miami-Dade	Miami	FL	74.5	1390	13600 SW 182nd	Nov-20	$1,684,000			Light
						17950 SW 158th	Oct-20	$1,730,000	$1,713,199	-2%	
53	Spotsylvania	Paytes	VA	617	1270	12901 Orange Pink	Aug-20	$319,900			Medium
						12717 Flintlock	Dec-20	$290,000	$326,767	-2%	
54	Spotsylvania	Paytes	VA	617	1950	9641 Nottoway	May-20	$449,900			Medium
						11626 Forest	Aug-20	$489,900	$430,246	4%	
55	Spotsylvania	Paytes	VA	617	1171	13353 Post Oak	Sep-20	$300,000			Heavy
						12810 Catharpin	Jan-20	$280,000	$299,008	0%	
56	McBride Place	Midland	NC	75	470	5833 Kristi	Sep-20	$625,000			Light
						4055 Dakeita	Dec-20	$600,000	$594,303	5%	

MW	Avg. Distance
64.91	612
20.00	479
617.00	1,950
5.00	145

	Indicated Impact
Average	1%
Median	1%
High	10%
Low	-10%

I have further broken down these results based on the MWs, Landscaping, and distance from panel to show the following range of findings for these different categories.

Most of the findings are for homes between 201 and 500 feet. Most of the findings are for Light landscaping screens.

Light landscaping screens are showing no impact on value at any distances, including for solar farms over 75.1 MW.

MW Range 4.4 to 10 Landscaping Distance	Light 100-200	Light 201-500	Light 500+	Medium 100-200	Medium 201-500	Medium 500+	Heavy 100-200	Heavy 201-500	Heavy 500+
#	1	19	2	0	1	2	0	0	1
Average	5%	2%	3%	N/A	0%	4%	N/A	N/A	1%
Median	5%	1%	3%	N/A	0%	4%	N/A	N/A	1%
High	5%	10%	4%	N/A	0%	4%	N/A	N/A	1%
Low	5%	-5%	3%	N/A	0%	4%	N/A	N/A	1%

10.1 to 30 Landscaping Distance	Light 100-200	Light 201-500	Light 500+	Medium 100-200	Medium 201-500	Medium 500+	Heavy 100-200	Heavy 201-500	Heavy 500+
#	0	3	2	0	0	1	0	0	0
Average	N/A	4%	-1%	N/A	N/A	-3%	N/A	N/A	N/A
Median	N/A	5%	-1%	N/A	N/A	-3%	N/A	N/A	N/A
High	N/A	7%	0%	N/A	N/A	-3%	N/A	N/A	N/A
Low	N/A	0%	-1%	N/A	N/A	-3%	N/A	N/A	N/A

30.1 to 75 Landscaping Distance	Light 100-200	Light 201-500	Light 500+	Medium 100-200	Medium 201-500	Medium 500+	Heavy 100-200	Heavy 201-500	Heavy 500+
#	0	2	3	0	0	4	0	0	0
Average	N/A	1%	0%	N/A	N/A	0%	N/A	N/A	N/A
Median	N/A	1%	0%	N/A	N/A	0%	N/A	N/A	N/A
High	N/A	2%	2%	N/A	N/A	9%	N/A	N/A	N/A
Low	N/A	1%	-2%	N/A	N/A	-7%	N/A	N/A	N/A

75.1+ Landscaping Distance	Light 100-200	Light 201-500	Light 500+	Medium 100-200	Medium 201-500	Medium 500+	Heavy 100-200	Heavy 201-500	Heavy 500+
#	0	2	5	0	0	2	0	0	1
Average	N/A	-3%	2%	N/A	N/A	1%	N/A	N/A	0%
Median	N/A	-3%	4%	N/A	N/A	1%	N/A	N/A	0%
High	N/A	5%	5%	N/A	N/A	4%	N/A	N/A	0%
Low	N/A	-10%	-3%	N/A	N/A	-2%	N/A	N/A	0%

C. *Summary of National Data on Solar Farms*

I have worked in 19 states related to solar farms and I have been tracking matched pairs in most of those states. On the following pages I provide a brief summary of those findings showing 37 solar farms over 5 MW studied with each one providing matched pair data supporting the findings of this report.

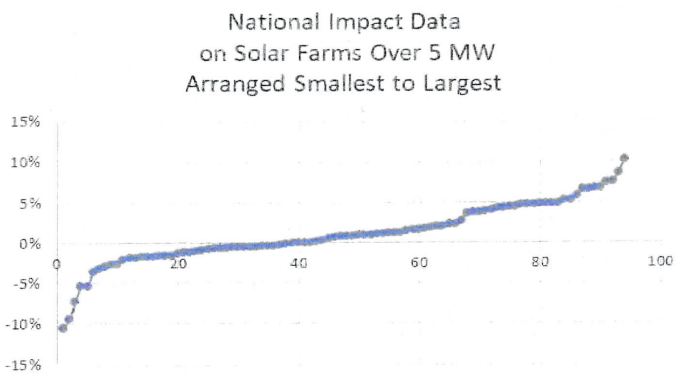
The solar farms summary is shown below with a summary of the matched pair data shown on the following page.

Matched Pair Summary						Adj. Uses By Acreage					1 mile Radius (2010-2020 Data)			
	Name	City	State	Acres	MW	Topo Shift	Res	Ag	Ag/Res	Com/Ind	Popl.	Med. Income	Avg. Housing Unit	Veg. Buffer
1	AM Best	Goldsboro	NC	38	5.00	2	38%	0%	23%	39%	1,523	$37,358	$148,375	Light
2	Mulberry	Selmer	TN	160	5.00	60	13%	73%	10%	3%	467	$40,936	$171,746	Lt to Med
3	Leonard	Hughesville	MD	47	5.00	20	18%	75%	0%	6%	525	$106,550	$350,000	Light
4	Gastonia SC	Gastonia	NC	35	5.00	48	33%	0%	23%	44%	4,689	$35,057	$126,562	Light
5	Summit	Moyock	NC	2,034	80.00	4	4%	0%	94%	2%	382	$79,114	$281,731	Light
7	Tracy	Bailey	NC	50	5.00	10	29%	0%	71%	0%	312	$43,940	$99,219	Heavy
8	Manatee	Parrish	FL	1,180	75.00	20	2%	97%	1%	0%	48	$75,000	$291,667	Heavy
9	McBride	Midland	NC	627	75.00	140	12%	10%	78%	0%	398	$63,678	$256,306	Lt to Med
10	Grand Ridge	Streator	IL	160	20.00	1	8%	87%	5%	0%	96	$70,158	$187,037	Light
11	Dominion	Indianapolis	IN	134	8.60	20	3%	97%	0%	0%	3,774	$61,115	$167,515	Light
12	Mariposa	Stanley	NC	36	5.00	96	48%	0%	52%	0%	1,716	$36,439	$137,884	Light
13	Clarke Cnty	White Post	VA	234	20.00	70	14%	39%	46%	1%	578	$81,022	$374,453	Light
14	Flemington	Flemington	NJ	120	9.36	N/A	13%	50%	28%	8%	3,477	$105,714	$444,696	Lt to Med
15	Frenchtown	Frenchtown	NJ	139	7.90	N/A	37%	35%	29%	0%	457	$111,562	$515,399	Light
16	McGraw	East Windsor	NJ	95	14.00	N/A	27%	44%	0%	29%	7,684	$78,417	$362,428	Light
17	Tinton Falls	Tinton Falls	NJ	100	16.00	N/A	98%	0%	0%	2%	4,667	$92,346	$343,492	Light
18	Simon	Social Circle	GA	237	30.00	71	1%	63%	36%	0%	203	$76,155	$269,922	Medium
19	Candace	Princeton	NC	54	5.00	22	76%	24%	0%	0%	448	$51,002	$107,171	Medium
20	Walker	Barhamsville	VA	485	20.00	N/A	12%	68%	20%	0%	203	$80,773	$320,076	Light
21	Innov 46	Hope Mills	NC	532	78.50	0	17%	83%	0%	0%	2,247	$58,688	$183,435	Light
22	Innov 42	Fayetteville	NC	414	71.00	0	41%	59%	0%	0%	568	$60,037	$276,347	Light
23	Demille	Lapeer	MI	160	28.40	10	10%	68%	0%	22%	2,010	$47,208	$187,214	Light
24	Turrill	Lapeer	MI	230	19.60	10	75%	59%	0%	25%	2,390	$46,839	$110,361	Light
25	Sunfish	Willow Spring	NC	50	6.40	30	35%	35%	30%	0%	1,515	$63,652	$253,138	Light
26	Picture Rocks	Tucson	AZ	182	20.00	N/A	6%	88%	6%	0%	102	$81,081	$280,172	None
27	Avra Valley	Tucson	AZ	246	25.00	N/A	3%	94%	3%	0%	85	$80,997	$292,308	None
28	Sappony	Stony Crk	VA	322	20.00	N/A	2%	98%	0%	0%	74	$51,410	$155,208	Medium
29	Camden Dam	Camden	NC	50	5.00	0	17%	72%	11%	0%	403	$84,426	$230,288	Light
30	Grandy	Grandy	NC	121	20.00	10	55%	24%	0%	21%	949	$50,355	$231,408	Light
31	Champion	Pelion	SC	100	10.00	N/A	4%	70%	8%	18%	1,336	$46,867	$171,939	Light
32	Eddy II	Eddy	TX	93	10.00	N/A	15%	25%	58%	2%	551	$59,627	$139,088	Light
33	Somerset	Somerset	TX	128	10.60	N/A	5%	95%	0%	0%	1,293	$41,574	$135,490	Light
34	DG Amp Piqua	Piqua	OH	86	12.60	2	26%	16%	58%	0%	6,735	$38,919	$96,555	Light
45	Barefoot Bay	Barefoot Bay	FL	504	74.50	0	11%	87%	0%	3%	2,446	$36,737	$143,320	Lt to Med
36	Miami-Dade	Miami	FL	347	74.50	0	26%	74%	0%	0%	127	$90,909	$403,571	Light
37	Spotyslvania	Paytes	VA	3,500	617.00	160	37%	52%	11%	0%	74	$120,861	$483,333	Med to Hvy
	Average			362	42.05	32	24%	52%	19%	6%	1,515	$66,292	$242,468	
	Median			150	17.80	10	16%	59%	7%	0%	560	$62,384	$230,848	
	High			3,500	617.00	160	98%	98%	94%	44%	7,684	$120,861	$515,399	
	Low			35	5.00	0	1%	0%	0%	0%	48	$35,057	$96,555	

From these 37 solar farms, I have derived 94 matched pairs. The matched pairs show no negative impact at distances as close as 105 feet between a solar panel and the nearest point on a home. The range of impacts is -10% to +10% with an average and median of +1%.

	MW	Avg. Distance		Indicated Impact
Average	44.80	569	**Average**	1%
Median	14.00	400	**Median**	1%
High	617.00	1,950	**High**	10%
Low	5.00	145	**Low**	-10%

While the range is broad, the two charts below show the data points in range from lowest to highest. There is only 3 data points out of 94 that show a negative impact. The rest support either a finding of no impact or 9 of the data points suggest a positive impact due to adjacency to a solar farm. As discussed earlier in this report, I consider this data to strongly support a finding of no impact on value as most of the findings are within typical market variation and even within that, most are mildly positive findings.



D. Larger Solar Farms

I have also considered larger solar farms to address impacts related to larger projects. Projects have been increasing in size and most of the projects between 100 and 1000 MW are newer with little time for adjoining sales. I have included a breakdown of solar farms with 20 MW to 80 MW facilities with one 617 MW facility.

Matched Pair Summary - @20 MW And Larger

							Adj. Uses By Acreage				1 mile Radius (2010-2019 Data)			
	Name	City	State	Acres	MW	Topo Shift	Res	Ag	Ag/Res	Com/Ind	Popl.	Med. Income	Avg. Housing Unit	Veg. Buffer
1	Summit	Moyock	NC	2,034	80.00	4	4%	0%	94%	2%	382	$79,114	$281,731	Light
2	Manatee	Parrish	FL	1,180	75.00	20	2%	97%	1%	0%	48	$75,000	$291,667	Heavy
3	McBride	Midland	NC	627	75.00	140	12%	10%	78%	0%	398	$63,678	$256,306	Lt to Med
4	Grand Ridge	Streator	IL	160	20.00	1	8%	87%	5%	0%	96	$70,158	$187,037	Light
5	Clarke Cnty	White Post	VA	234	20.00	70	14%	39%	46%	1%	578	$81,022	$374,453	Light
6	Simon	Social Circle	GA	237	30.00	71	1%	63%	36%	0%	203	$76,155	$269,922	Medium
7	Walker	Barhamsville	VA	485	20.00	N/A	12%	68%	20%	0%	203	$80,773	$320,076	Light
8	Innov 46	Hope Mills	NC	532	78.50	0	17%	83%	0%	0%	2,247	$58,688	$183,435	Light
9	Innov 42	Fayetteville	NC	414	71.00	0	41%	59%	0%	0%	568	$60,037	$276,347	Light
10	Demille	Lapeer	MI	160	28.40	10	10%	68%	0%	22%	2,010	$47,208	$187,214	Light
11	Turrill	Lapeer	MI	230	19.60	10	75%	59%	0%	25%	2,390	$46,839	$110,361	Light
12	Picure Rocks	Tucson	AZ	182	20.00	N/A	6%	88%	6%	0%	102	$81,081	$280,172	Light
13	Avra Valley	Tucson	AZ	246	25.00	N/A	3%	94%	3%	0%	85	$80,997	$292,308	None
14	Sappony	Stony Crk	VA	322	20.00	N/A	2%	98%	0%	0%	74	$51,410	$155,208	None
15	Grandy	Grandy	NC	121	20.00	10	55%	24%	0%	21%	949	$50,355	$231,408	Medium
16	Barefoot Bay	Barefoot Bay	FL	504	74.50	0	11%	87%	0%	3%	2,446	$36,737	$143,320	Lt to Med
17	Miami-Dade	Miami	FL	347	74.50	0	26%	74%	0%	0%	127	$90,909	$403,571	Light
18	Spotyslvania	Paytes	VA	3,500	617.00	160	37%	52%	11%	0%	74	$120,861	$483,333	Med to Hvy
	Average			640	76.03		19%	64%	17%	4%	721	$69,501	$262,659	
	Median			335	29.20		12%	68%	2%	0%	293	$72,579	$273,135	
	High			3,500	617.00		75%	98%	94%	25%	2,446	$120,861	$483,333	
	Low			121	19.60		1%	0%	0%	0%	48	$36,737	$110,361	

The breakdown of adjoining uses, population density, median income and housing prices for these projects are very similar to those of the larger set. The matched pairs for each of these were considered earlier and support a finding of no negative impact on the adjoining home values.

I have included a breakdown of solar farms with 50 MW to 617 MW facilities adjoining.

Matched Pair Summary - @50 MW And Larger

							Adj. Uses By Acreage				1 mile Radius (2010-2019 Data)			
	Name	City	State	Acres	MW	Topo Shift	Res	Ag	Ag/Res	Com/Ind	Popl.	Med. Income	Avg. Housing Unit	Veg. Buffer
1	Summit	Moyock	NC	2,034	80.00	4	4%	0%	94%	2%	382	$79,114	$281,731	Light
2	Manatee	Parrish	FL	1,180	75.00	20	2%	97%	1%	0%	48	$75,000	$291,667	Heavy
3	McBride	Midland	NC	627	75.00	140	12%	10%	78%	0%	398	$63,678	$256,306	Lt to Med
4	Innov 46	Hope Mills	NC	532	78.50	0	17%	83%	0%	0%	2,247	$58,688	$183,435	Light
5	Innov 42	Fayetteville	NC	414	71.00	0	41%	59%	0%	0%	568	$60,037	$276,347	Light
6	Barefoot Bay	Barefoot Bay	FL	504	74.50	0	11%	87%	0%	3%	2,446	$36,737	$143,320	Lt to Med
7	Miami-Dade	Miami	FL	347	74.50	0	26%	74%	0%	0%	127	$90,909	$403,571	Light
8	Spotyslvania	Paytes	VA	3,500	617.00	160	37%	52%	11%	0%	74	$120,861	$483,333	Med to Hvy
	Average			1,142	143.19		19%	58%	23%	1%	786	$73,128	$289,964	
	Median			580	75.00		15%	67%	0%	0%	390	$69,339	$279,039	
	High			3,500	617.00		41%	97%	94%	3%	2,446	$120,861	$483,333	
	Low			347	71.00		2%	0%	0%	0%	48	$36,737	$143,320	

The breakdown of adjoining uses, population density, median income and housing prices for these projects are very similar to those of the larger set. The matched pairs for each of these were considered earlier and support a finding of no negative impact on the adjoining home values.

The data for these larger solar farms is shown in the SE USA and the National data breakdowns with similar landscaping, setbacks and range of impacts that fall mostly in the +/-5% range as can be seen earlier in this report.

On the following page I show 81 projects ranging in size from 50 MW up to 1,000 MW with an average size of 111.80 MW and a median of 80 MW. This is the list of solar farms that I have researched for possible matched pairs and not a complete list of larger solar farms in those states.

				Output	Total	Used	Avg. Dist	Closest Adjoining Use by Acre				
Parcel #	State	City	Name	(MW)	Acres	Acres	to home	Home	Res	Agri	Ag/R	Com
78	NC	Moyock	Summit/Ranchland	80	2034		674	360	4%	94%	0%	2%
133	MS	Hattiesburg	Hattiesburg	50	1129	479.6	650	315	35%	65%	0%	0%
179	SC	Ridgeland	Jasper	140	1600	1000	461	108	2%	85%	13%	0%
211	NC	Enfield	Chestnut	75	1428.1		1,429	210	4%	96%	0%	0%
222	VA	Chase City	Grasshopper	80	946.25				6%	87%	5%	1%
226	VA	Louisa	Belcher	88	1238.1			150	19%	53%	28%	0%
305	FL	Dade City	Mountain View	55	347.12		510	175	32%	39%	21%	8%
319	FL	Jasper	Hamilton	74.9	1268.9	537	3,596	240	5%	67%	28%	0%
336	FL	Parrish	Manatee	74.5	1180.4		1,079	625	2%	50%	1%	47%
337	FL	Arcadia	Citrus	74.5	640				0%	0%	100%	0%
338	FL	Port Charlotte	Babcock	74.5	422.61				0%	0%	100%	0%
353	VA	Oak Hall	Amazon East(ern sh	80	1000		645	135	8%	75%	17%	0%
364	VA	Stevensburg	Greenwood	100	2266.6	1800	788	200	8%	62%	29%	0%
368	NC	Warsaw	Warsaw	87.5	585.97	499	526	130	11%	66%	21%	3%
390	NC	Ellerbe	Innovative Solar 34	50	385.24	226	N/A	N/A	1%	99%	0%	0%
399	NC	Midland	McBride	74.9	974.59	627	1,425	140	12%	78%	9%	0%
400	FL	Mulberry	Alafia	51	420.35		490	105	7%	90%	3%	0%
406	VA	Clover	Foxhound	91	1311.8		885	185	5%	61%	17%	18%
410	FL	Trenton	Trenton	74.5	480		2,193	775	0%	26%	55%	19%
411	NC	Battleboro	Fern	100	1235.4	960.71	1,494	220	5%	76%	19%	0%
412	MD	Goldsboro	Cherrywood	202	1722.9	1073.7	429	200	10%	76%	13%	0%
434	NC	Conetoe	Conetoe	80	1389.9	910.6	1,152	120	5%	78%	17%	0%
440	FL	Debary	Debary	74.5	844.63		654	190	3%	27%	0%	70%
441	FL	Hawthorne	Horizon	74.5	684				3%	81%	16%	0%
484	VA	Newsoms	Southampton	100	3243.9		-	-	3%	78%	17%	3%
486	VA	Stuarts Draft	Augusta	125	3197.4	1147	588	165	16%	61%	16%	7%
491	NC	Misenheimer	Misenheimer 2018	80	740.2	687.2	504	130	11%	40%	22%	27%
494	VA	Shacklefords	Walnut	110	1700	1173	641	165	14%	72%	13%	1%
496	VA	Clover	Piney Creek	80	776.18	422	523	195	15%	62%	24%	0%
511	NC	Scotland Neck	American Beech	160	3255.2	1807.8	1,262	205	2%	58%	38%	3%
514	NC	Reidsville	Williamsburg	80	802.6	507	734	200	25%	12%	63%	0%
517	VA	Luray	Cape	100	566.53	461	519	110	42%	12%	46%	0%
518	VA	Emporia	Fountain Creek	80	798.3	595	862	300	6%	23%	71%	0%
525	NC	Plymouth	Macadamia	484	5578.7	4813.5	1,513	275	1%	90%	9%	0%
526	NC	Mooresboro	Broad River	50	759.8	365	419	70	29%	55%	16%	0%
555	FL	Mulberry	Durrance	74.5	463.57	324.65	438	140	3%	97%	0%	0%
560	NC	Yadkinville	Sugar	60	477	357	382	65	19%	39%	20%	22%
561	NC	Enfield	Halifax 80mw 2019	80	1007.6	1007.6	672	190	8%	73%	19%	0%
577	VA	Windsor	Windsor	85	564.1	564.1	572	160	9%	67%	24%	0%
579	VA	Paytes	Spotsylvania	500	6412	3500			9%	52%	11%	27%
582	NC	Salisbury	China Grove	65	428.66	324.26	438	85	58%	4%	38%	0%
583	NC	Walnut Cove	Lick Creek	50	1424	185.11	410	65	20%	64%	11%	5%
584	NC	Enfield	Sweetleaf	94	1956.3	1250	968	160	5%	63%	32%	0%
586	VA	Aylett	Sweet Sue	77	1262	576	1,617	680	7%	68%	25%	0%
593	NC	Windsor	Sumac	120	3360.6	1257.9	876	160	4%	90%	6%	0%
599	TN	Somerville	Yum Yum	147	4000	1500	1,862	330	3%	32%	64%	1%
602	GA	Waynesboro	White Oak	76.5	516.7	516.7	2,995	1,790	1%	34%	65%	0%
603	GA	Butler	Butler GA	103	2395.1	2395.1	1,534	255	2%	73%	23%	2%
604	GA	Butler	White Pine	101.2	505.94	505.94	1,044	100	1%	51%	48%	1%
605	GA	Metter	Live Oak	51	417.84	417.84	910	235	4%	72%	23%	0%
606	GA	Hazelhurst	Hazelhurst II	52.5	947.15	490.42	2,114	105	9%	64%	27%	0%
607	GA	Bainbridge	Decatur Parkway	80	781.5	781.5	1,123	450	2%	27%	22%	49%
608	GA	Leslie-DeSoto	Americus	1000	9661.2	4437	5,210	510	1%	63%	36%	0%
616	FL	Fort White	Fort White	74.5	570.5	457.2	828	220	12%	71%	17%	0%
621	VA	Spring Grove	Loblolly	150	2181.9	1000	1,860	110	7%	62%	31%	0%
622	VA	Scottsville	Woodridge	138	2260.9	1000	1,094	170	9%	63%	28%	0%
625	NC	Middlesex	Phobos	80	754.52	734	356	57	14%	75%	10%	0%
628	MI	Deerfield	Carroll Road	200	1694.8	1694.8	343	190	12%	86%	0%	2%
633	VA	Emporia	Brunswick	150.2	2076.4	1387.3	1,091	240	4%	85%	11%	0%
634	NC	Elkin	Partin	50	429.4	257.64	945	155	30%	25%	15%	30%

Parcel #	State	City	Name	Output (MW)	Total Acres	Used Acres	Avg. Dist to home	Closest Home	Adjoining Use by Acre Res	Agri	Ag/R	Com
638	GA	Dry Branch	Twiggs	200	2132.7	2132.7	-	-	10%	55%	35%	0%
639	NC	Hope Mills	Innovative Solar 46	78.5	531.87	531.87	423	125	17%	83%	0%	0%
640	NC	Hope Mills	Innovative Solar 42	71	413.99	413.99	375	135	41%	59%	0%	0%
645	NC	Stanley	Hornet	75	1499.5	858.4	663	110	30%	40%	23%	6%
650	NC	Grifton	Grifton 2	56	681.59	297.6	363	235	1%	99%	0%	0%
651	NC	Grifton	Buckleberry	52.1	367.67	361.67	913	180	5%	54%	41%	0%
657	KY	Greensburg	Horseshoe Bend	60	585.65	395	1,394	63	3%	36%	61%	0%
658	KY	Campbellsville	Flat Run	55	429.76	429.76	408	115	13%	52%	35%	0%
666	FL	Archer	Archer	74.9	636.94	636.94	638	200	43%	57%	0%	0%
667	FL	New Smyrna Bea	Pioneer Trail	74.5	1202.8	900	1,162	225	14%	61%	21%	4%
668	FL	Lake City	Sunshine Gateway	74.5	904.29	472	1,233	890	11%	80%	8%	0%
669	FL	Florahome	Coral Farms	74.5	666.54	580	1,614	765	19%	75%	7%	0%
672	VA	Appomattox	Spout Spring	60	881.12	673.37	836	335	16%	30%	46%	8%
676	TX	Stamford	Alamo 7	106.4	1663.1	1050	-	-	6%	83%	0%	11%
677	TX	Fort Stockton	RE Roserock	160	1738.2	1500	-	-	0%	100%	0%	0%
678	TX	Lamesa	Lamesa	102	914.5	655	921	170	4%	41%	11%	44%
679	TX	Lamesa	Ivory	50	706	570	716	460	0%	87%	2%	12%
680	TX	Uvalde	Alamo 5	95	830.35	800	925	740	1%	93%	6%	0%
684	NC	Waco	Brookcliff	50	671.03	671.03	560	150	7%	21%	15%	57%
689	AZ	Arlington	Mesquite	320.8	3774.5	2617	1,670	525	8%	92%	0%	0%
692	AZ	Tucson	Avalon	51	479.21	352	-	-	0%	100%	0%	0%
				81								
			Average	111.80	1422.4	968.4	1031	263	10%	62%	22%	6%
			Median	80.00	914.5	646.0	836	188	7%	64%	17%	0%
			High	1000.00	9661.2	4813.5	5210	1790	58%	100%	100%	70%
			Low	50.00	347.1	185.1	343	57	0%	0%	0%	0%

VII. Distance Between Homes and Panels

I have measured distances at matched pairs as close as 105 feet between panel and home to show no impact on value. This measurement goes from the closest point on the home to the closest solar panel. This is a strong indication that at this distance there is no impact on adjoining homes.

However, in tracking other approved solar farms across North Carolina and other states, I have found that it is common for there to be homes within 100 to 150 feet of solar panels. Given the visual barriers in the form of privacy fencing or landscaping, there is no sign of negative impact.

I have also tracked a number of locations where solar panels are between 50 and 100 feet of single-family homes. In these cases the landscaping is typically a double row of more mature evergreens at time of planting. There are many examples of solar farms with one or two homes closer than 100-feet, but most of the adjoining homes are further than that distance.

VIII. Topography

As shown on the summary charts for the solar farms, I have been identifying the topographic shifts across the solar farms considered. Differences in topography can impact visibility of the panels, though typically this results in distant views of panels as opposed to up close views. The topography noted for solar farms showing no impact on adjoining home values range from as much as 160-foot shifts across the project. Given that appearance is the only factor of concern and that distance plus landscape buffering typically addresses up close views, this leaves a number of potentially distant views of panels.

General rolling terrain with some distant solar panel views are showing no impact on adjoining property value.

IX. Potential Impacts During Construction

Any development of a site will have a certain amount of construction, whether it is for a commercial agricultural use such as large-scale poultry operations or a new residential subdivision. Construction will be temporary and consistent with other development uses of the land and in fact dust from the construction will likely be less than most other construction projects given the minimal grading. I would not anticipate any impacts on property value due to construction on the site.

I note that in the matched pairs that I have included there have been a number of home sales that happened after a solar farm was approved but before the solar farm was built showing no impact on property value. Therefore the anticipated construction had no impact as shown by that data.

X. Scope of Research

I have researched over 800 solar farms and sites on which solar farms are existing and proposed in North Carolina Virginia, Illinois, Tennessee, Kentucky as well as other states to determine what uses are typically found in proximity with a solar farm. The data I have collected and provide in this report strongly supports the assertion that solar farms are having no negative consequences on adjoining agricultural and residential values.

Beyond these references, I have quantified the adjoining uses for a number of solar farm comparables to derive a breakdown of the adjoining uses for each solar farm. The chart below shows the breakdown of adjoining or abutting uses by total acreage.

Percentage By Adjoining Acreage

	Res	Ag	Res/AG	Comm	Ind	Avg Home	Closest Home	All Res Uses	All Comm Uses
Average	19%	53%	20%	2%	6%	887	344	91%	8%
Median	11%	56%	11%	0%	0%	708	218	100%	0%
High	100%	100%	100%	93%	98%	5,210	4,670	100%	98%
Low	0%	0%	0%	0%	0%	90	25	0%	0%

Res = Residential, Ag = Agriculture, Com = Commercial

Total Solar Farms Considered: 705

I have also included a breakdown of each solar farm by number of adjoining parcels to the solar farm rather than based on adjoining acreage. Using both factors provide a more complete picture of the neighboring properties.

Percentage By Number of Parcels Adjoining

	Res	Ag	Res/AG	Comm	Ind	Avg Home	Closest Home	All Res Uses	All Comm Uses
Average	61%	24%	9%	2%	4%	887	344	93%	6%
Median	65%	19%	5%	0%	0%	708	218	100%	0%
High	100%	100%	100%	60%	78%	5,210	4,670	105%	78%
Low	0%	0%	0%	0%	0%	90	25	0%	0%

Res = Residential, Ag = Agriculture, Com = Commercial

Total Solar Farms Considered: 705

Both of the above charts show a marked residential and agricultural adjoining use for most solar farms. Every single solar farm considered included an adjoining residential or residential/agricultural use.

XI. Specific Factors Related To Impacts on Value

I have completed a number of Impact Studies related to a variety of uses and I have found that the most common areas for impact on adjoining values typically follow a hierarchy with descending levels of potential impact. I will discuss each of these categories and how they relate to a solar farm.

1. Hazardous material
2. Odor
3. Noise
4. Traffic
5. Stigma
6. Appearance

1. Hazardous material

A solar farm presents no hazardous waste byproduct as part of normal operation. Any fertilizer, weed control, vehicular traffic, or construction will be significantly less than typically applied in a residential development and even most agricultural uses.

The various solar farms that I have inspected and identified in the addenda have no known environmental impacts associated with the development and operation.

2. Odor

The various solar farms that I have inspected produced no odor.

3. Noise

Whether discussing passive fixed solar panels, or single-axis trackers, there is no negative impact associated with noise from a solar farm. The transformer reportedly has a hum similar to an HVAC that can only be heard in close proximity to this transformer and the buffers on the property are sufficient to make emitted sounds inaudible from the adjoining properties. No sound is emitted from the facility at night.

The various solar farms that I have inspected were inaudible from the roadways.

4. Traffic

The solar farm will have no onsite employee's or staff. The site requires only minimal maintenance. Relative to other potential uses of the site (such as a residential subdivision), the additional traffic generated by a solar farm use on this site is insignificant.

5. Stigma

There is no stigma associated with solar farms and solar farms and people generally respond favorably towards such a use. While an individual may express concerns about proximity to a solar farm, there is no specific stigma associated with a solar farm. Stigma generally refers to things such as adult establishments, prisons, rehabilitation facilities, and so forth.

Solar panels have no associated stigma and in smaller collections are found in yards and roofs in many residential communities. Solar farms are adjoining elementary, middle and high schools as well as churches and subdivisions. I note that one of the solar farms in this report not only adjoins

a church, but is actually located on land owned by the church. Solar panels on a roof are often cited as an enhancement to the property in marketing brochures.

I see no basis for an impact from stigma due to a solar farm.

6. Appearance

I note that larger solar farms using fixed or tracking panels are a passive use of the land that is in keeping with a rural/residential area. As shown below, solar farms are comparable to larger greenhouses. This is not surprising given that a greenhouse is essentially another method for collecting passive solar energy. The greenhouse use is well received in residential/rural areas and has a similar visual impact as a solar farm.









The solar panels are all less than 15 feet high, which means that the visual impact of the solar panels will be similar in height to a typical greenhouse and lower than a single-story residential dwelling. Were the subject property developed with single family housing, that development would have a much greater visual impact on the surrounding area given that a two-story home with attic could be three to four times as high as these proposed panels.

Whenever you consider the impact of a proposed project on viewshed or what the adjoining owners may see from their property it is important to distinguish whether or not they have a protected viewshed or not. Enhancements for scenic vistas are often measured when considering properties that adjoin preserved open space and parks. However, adjoining land with a preferred view today conveys no guarantee that the property will continue in the current use. Any consideration of the impact of the appearance requires a consideration of the wide variety of other uses a property already has the right to be put to, which for solar farms often includes subdivision development, agricultural business buildings such as poultry, or large greenhouses and the like.

Dr. Randall Bell, MAI, PhD, and author of the book **Real Estate Damages**, Third Edition, on Page 146 "Views of bodies of water, city lights, natural settings, parks, golf courses, and other amenities

are considered desirable features, particularly for residential properties." Dr. Bell continues on Page 147 that "View amenities may or may not be protected by law or regulation. It is sometimes argued that views have value only if they are protected by a view easement, a zoning ordinance, or covenants, conditions, and restrictions (CC&Rs), although such protections are relatively uncommon as a practical matter. The market often assigns significant value to desirable views irrespective of whether or not such views are protected by law."

Dr. Bell concludes that a view enhances adjacent property, even if the adjacent property has no legal right to that view. He then discusses a "borrowed" view where a home may enjoy a good view of vacant land or property beyond with a reasonable expectation that the view might be partly or completely obstructed upon development of the adjoining land. He follows that with "This same concept applies to potentially undesirable views of a new development when the development conforms to applicable zoning and other regulations. Arguing value diminution in such cases is difficult, since the possible development of the offending property should have been known." In other words, if there is an allowable development on the site then arguing value diminution with such a development would be difficult. This further extends to developing the site with alternative uses that are less impactful on the view than currently allowed uses.

This gets back to the point that if a property has development rights and could currently be developed in such a way that removes the viewshed such as a residential subdivision, then a less intrusive use such as a solar farm that is easily screened by landscaping would not have a greater impact on the viewshed of any perceived value adjoining properties claim for viewshed. Essentially, if there are more impactful uses currently allowed, then how can you claim damages for a less impactful use.

7. Conclusion

On the basis of the factors described above, it is my professional opinion that the proposed solar farm will not negatively impact adjoining property values. The only category of impact of note is appearance, which is addressed through setbacks and landscaping buffers. The matched pair data supports that conclusion.

XII. Conclusion

The matched pair analysis shows no negative impact in home values due to abutting or adjoining a solar farm as well as no impact to abutting or adjacent vacant residential or agricultural land. The criteria that typically correlates with downward adjustments on property values such as noise, odor, and traffic all support a finding of no impact on property value.

Very similar solar farms in very similar areas have been found by hundreds of towns and counties not to have a substantial injury to abutting or adjoining properties, and many of those findings of no impact have been upheld by appellate courts. Similar solar farms have been approved adjoining agricultural uses, schools, churches, and residential developments.

I have found no difference in the mix of adjoining uses or proximity to adjoining homes based on the size of a solar farm and I have found no significant difference in the matched pair data adjoining larger solar farms versus smaller solar farms. The data in the Southeast is consistent with the larger set of data that I have nationally, as is the more specific data located in and around North Carolina.

Based on the data and analysis in this report, it is my professional opinion that the solar farm proposed at the subject property will have no negative impact on the value of adjoining or abutting property. I note that some of the positive implications of a solar farm that have been expressed by people living next to solar farms include protection from future development of residential developments or other more intrusive uses, reduced dust, odor and chemicals from former farming operations, protection from light pollution at night, it's quiet, and there is no traffic.

XIII. Certification

I certify that, to the best of my knowledge and belief:

1. The statements of fact contained in this report are true and correct;
2. The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are my personal, unbiased professional analyses, opinions, and conclusions;
3. I have no present or prospective interest in the property that is the subject of this report and no personal interest with respect to the parties involved;
4. I have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment;
5. My engagement in this assignment was not contingent upon developing or reporting predetermined results;
6. My compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of the appraisal;
7. The reported analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the requirements of the Code of Professional Ethics and Standards of Professional Appraisal Practice of the Appraisal Institute;
8. My analyses, opinions and conclusions were developed, and this report has been prepared, in conformity with the Uniform Standards of Professional Appraisal Practice.
9. The use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives;
10. I have not made a personal inspection of the property that is the subject of this report, and;
11. No one provided significant real property appraisal assistance to the person signing this certification.
12. As of the date of this report Richard C Kirkland Jr has completed the continuing education program for Designated Members of the Appraisal Institute; As of the date of this report Nicholas Kirkland has not completed the Standards and Ethics Education Requirements for Candidates of the Appraisal Institute.
13. I have not performed services, regarding the property that is the subject of this report within the three-year period immediately preceding acceptance of this assignment.

Disclosure of the contents of this appraisal report is governed by the bylaws and regulations of the Appraisal Institute and the National Association of Realtors.

Neither all nor any part of the contents of this appraisal report shall be disseminated to the public through advertising media, public relations media, news media, or any other public means of communications without the prior written consent and approval of the undersigned.





Richard C. Kirkland, Jr., MAI
State Certified General Appraiser

Nicholas D. Kirkland
State Certified General Appraiser



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Professional Experience

Kirkland Appraisals, LLC, Raleigh, N.C. Commercial appraiser	2003 – Present
Hester & Company, Raleigh, N.C. Commercial appraiser	1996 – 2003

Professional Affiliations

MAI (Member, Appraisal Institute) designation #11796	2001
NC State Certified General Appraiser # A4359	1999
VA State Certified General Appraiser # 4001017291	
SC State Certified General Appraiser # 6209	
FL State Certified General Appraiser # RZ3950	
GA State Certified General Appraiser # 321885	
MI State Certified General Appraiser # 1201076620	
PA State Certified General Appraiser # GA004598	
OH State Certified General Appraiser # 2021008689	
IN State Certified General Appraiser # CG42100052	

Education

Bachelor of Arts in English, University of North Carolina, Chapel Hill	1993

Continuing Education

Uniform Standards of Professional Appraisal Practice Update	2022
Sexual Harassment Prevention Training	2021
Appraisal of Land Subject to Ground Leases	2021
Florida Appraisal Laws and Regulations	2020
Michigan Appraisal Law	2020
Uniform Standards of Professional Appraisal Practice Update	2020
Uniform Appraisal Standards for Federal Land Acquisitions (Yellow Book)	2019
The Cost Approach	2019
Income Approach Case Studies for Commercial Appraisers	2018
Introduction to Expert Witness Testimony for Appraisers	2018
Appraising Small Apartment Properties	2018
Florida Appraisal Laws and Regulations	2018
Uniform Standards of Professional Appraisal Practice Update	2018
Appraisal of REO and Foreclosure Properties	2017
Appraisal of Self Storage Facilities	2017
Land and Site Valuation	2017
NCDOT Appraisal Principles and Procedures	2017
Uniform Standards of Professional Appraisal Practice Update	2016
Forecasting Revenue	2015

Wind Turbine Effect on Value	2015
Supervisor/Trainee Class	2015
Business Practices and Ethics	2014
Subdivision Valuation	2014
Uniform Standards of Professional Appraisal Practice Update	2014
Introduction to Vineyard and Winery Valuation	2013
Appraising Rural Residential Properties	2012
Uniform Standards of Professional Appraisal Practice Update	2012
Supervisors/Trainees	2011
Rates and Ratios: Making sense of GIMs, OARs, and DCFs	2011
Advanced Internet Search Strategies	2011
Analyzing Distressed Real Estate	2011
Uniform Standards of Professional Appraisal Practice Update	2011
Business Practices and Ethics	2011
Appraisal Curriculum Overview (2 Days – General)	2009
Appraisal Review - General	2009
Uniform Standards of Professional Appraisal Practice Update	2008
Subdivision Valuation: A Comprehensive Guide	2008
Office Building Valuation: A Contemporary Perspective	2008
Valuation of Detrimental Conditions in Real Estate	2007
The Appraisal of Small Subdivisions	2007
Uniform Standards of Professional Appraisal Practice Update	2006
Evaluating Commercial Construction	2005
Conservation Easements	2005
Uniform Standards of Professional Appraisal Practice Update	2004
Condemnation Appraising	2004
Land Valuation Adjustment Procedures	2004
Supporting Capitalization Rates	2004
Uniform Standards of Professional Appraisal Practice, C	2002
Wells and Septic Systems and Wastewater Irrigation Systems	2002
Appraisals 2002	2002
Analyzing Commercial Lease Clauses	2002
Conservation Easements	2000
Preparation for Litigation	2000
Appraisal of Nonconforming Uses	2000
Advanced Applications	2000
Highest and Best Use and Market Analysis	1999
Advanced Sales Comparison and Cost Approaches	1999
Advanced Income Capitalization	1998
Valuation of Detrimental Conditions in Real Estate	1999
Report Writing and Valuation Analysis	1999
Property Tax Values and Appeals	1997
Uniform Standards of Professional Appraisal Practice, A & B	1997
Basic Income Capitalization	1996



HEALTH AND SAFETY ASSESSMENT REPORT

Coastal Pine Solar
200 MW_{AC} Photovoltaic Facility
Pender County, NC

ABSTRACT

This is an assessment to address the potential health and safety impacts of the proposed 200 MW_{AC} Coastal Pine Solar photovoltaic facility in Pender County, NC. Considering the project design, equipment specifications and operations, the assessment evaluates potential positive and negative impacts on public health and safety. The conclusion of the assessment is that the Coastal Pine Solar project will not create negative health and safety impacts. The clean electricity the project will produce will help to reduce the burning of fossil fuels, which will reduce pollution from those sources and provide millions of dollars' worth of local public health benefits as a result.

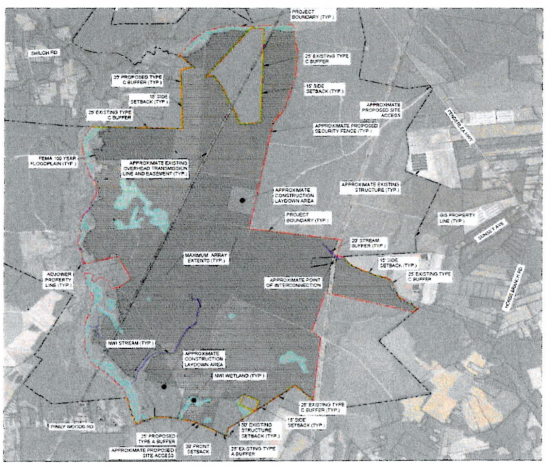
Tommy Cleveland, PE
Consulting Engineer
Solar Health and Safety Expert

September 15, 2022

Health & Safety Assessment Report
Coastal Pine Solar Facility – Pender County, NC

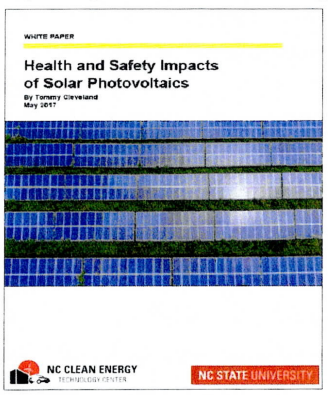
Project Overview:

- **Project Name:** Coastal Pine Solar
- **Developer**: Birch Creek Development
- **Capacity**: 200 MW_{AC} (~260 MW_{DC})
- **Project Area**: ~2,360 acres
- **Solar Panels**: crystalline silicon, ~650 watt bi-facial modules
- **Structure**: single-axis trackers (north-south rows, slowly rotate E to W each day)
- **Inverters**: central station type (2 to 4 MW each)
- **Point of Interconnection (POI)**: Duke Energy Progress 230 kV transmission line where it passes through eastern edge of project
- **Interconnection Equipment**: 230 kV/34.5 kV project substation and interconnection facilities located at POI on eastern edge of project

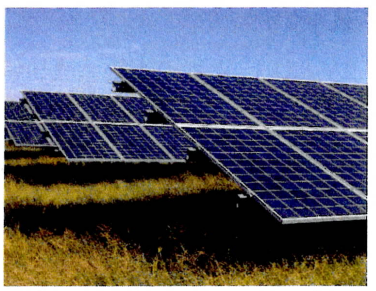


Report Author

The author of this report is **Tommy Cleveland, PE**, a consulting engineer licensed as a professional engineer in NC since 2007. Mr. Cleveland graduated from North Carolina State University with undergraduate and master's degrees in mechanical engineering, where he focused on energy. His solar career started with his master's thesis, which led to working over 12 years at the North Carolina Clean Energy Technology Center at NC State University. While at the university, Tommy worked on nearly every aspect of solar energy; from teaching, to testing equipment, to research & development, to leading a statewide stakeholder group in the development of a template solar ordinance. During his time at NC State, North Carolina became the state to install more photovoltaic (PV) capacity than any state other than California, mostly in the form of 2-5 MW_{AC} utility-scale solar facilities covering around 40 acres each. Utility-scale solar was unfamiliar to the hundreds of communities around the state where the systems were proposed, and many of those communities had questions about the technology and its potential to harm public health or the environment in their community. Many of those questions found their way to Mr. Cleveland and he expanded his already broad knowledge of photovoltaics to research and find answers to the questions being asked. Over time he became an expert on the potential health and safety impacts of photovoltaics and was the lead author of the 2017 NC State white paper on the topic (pictured to the left). Since mid-2017 Mr. Cleveland has worked as a solar engineer at an energy engineering firm conducting interconnection commissioning of utility-scale solar and battery facilities for utilities in North and South Carolina. In this role Mr. Cleveland was the engineer responsible for (interconnection) commissioning over 60 PV sites and 4 battery sites.



Executive Summary



This report assesses the potential health and safety impacts of the proposed Coastal Pine Solar 200 MW_{AC} project. The Coastal Pine Solar facility, located in Pender County, North Carolina, will install crystalline silicon solar panels on single-axis tracking racks that slowly rotate each row of panels to follow the sun across the sky. Large central station inverters will convert the DC electricity generated by the solar panels into grid-synced AC electricity. Step-up transformers will boost the voltage for connection to an onsite substation that connects to a Duke Energy Progress transmission line that passes through the eastern edge of the solar facility.

Photovoltaic panels are not new. They have been used and studied for over 40 years and are well understood by the scientific community. Utility-scale solar facilities are newer, but they too have been installed and studied for over a decade, and scientists also have a clear understanding of their function and impacts.

Photovoltaic systems produce emission-free electricity. This replaces electricity production from fossil fuel power plants that do produce harmful emissions. The health benefits of clean solar electricity are hard to put a dollar figure on, but the EPA's best attempt at doing just that puts the value in the "Carolinas" between 1.7 and 3.8 cents per kWh produced. Even at the bottom end of this range, **for the Coastal Pine Solar project this is over $7.2 million of public health benefit per year, and over $215 million in 30 years.**

The only risks to health and safety of the Coastal Pine Solar project are not unique to solar but exist for any source or use of electricity. These are electric shock, arc flash, and fire. Due to world-class safety regulations in the U.S. and an experienced solar industry, these risks are extremely low, and the secure and isolated nature of ground-mounted PV facilities, including Coastal Pine Solar, results in negligible risk to the public.

Common concerns about toxicity and EMF from solar facilities are understandable, but the operating characteristics and materials present in the equipment means that neither toxicity nor EMF pose a material risk to public health or safety. The potential for toxicity impacts from photovoltaic technology has been studied by many organizations for decades, resulting in an understanding that while some solar panels may contain small amounts of toxic materials, they pose no risk to public health. EMF is generated by all electricity, including solar photovoltaic systems, but does not extend far beyond the wires and equipment, so any EMF generated in the project will not impact anyone outside of the facility.

Research and experience regarding heat island effect and solar glare shows that, like other utility-scale PV projects, the Coastal Pine Solar project will not create either of these impacts. The single-axis trackers at Coastal Pine Solar that will keep the panels facing in the direction of the sun minimizes the potential for the project to create any glare. Additionally, no airport is closer than 5 miles to the site and the closet air traffic control tower is 20 miles away. These long distances from the site result in there being no chance of glare from the solar site causing a hazard to aviation.

When the solar panels reach the end of their useful life, likely in 30 to 40 years, they will be removed from the site and disposed of in conformance with federal, state, and local requirements, which could mean recycling or disposal in a landfill. Today the main constituents of the solar panels, and the other equipment such as racking and transformers, can be recycled in the existing recycling infrastructure. Technology to recycle nearly all the constituents in solar panels exists today and is expected to be much cheaper and widely available when the solar panels at this project reach the end of their useful life.

Based on my knowledge of engineering and science, personal experience with PV technology, review of academic research, and review of materials provided by the project developers about the proposed Coastal Pine Solar PV facility in Pender County, North Carolina, my opinions are summarized as follows:

- The development and operation of the Coastal Pine Solar facility will not result in any environmental contamination or negative impacts to public health or safety.
- The Coastal Pine Solar facility will not increase the temperature of the area surrounding the site.
- The Coastal Pine Solar facility is not expected to create any glare hazard for aviation or other negative glare impacts.

Introduction

Purpose:

This report assesses the potential health and safety impacts of the proposed Coastal Pine Solar 200 MW_{AC} project. It also seeks to educate readers on the health and safety impacts of photovoltaic systems using accurate scientific sources of information.

Overview of Potential Impacts:

The proposed solar photovoltaic (PV) system is likely to remain in operation at least 30 years, and this report considers its potential impacts in Pender County from the start of construction onward, including decommissioning of the project and restoration of the land. This assessment considers all aspects of the project but focuses on those unique to solar projects.

Potential Positive Health and Safety Impacts:

Every utility-scale PV project creates a significant reduction in pollution because it produces emission-free electricity that replaces electricity that otherwise would have been largely produced by burning coal and natural gas. Burning these fossil fuels for electricity production is a significant source of air, water, and soil pollution, so reducing their use is a clear public health benefit.

The US Environmental Protection Agency (EPA) conducted a study to determine how much pollution PV systems avoid and to estimate the public health value of the cleaner air, water, and soil they provide. These experts calculated that based on the sunshine available, the way regional grid electricity is produced, and the public health impacts of fossil fuel-fired electricity, every kilowatt-hour (kWh) of electricity produced by utility scale solar in the "Carolinas" provides 1.7 to 3.8 cents of public health benefit.[1] At this rate of benefit, **the Coastal Pine Solar project will produce $7.2 to 16.2 million of public health benefits every year**, which results in over $215 to $485 million of public health benefits over the life of the project. The public health benefits of generating pollution-free electricity with PV are very significant.

The positive benefits of photovoltaics are widely understood and well documented, so this report will not address them further. Furthermore, the positive public health impacts of the Coastal Pine Solar project significantly outweigh any health and safety risks, as described below.

Potential Negative Health and Safety Impacts:

While PV facilities, as electricity generating facilities, in general provide some potential for negative health and safety impacts, the Coastal Pine Solar project does not present any negative health and safety risks specific to its location or technology choice. The only aspect of PV systems that presents risk of physical harm is the potential for electrical shock, arc flash, or fire, which are hazards present with any electrical system and not unique to solar. There are several other aspects of PV systems that often raise public health and safety concerns, but no other aspect of PV systems poses more than an insignficant risk of negative public health or safety impacts.

Some confidence for the lack of any significant environmental, health, or safety impact of the proposed Coastal Pine Solar project is the State Environmental Review Clearinghouse review required as a part of the project's Certificate of Public Convenience and Necessity (CPCN) application process.[2] The North Carolina Environmental Policy Act of 1971 (G.S. 113A 1-13), also known as the State Environmental Policy Act (SEPA), defines the state policy designed to maintain and protect the state's environment. The statute requires state agencies to the fullest extent possible identify significant environmental effects of their actions and to implement measures to minimize negative effects. The state clearinghouse is made up of all applicable state agencies, and they review and comment on every request for a CPCN. The project cannot receive the needed CPCN until the State Clearinghouse concludes their review and finds that no further State

[1] US Environmental Protection Agency, Public Health Benefits-per-kWh of Energy Efficiency and Renewable Energy in the United States: A Technical Report. 2nd Ed, May 2021, www.epa.gov/statelocalenergy/public-health-benefits-kwh-energy-efficiency-and-renewable-energy-united-states

[2] NC Department of Administration, State Environmental Review Clearinghouse Resources, accessed September 2022, https://ncadmin.nc.gov/about-doa/special-programs/state-environmental-review-clearinghouse/state-environmental-review

Clearinghouse action is needed for the project to be in compliance with the North Carolina Environmental Policy Act. Some of the Clearinghouse members that provide guidance on applicable regulations and recommendations for utility-scale PV facilities are the North Carolina Department of Natural and Cultural Resources, the NC Wildlife Resources Commission, the Division of Waste Management, and the North Carolina Department of Agriculture and Consumer Services.

This report will address all the potential health and/or safety risks of the Coastal Pine Solar project, including common concerns that have no potential for public health impact. Specifically, this report addresses the following possible negative impacts/concerns:

- Electrical Shock and Arc Flash
- Fire and Emergency Response
- Toxicity
- Electromagnetic Fields (EMF)
- Heat Island Effect
- Glare

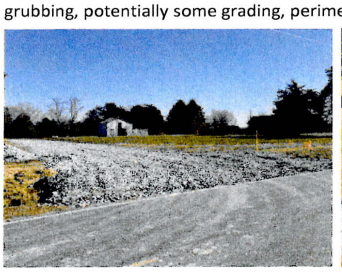
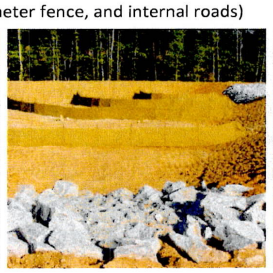
The most significant impact of most utility-scale PV projects is not related to environmental, health, or safety, but is its visual impact on the viewshed in the area. The Coastal Pine Solar project minimizes this impact in several ways. The project will only use approximately 2,360 acres of a 4,000-acre property, which allows the project to provide very extensive natural buffers between the project and most neighboring properties because the reminder of the parent property will remain in timber and agricultural production. Most of the project's perimeter is surrounded by at least a quarter mile of this buffer land. Where a significant natural buffer does not exist, the project will plant vegetation designed to meet the county's screening requirements to conceal view of the project from roadways and adjoining properties. The planted vegetative buffer has been designed by a landscape architect and is detailed on the proposed project's site plan and project narrative. The proposed project design results in a project that will largely be out of public view, unlike many smaller existing solar facilities and many other land uses. As proposed, the project's impact to the viewshed is very limited..

Before addressing each of the above impact categories, this report provides an overview of utility-scale photovoltaics equipment, facility construction, and operations.

Utility-Scale PV Equipment, Construction, and Operations[3]

To understand the potential impacts of a utility-scale PV system it is helpful to understand the components of the facility, as well as how a facility is constructed and maintained. The components and practices in this overview are typical of the industry and representative of the proposed Coastal Pine Solar project. The initial site work occurs first, but the order of the other construction steps is flexible and may occur concurrently.

Initial Site Work (construction entrance/driveway, sedimentation and erosion control installation, clearing and grubbing, potentially some grading, perimeter fence, and internal roads)


[3] Photo sources: author, ncre-usa.com, NC DEQ, blueoakenergy.com, solarbuildermag.com, hbc-inc.com, solarprofessional.com, ccrenew.com, and landiscontracting.com

Underground Work (trenching for wires from PV combiner boxes to inverters, inverter pad installation, medium voltage cables to interconnection equipment)



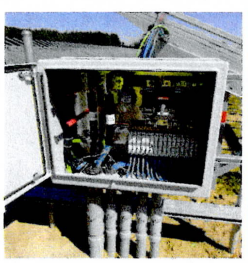


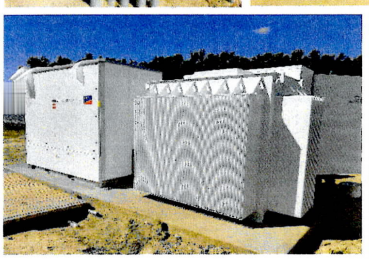
PV Panel Structure/Racking (driving of steel piles, installation of racking "tables", installation of PV panels)

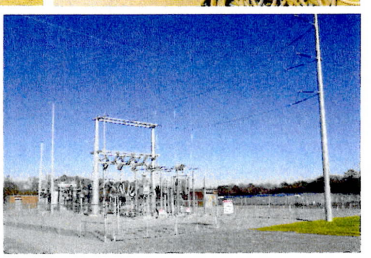




Electrical Work (connection of PV module wiring, combiner boxes, inverters, transformers, interconnection facilities)



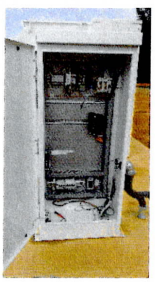





Establishment of Ground Cover (required to close out sedimentation and erosion control permit)




Operations and Maintenance (24/7 monitoring, vegetation maintenance, preventative maintenance)





Electrical Shock and Arc Flash

Any electricity over 50 volts presents an electrical shock hazard, including the electricity in PV facilities. However, like electrical systems in buildings, the solar facility must adhere to the National Electrical Code (NEC) and the equipment must be certified to the appropriate UL safety standards. Unlike buildings, members of the public are restricted from entering a utility-scale solar facility. To help ensure that only qualified people have access to the equipment, the NEC requires a perimeter security fence with electrical warning signs. The lack of public access coupled with the high U.S. electrical safety standards practically eliminates the risk of electric shock for the public.



Figure 1. Perimeter Fence with Warning Signs

In circuits with significant available fault current there is another electrical hazard, called arc flash, which is an explosion of energy that can occur due to a short circuit. This explosive release of energy causes a flash of light and heat, and creates a shockwave that can knock someone off their feet. The risk of arc flash in a solar facility is no different than the risk at commercial or industrial buildings, except that solar facilities are much less accessible. Equipment with an arc flash risk requires arc flash warning labels, and only trained personnel wearing the proper personal protective equipment are allowed to work on it. Due to the secure perimeter and the high U.S. electrical safety standards, there is essentially no arc flash risk to the public.

Fire and Emergency Response

Every electrical system has some risk of starting a fire, including electrical systems in residential, commercial, and industrial buildings. It is this hazard that motivated creation of the National Electrical Code over 100 years ago. Due to the high standard required by the NEC, modern electrical systems rarely start fires. Like electrical systems in buildings, photovoltaic systems must also adhere to the NEC. In the rare case that a PV system has a fault that starts a fire, there is very little combustible material present for it to ignite. The only flammable portions of PV panels are the few thin plastic layers, the plastic junction box, and the insulation on its wires. The inverters and other electrical components are also capable of igniting, however like PV modules, they consist primarily of non-flammable materials, except for transformers that are addressed below.

Heat from a small flame is not adequate to ignite a PV panel, but an intense fire or an electrical fault can ignite a PV panel. One real-world example illustrating the low flammability of PV panels occurred during July 2015 in an arid area of California. Three acres of grass under a utility-scale PV facility burned without igniting the panels mounted just above the grass.[4] Another example occurred recently in Florida, where there was a 5-acre grass fire under a portion of a 400-acre PV facility that did not ignite any modules.[5]

The most significant fire hazard at a utility-scale solar facility may be the oil in the transformers. There are medium voltage transformers dispersed throughout the site located by each inverter, called inverter step-up (ISU) transformers, and there is one or more large transformers in the interconnection substation, known as generator step-up (GSU) transformers. Traditionally all pad-mounted transformers, including ISU and GSU transformers, have been filled with mineral oil, which is derived from petroleum. The mineral oil is electrically insulating but flammable. The ISU transformers are similar to transformers found throughout every community; at shopping centers, schools, factories, neighborhoods, etc, and the GSU transformer(s) is similar to the main transformer in any utility substation. There are best practices for how to prepare for and conduct an emergency response at a transformer. For example, see the NERC "Lessons Learned" document in the Sources for Further Reading at the end of this section.

No special equipment is required to respond to a fire incident at a utility-scale PV facility. The most important thing for first responders to know is that as long as the sun is shining the PV panels will produce dangerous voltage, but there is no danger in touching undamaged equipment. There are multiple electrical disconnect switches in PV systems which allows problem areas to be electrically isolated quickly.

Risks of fire associated with ground cover and perimeter vegetation are reduced by landscaping plans that are developed with this specific goal. Local emergency responders will have 24/7 access to the facility via a lock box or key. First responders can safely extinguish grass fires inside of the facility, or monitor and protect the areas surrounding the facility, to ensure the fire does not spread to surrounding areas. The solar facility owner remotely monitors the system around the clock and has personnel available 24/7 for emergencies. The International Association of Fire Fighters (IAFF) provides online training on responding to fires at photovoltaic facilities at www.iaff.org/solar-pv-safety.

Sources for Further Reading on Fire and Emergency Response:

- Duke Energy: Fire Safety Guidelines for Rooftop- and Ground-Mounted Solar Photovoltaic (PV) Systems, September 2015
- North American Electric Reliability Corporation (NERC): Lessons Learned, Substation Fires: Working with First Responders, February 2019

[4] Matt Fountain. The Tribune. Fire breaks out at Topaz Solar Farm. July 2015. www.sanluisobispo.com/news/local/article39055539.html
[5] WBMM News 13, Fire breaks out at Jackson Co. solar farm. August 2022, www.youtube.com/watch?v=byE_BpUX2mc

Toxicity (Equipment and Operations)

Toxicity is probably the most common health and safety concern about photovoltaic systems members of the public may have, although as detailed below the systems do not pose a material toxicity risk to the public or the environment. This report examines all possible sources of toxicity, from site construction to decommissioning at the end of the project life. The potential sources of toxicity are organized into two categories: equipment and operations and maintenance (O&M).

Toxicity: Equipment

The main equipment installed at a solar facility includes photovoltaic modules (a.k.a. solar panels or PV panels), metal structures for mounting the solar panels, and wiring to collect the electricity they produce. The other major components are inverters and transformers. Inverters are enclosed power electronic equipment that do not contain liquids and are treated like other electronic waste at the end of their life. Transformers contain non-toxic mineral or vegetable oil and are no different than the typical transformers outside of most schools and shopping centers or in utility substations. Solar panels have raised the most public toxicity concerns, so they are the focus in this section but transformers are also addressed.

Contents of PV Panels

The Coastal Pine Solar project will use crystalline silicon PV panels from a Bloomberg Tier 1 manufacturer[6]. The PV panels are the most expensive and most important component in a solar facility, so the project owner performs industry-standard due diligence to ensure that the panels selected and delivered to the project are properly manufactured, certified, and tested.

The diagram below shows the components of a typical silicon PV panel, including a closeup of the solar cells and the electrical connections. Over 80% of the weight of a PV panel is the tempered glass cover (or, front and back heat-strengthened glass) and the structural aluminum frame, which work together to create a strong, durable panel that outlasts its 30-year performance warranty. The encapsulation films are clear plastic lamination layers that protect the cells and electrical contacts from moisture for the life of the panel. These layers also maintain the panel as a single unit in the event of breakage of the glass cover(s), similar to the film in auto windshields that keeps them from fragmenting if the windshield shatters.

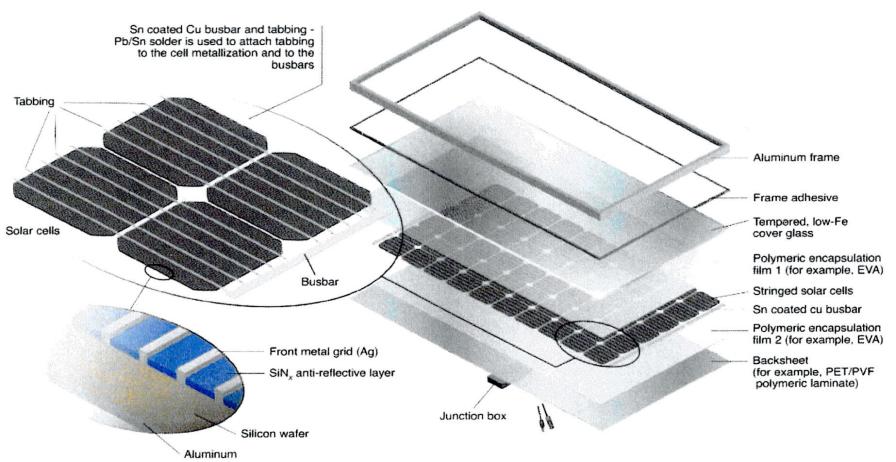


Figure 2. Contents of Framed Crystalline Silicon Panels (Source: NREL)

[6] The financial information firm Bloomberg developed a tiering system for PV module makers based on bankability. Tier 1 is the highest of three tiers, which are determined by banks' confidence in a manufacturer's PV panels as demonstrated by their willingness to supply project financing backed only by the assets of the project. The details are described by BloombergNEF in this document: PV Module Tier 1 List Methodology https://data.bloomberglp.com/bnef/sites/4/2012/12/bnef_2012-12-03_PVModuleTiering.pdf

As can be seen in the above diagram, there are no liquids to leak from a broken panel. The plastic layers are inert. The silicon PV cells are nearly 100% silicon, which is harmless and is the second most common element in the Earth's crust. The only components of a PV panel that have any potential of toxic impact is the solder used to connect the solar cells together and to the busbars at the end of the panel, and the thin strips of silver that collect electricity from each cell.[7] The solder, which is the same tin-lead solder standard in the electronic industry, is 36% lead. The tiny amount of silver in a panel does not create a toxicity hazard, but it does add potential recycling value.

Even though there is only a tiny amount of lead in each panel, the total amount of lead in all the PV modules in a utility-scale project adds up to a considerable amount of lead. However, these PV panels are spread out over a large area and when the amount of lead in the PV panels is compared to the amount of lead naturally occurring in the soil under the PV array, it is obvious that even if all the lead somehow leached out of every module (which as explained below is impossible), the increase in total lead in the soil would be less than the naturally occurring difference between different soils in the region. Across the US, soils naturally have between about 10 and 50 mg of lead per kg of soil, with the average being somewhere in the 20s. Across 83 USGA survey locations across N.C., the values ranged from 5 to 46 with an average of 20 and a median of 18.[8] For a location that naturally has 15 mg of lead per kg of soil, all the lead in all the PV modules in the facility would have the same amount of lead as just the top 4 inches of soil at the site.[9]

Broken PV Panels

There is zero risk of toxicity escape from undamaged PV panels because any lead is sealed from air and water exposure. Individual panels damaged during the life of the solar facility are identified in days to months through either remote monitoring of system performance or from visual inspections during scheduled maintenance inspections. Recently an international team of experts conducted an International Energy Agency - Photovoltaic Power Systems Programme (IEA-PVPS) study to assess if there is a public health hazard caused by lead leaching from the broken PV panels during the life of a utility-scale solar facility utilizing conservative assumptions to evaluate extreme scenarios.[10] The study examined worst-case exposure routes of soil, air, and ground water for a typical 100 MW_{AC} PV facility. For example, the worst-case residential groundwater exposure assumed that all broken panels from the entire array were within 25 feet of the groundwater well, and the chemicals released from every broken panel transported to the same groundwater well. The study found that worst-case lead exposure via air, soil, and water were each orders of magnitude less than the maximum levels defined by the US Environmental Protection Agency (EPA) to have no adverse health effects. In the case of water, the health-screening level is the same as the maximum concentration level (MCL) set by the EPA for water quality in public water systems. This study demonstrates that there is no risk to public health from lead leached from broken PV panels.

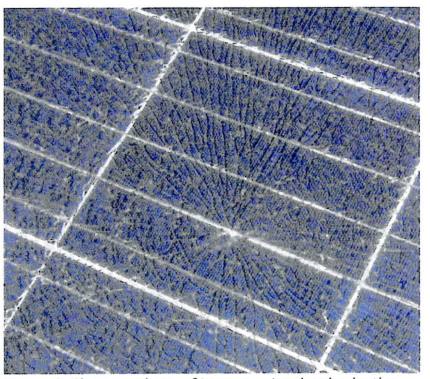


Figure 3. Close-up photo of impact point that broke the glass front of this PV panel

[7] A detailed bill of materials for crystalline silicon PV modules is provided in Table 2 of the International Energy Agency (IEA) PVPS's report entitled: Life Cycle Inventories and Life Cycle Assessments of Photovoltaic Systems, December 2020 https://iea-pvps.org/wp-content/uploads/2020/12/IEA-PVPS-LCI-report-2020.pdf

[8] Smith, D.B., Cannon, W.F., Woodruff, L.G., Solano, Federico, Kilburn, J.E., and Fey, D.L., 2013, Geochemical and Mineralogical Data for Soils of the Conterminous United States: U.S. Geological Survey Data Series 801, 19 p., http://pubs.usgs.gov/ds/801/

[9] PV: 12 g of lead (per panel) per 65 ft^2 (panel footprint of 21.5 ft^2 / ground coverage ratio of 0.40) = 0.223 g of lead/ft^2
Soil: 15 mg of lead per kg of soil * 45 kg of soil per ft^3 * 4 inches (0.333 ft) soil depth * 65 ft^2 = 14.61 g of lead / 65 ft^2 = 0.225 g of lead/ft^2

[10] P. Sinha, G. Heath, A. Wade, K. Komoto, 2019, Human health risk assessment methods for PV, Part 2: Breakage risks, International Energy Agency (IEA) PVPS Task 12, Report T12-15:2019. ISBN 978-3-906042-87-9, September 2019

GenX and PFAS

Following the discovery that a chemical plant near Fayetteville, NC had been dumping the unregulated chemical known as GenX into the Cape Fear River for many years, some solar opponents raised questions about the possibility of GenX or other PFAS chemicals being emitted by solar panels. PFAS chemicals are a group of chemicals informally known as "forever chemicals" due to their durability in the environment. These chemicals are found in many products, including food packaging materials, firefighting foam, and stain resistant carpet treatments. The author has not found any evidence for the existence of PFAS in PV panels, and a fact sheet from the University of Michigan entitled "Facts about solar panels: PFAS contamination" explains that PV panels do not contain PFAS and thus do not produce any PFAS contamination.[11]

PV Panel End-of-Life

PV panels last a very long time, but they do not last forever. Their output declines slightly each year, but panels rarely fail in less than 40 years. The expected economic life of utility-scale PV panels is 25-40 years, at which point they may be replaced by new panels, or the entire project may be decommissioned, returning the land back to how it was before the solar facility was installed. In both instances, the original PV panels are removed from the site. At a typical solar facility, there are three possible fates for solar panels at the end of their economic life at a project, described below. At a minimum, waste management laws require that the facility owners handle and dispose of the equipment and other facility components in conformance with federal, state, and local requirements. To help assure that the project is fully decommissioned at the appropriate time, without putting any cost burden on the landowners or the county, the project will post decommissioning surety.

- **Reuse**: It is most likely that when the PV panels at the Coastal Pine Solar project are decommissioned, they will still produce approximately 80% of their original output and have another decade of productive life, making them viable to be reused as solar panels on rooftops or ground-mounted applications. Markets for used solar panels exist today and are likely to be much more mature and widely available in 30-40 years when the Coastal Pine Solar PV panels near the end of their life.
- **Recycling**: Any panels that are not reused as working panels could be recycled. Currently in the US it is possible to recycle the largest constituents of PV panels using the existing glass and metal recycling infrastructure. Today this recycling comes at a cost premium to disposing the panels in a landfill. However, as PV recycling technology improves and the number of panels reaching end-of-life increases dramatically, it is possible that in the future recycling PV panels will more than pay for itself. Recycling plants built specifically to recycle PV panels can recycle nearly 100% of the panel, including the valuable silver and refined silicon they contain, and can be optimized for the task, significantly reducing the cost to recycle each panel. Currently only one PV-specific recycling plant has been built, in France, but in the coming decades it is expected that PV-specific recycling plants will become commonplace. PV recycling technology is clearly still in its infancy. However, it is expected that when the Coastal Pine Solar PV panels reach the end of their useful life in 30+ years, the US PV recycling infrastructure will be robust, such that reuse or recycling of the PV panels will be the preferred options or required by new U.S. regulations, as it has been for years in Europe.

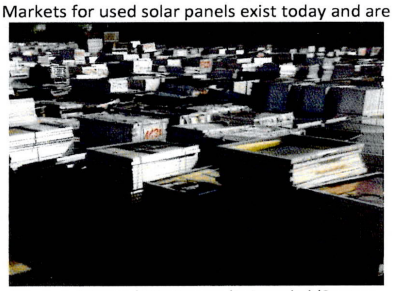


Figure 4. PV Panels Waiting to be Recycled (Source: LuxChemtech GmbH)

  The Solar Energy Industries Association (SEIA) started the SEIA National PV Recycling Program several years ago to accelerate PV recycling in the US. Currently the program aggregates the services offered by recycling vendors and PV manufacturers, making it easier for the industry to select a cost-effective and environmentally responsible end-of-life management solution. **The program identifies Preferred Recycling Partners through an evaluation process. These partners are capable of recycling PV modules, inverters, and other related equipment today**. The current SEIA PV Recycling Partners are listed on the program's website, and full access to the program and the Preferred Recycling Partners is available to SEIA members.

[11] "Clean Energy in Michigan" Series, Number 12, Facts about solar panels: PFAS contamination, By Dr. Annick Anctil, https://graham.umich.edu/media/pubs/Facts-about-solar-panels--PFAS-contamination-47485.pdf

- **Disposal**: For most solar facilities, if panels are not reused or recycled, federal waste management laws (Resource Recovery and Conservation Act, RCRA) require that PV panels, like any other commercial/industrial waste, be disposed of properly, which is typically in a landfill. In order to determine the proper disposal method, RCRA requires that all commercial/industrial waste be identified as either hazardous or non-hazardous waste, which is generally determined using the Toxic Characteristic Leaching Procedure (TCLP) test developed by the U.S. EPA. This test seeks to simulate landfill conditions and check for leaching of 8 toxic metals and 32 organic compounds. Little data has been published about the TCLP test results of solar panels, but it is known that some older silicon panels that contain more lead than modern panels exceed the TCLP test limits for lead. Researchers at Arizona State University's Photovoltaic Reliability Laboratory have done the most robust investigation of methods for conducting accurate TCLP tests on PV panels, and their latest research found that all three of the crystalline silicon PV panels tested passed the TCLP test, classifying them as non-hazardous waste.[12]

  A worst-case scenario would be tons of PV panels being disposed of in a non-sanitary landfill, which is essentially a huge pile of garbage with little to no effort to minimize leaching from the waste that is illegal in many world regions, including in North Carolina. A recent IEA-PVS research study on PV panels disposal risks used this worst-case situation to evaluate the potential for cancer and non-cancer hazards through comparison of predicted exposure-point concentrations in soil, air, groundwater, and surface water with risk-based screening levels created by the EPA and the World Health Organization (WHO).[13] One the report's authors, Gavin Heath with the US Department of Energy's National Renewable Energy Laboratory (NREL), summarized their findings about lead in silicon PV panels this way: "under the worst-case conditions, none of them exceeded health-screening thresholds, meaning they're not deemed to potentially have significant enough risk that you'd want to do a more detailed health risk assessment."[14] The worst-case scenario defined in the research has many conservative assumptions, and thus likely overestimates the risk of disposal in a *non-sanitary* landfill. It is important to stress that North Carolina only allows solid waste disposal in sanitary landfills, which are engineered facilities with plastic liners, leachate collection systems, and covers, all of which dramatically reduce the potential for human exposure compared to non-sanitary landfills. This and other research show that if the Coastal Pine Solar PV panels are disposed of in a landfill, they will not create any negative public health impact.

In 2019 the North Carolina legislature passed HB 329 (S.L. 2019-132), requiring the NC Department of Environmental Quality (DEQ) to prepare a report to guide rulemaking regarding decommissioning of solar PV and other renewable energy facilities and proper disposal of their equipment. The report issued January 1, 2021 and titled *Final Report on the Activities Conducted to Establish a Regulatory Program for the Management and Decommissioning of Renewable Energy Equipment*, provides a thorough discussion addressing many questions landowners and communities may have about solar decommissioning. DEQ compiled the input and commentary of numerous stakeholders, including the renewable energy industry, environmental organizations, and academia, including the author and NC State University's Clean Energy Technology Center. The report is well researched and very informative. NC DEQ provides several key findings and recommendations, but no recommendations for changes in NC regulations of solar facilities. One of the report's key findings is that "According to Division of Waste Management experts, if every end-of-life PV module is disposed of in landfills, landfill capacities will not be negatively impacted."

Transformer Oil

While PV modules and inverters do not have any liquids that could leak into the environment, the generator step-up (GSU) transformer in the substation and the inverter step-up (ISU) transformers located with each inverter do contain an oil. Several types of oil can be used in transformers to provide the needed electrical insulation and cooling, but the most common type of transformer oil is mineral oil, which has been used in transformers since transformers were first manufactured in the 1890s. Due to the large volume of oil contained in a GSU transformer, they are installed with a secondary containment structure

[12] Tamizhmani, G., et al. (2019). Assessing Variability in Toxicity Testing of PV Modules. In 2019 IEEE 46th Photovoltaic Specialists Conference (pp. 2475-2481). Institute of Electrical and Electronics Engineers Inc.. https://doi.org/10.1109/PVSC40753.2019.8980781 Publicly-accessible version: https://dev-pvreliability.ws.asu.edu/sites/default/files/93_assessing_variability_in_toxicity_testing_of_pv_modules.pdf
[13] P. Sinha, G. Heath, A. Wade, K. Komoto, Human health risk assessment methods for PV, Part 3: Module disposal risks, International Energy Agency (IEA) PVPS Task 12, Report T12-16:2020. ISBN 978-3-906042-96-1, May 2020
[14] Green Tech Media, Landfilling Old Solar Panels Likely Safe for Humans, New Research Suggests, April 2020, www.greentechmedia.com/articles/read/solar-panel-landfill-deemed-safe-as-recycling-options-grow

under them to contain any oil leaked or spilled. The smaller ISU transformers are approximately the same size as the transformers located throughout every community; behind schools, shopping centers, apartments, etc., and they typically do not provide secondary containment. However, ongoing monitoring of transformer temperature and pressure, and regular preventative maintenance, is likely to find the rare leak when it is still small before it has a chance to leak much oil.

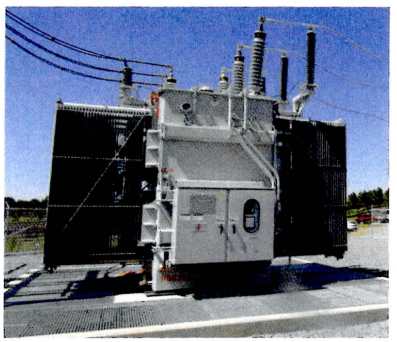


Figure 5. GSU Transformer with Secondary Containment to Capture any Leaked Oil

There was a time when most transformer oil was toxic. From 1929 to 1977 polychlorinated biphenyls (PCBs), a man-made alternative to mineral oil, was commonly used as transformer oil instead of mineral oil. However, the toxicity of PCBs was eventually understood, leading to PCBs being banned in the US in 1979. Today, transformers either use mineral oil or vegetable oil, both of which are free of PCBs. Mineral oil is non-toxic to humans, in fact "baby oil" that is commonly used to soothe babys' skin is a scented mineral oil. Although non-toxic to humans, mineral oil is an environmental contaminate and harmful to aquatic ecosystems, so any release to the environment should be avoided. An alternative to mineral oil is vegetable oil, and the potential for negative environmental impact from spilled vegetable oil is much less because these oils are biodegradable, so the time they impact the environment is short-lived. Federal regulations dating back to the Clean Water Act of 1973 require that facilities with significant quantities of oil prevent pollution of water.[15] The current EPA regulations require that facilities with over 1,320 gallons oil, and with the potential for spilled oil to impact surface water, must develop and implement an oil spill prevention, control and countermeasure (SPCC) plan. While the risk of negative environmental impact from a transformer oil spill/leak cannot be eliminated entirely, these regulations along with standard industry practices, result in a low probability for a substantial spill and a high probability for a quick clean-up response to minimize impact if a spill were to ever occur.

Toxicity: Operations & Maintenance

Unlike most other electricity generation facilities, photovoltaic systems do not produce any emissions. The only way they could produce emissions is in the case of a fire. The potential human health impacts from contact with smoke from burning PV panels was studied by the International Energy Agency (IEA) PVPS in their first report on human health risk assessment. In that study they did not study ground-mounted PV, presumably because of the extremely low risk of significant fire, but they did investigate the potential health impacts of lead in silicon modules dispersing in smoke from a fire in a building that is covered in PV modules. The study considered several worst-case scenarios for different size buildings and different environments and found no risk of harmful health impacts from the smoke from PV panels.[16]

The only other two aspects of operations and maintenance (O&M) that have raised concerns about toxicity are the fluids used to wash panels and herbicides used to maintain vegetation.

- **Panel Washing** – Across NC there is ample rain to keep the panels clean. If the panels need to be washed, it would occur infrequently and typically with use of deionized water and cleaning brushes.
- **Herbicides** – The industry standard practice for maintaining the vegetation at solar facilities is similar to how most cities maintain their parks, which is they primarily rely on mowing and string trimmers for vegetation and use herbicides along fences, on roads, and under some equipment. Parks and solar facilities also use herbicides to strategically remove problem weeds, especially woody weeds, to maintain a healthy cover of the desired species of grasses and other low-growing vegetation. This mode of herbicide use applies significantly less than the herbicide volume commonly applied in NC agriculture. For example, Round-Up-Ready crops are common row crops that have been engineered for the entire field to be sprayed with Round-Up (glyphosate) several times each season. Additionally, farmers applying most types of

[15] Environmental Protection Agency, webpage: Overview of the Spill Prevention, Control, and Countermeasure (SPCC) Regulation, www.epa.gov/oil-spills-prevention-and-preparedness-regulations/overview-spill-prevention-control-and

[16] P. Sinha, G. Heath, A. Wade, K. Komoto, 2018, Human Health Risk Assessment Methods for PV, Part 1: Fire risks, International Energy Agency (IEA) PVPS Task 12, Report T12-14:2018, https://iea-pvps.org/wp-content/uploads/2020/01/HHRA_Methods_for_PV_Part1_by_Task_12.pdf

herbicides to their fields are not required to be certified or licensed, but a NC commercial pesticide applicators license is required to apply any herbicide to a solar facility.

Sources for Further Reading on Toxicity:

- International Renewable Energy Agency (IRENA): End-of-life management: Solar Photovoltaic Panels, June 2016
- Electric Power Research Institute (EPRI): Solar PV Module End of Life: Options and Knowledge Gaps for Utility-Scale Plants, December 2018
- EPRI: Feasibility Study on Photovoltaic Module Recycling in the United States, April 2018
- EPRI: Solar Photovoltaics: End-of-Life Management Infographic, March 2021
- National Renewable Energy Laboratory (NREL): A Circular Economy for Solar Photovoltaic System Materials, April 2021
- Solar Energy Industries Association (SEIA): SEIA National PV Recycling Program, with factsheet, checklist, and peer-reviewed article, (accessed December 2021)
- North Carolina Department of Environmental Quality: Final Report on the Activities Conducted to Establish a Regulatory Program for the Management and Decommissioning of Renewable Energy Equipment, January 2021

Electromagnetic Fields (EMF)

Exposure to EMF, or electric and magnetic fields, is a fact of everyday modern life. Electromagnetic fields come in many different frequencies, ranging from grid electricity with a frequency of 60 hertz to x-rays and gamma rays that are billions of billions of times faster. The faster the frequency the stronger the EMF. The EMF coming from grid electricity, including from the inverters, transformers, and AC wires to be used at the Coastal Pine Solar facility, has a much lower frequency and therefore much lower energy than the EMF from cell phones, wireless internet, and even radio and TV towers. The solar panels and the wire connecting them to the inverters carry direct current electricity, which has a frequency of zero hertz, and thus produces static electric and magnetic fields. The voltage and current of these circuits are both relatively low, so the electric and magnetic fields they produce are both rather weak. The static magnetic fields the panels generate are much weaker than the Earth's natural static magnetic field, which can be demonstrated by a compass still pointing north when placed near the panels.

Electric fields are created around wires and equipment wherever a voltage exists, however it is easily blocked with common materials such as metal, wood, and soil. The World Health Organization (WHO) in 2005 concluded that there were no substantive health issues related to electric fields (0 to 100,000 Hz) at levels generally encountered by members of the public.[17] The proposed solar project does not produce any voltages higher than the existing power lines, and therefore does not produce any electric fields not generally encountered by members of the public.

Magnetic fields are the other aspect of EMF, and they are created by electric current. Typical Americans are exposed to about 1 milligauss of magnetic field from grid electricity on average during their day, primarily from sources at homes and work[18]. The primary source of magnetic fields in a solar facility are the inverters and the short section of wires between each central inverter and its step-up transformer. To convert direct current to alternating current, inverters use a series of switches that turn off and on several thousand times a second, creating EMF in the range of 5 kHz to 100 kHz, which is much faster than the 60 Hz of grid electricity but still much slower than even the lowest frequency radio signals. Also, the energy output of inverters has the highest electrical current of any portion of the solar facility, making the few feet of wire between the inverter and the transformer the source for the strongest magnetic fields in the facility, yet because the strength of a magnetic field decreases dramatically with increasing distance from the source, these magnetic fields only extend about 100-300 feet from the inverter, which is less than the expected distance from each inverter to the perimeter of the Coastal Pine

[17] WHO factsheet: Electromagnetic fields and public health, Exposure to extremely low frequency fields, June 2007, www.who.int/teams/environment-climate-change-and-health/radiation-and-health/non-ionizing/exposure-to-extremely-low-frequency-field

[18] World Health Organization (WHO), webpage: Electromagnetic Fields – Typical exposure levels at home and in the environment, www.who.int/peh-emf/about/WhatisEMF/en/index3.html

Solar project, at which point the magnetic fields would be expected to measure less than 0.5 milligauss.[19] Similarly, the magnetic fields from substations generally do not extend far enough to leave the fence around the substation, so the same can be expected for the Project's substation.[20]

The bottom line is that the EMF from the Coastal Pine Solar project is not expected to leave the solar site boundary, and thus will not increase the EMF exposure of any neighbors. Even if some EMF from the PV facility were to extend beyond the fenced perimeter of the site, there would still be no public health impact because low levels of extremely low frequency (ELF) EMF exposure are not harmful to humans. After extensive study of the potential health impacts of EMF from grid electricity the World Health Organization (WHO) concludes:

> *"Despite extensive research, to date there is no evidence to conclude that exposure to low level electromagnetic fields is harmful to human health."*[21]

Sources for Further Reading on EMF:

- Electric Power Research Institute: EMF and Your Health: 2019 Update, December 2019
- World Health Organization: Electromagnetic Fields (accessed September 2022)

Heat Island Effect

The localized effects of large-scale PV facilities on temperature and moisture are not yet well understood. However, the localized micro-climate effects of large-scale PV facilities are understood well enough to determine that they do not create a heat island effect similar to the well-documented urban heat island effect from dark, massive, surfaces in urban environments, such as asphalt paved streets and parking lots, that cause urban areas to be significantly warmer than the surrounding rural area during the day and night. The changes that solar panels may make to the way land absorbs, reflects, and emits the energy from sunlight are minimal compared to the changes created by buildings, vehicles, and many miles of concrete and asphalt. By comparison, solar panels absorb and reflect a similar amount of solar energy as vegetation and soil. Solar panels are lightweight and cannot store large amounts of thermal energy, and the ground remains covered in vegetation with its natural exposure to air and water. Additionally, the solar panels remove about 20% of the solar energy that strikes them as electricity sent to the grid.

Initial research into the potential for PV systems to cause a heat island effect has used a variety of techniques, including conceptual energy flow calculations, advanced fluid dynamic computer simulations, and field measurements of temperature.[22, 23, 24] This research found a range of different effects on temperature, but none indicate that a large PV system could affect the temperature of the surrounding community. Most found that compared to similar undeveloped land the air temperature in a solar facility increases during the day, but the nighttime results were mixed. Some studies found PV sites to be cooler than non-PV sites at night, but others found them to be warmer. Much of this variation is likely explained by the different climates studied but may also be due to the different methods of the studies. Much of the research on solar heat island effect occurred in arid regions of the U.S. southwest where the results are unlikely to translate perfectly to wetter climates in the southeast. In a written statement of evidence Greg Barron-Gafford, leading solar heat island effect researcher,

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[19] Study of Acoustic and EMF Levels from Solar Photovoltaic Projects. Tech Environmental, Inc., December 2012, www.co.champaign.il.us/CountyBoard/ZBA/2018/180329_Meeting/180329__Massachusetts%20Acoustic%20Study%20for%20PV%20Solar%20Projects.pdf

[20] www.niehs.nih.gov/health/materials/electric_and_magnetic_fields_associated_with_the_use_of_electric_power_questions_and_answers_english_508.pdf

[21] World Health Organization (WHO), webpage: Electromagnetic Fields – Summary of health effects, www.who.int/peh-emf/about/WhatisEMF/en/index1.html

[22] Broadbent, Ashley & Krayenhoff, Eric & Georgescu, Matei & Sailor, David. (2019). The Observed Effects of Utility-Scale Photovoltaics on Near-Surface Air Temperature and Energy Balance. Journal of Applied Meteorology and Climatology. 58. 10.1175/JAMC-D-18-0271.1.

[23] Barron-Gafford, G. A. et al. The Photovoltaic Heat Island Effect: Larger solar power plants increase local temperatures. Sci. Rep. 6, 35070; doi: 10.1038/srep35070 (2016).

[24] V. Fthenakis and Y. Yu, "Analysis of the potential for a heat island effect in large solar farms," 2013 IEEE 39th Photovoltaic Specialists Conference (PVSC), Tampa, FL, 2013, pp. 3362-3366, doi: 10.1109/PVSC.2013.6745171.

says that he expects that when the area under the PV array is vegetated with grass, the localized heat island effect will be greatly reduced relative to what his research found in dry climates.[25]

The available studies agree that the slight increase of air temperature in the PV site dissipates quickly with height and distance from the panels as natural processes remove and spread the heat. As a result, any temperature increase that may occur at the Coastal Pine Solar project during the day will be limited to the site and will not increase the temperature of any of the surrounding community.

Sources for Further Reading on Heat Island Effect:

- EPA: Learn About Heat Islands, (accessed September 2022)

Glare

Photovoltaic panels are designed to absorb, and thus not reflect, the solar energy that they receive. However, when sunlight strikes the glass front of a solar panel at a glancing angle, a significant portion of the solar radiation is reflected, which can potentially lead to solar glint (a brief flash) or glare. Glint or glare can temporarily impact a person's vision, including pilots landing aircraft, or motorists driving vehicles. However, the conditions required for a PV project to create glare rarely occur.

PV facilities, such as Coastal Pine Solar, that utilize single axis trackers to slowly rotate the solar panels to follow the sun have even less potential to create glare because the trackers help avoid a situation where sunlight hits the panels at a glancing angle. Most modern trackers implement an advanced control strategy known as "backtracking" that increases the electricity production of the site by flattening the tilt of the panels early and late in the day to keep the rows of solar panels from shading one another. Backtracking can result in brief periods near sunrise and sunset where the sun strikes the panels at a glancing angle, creating a situation that could result in a few minutes of visible glare at sunrise and sunset. For anyone to see this glare they must be looking across the solar panels in the direction of the rising or setting sun, which is a situation where the sun obviously will create significant glare for the viewer with or without the solar project.



Figure 6. 20 MW PV System at Indianapolis International Airport (Photo source: inhabitat.com)

A clear indication of the ability to avoid glare problems from large ground-mounted PV systems are the PV systems installed on airports across the U.S., including Denver International and Indianapolis International. While there is the potential for a PV system to create glare, there is also the ability to predict when and where a system may create glare and incorporate any needed mitigation before construction. The Federal Aviation Administration (FAA) and the U.S. Department of Energy developed specialized solar glare analysis software to predict when and where a PV project may produce glint or glare for sensitive receptors nearby.

In May of 2021, the FAA replaced the long-standing interim solar glare policy with a (final) policy that no longer restricts solar developed on airport property from creating glare visible to pilots, in recognition that pilots often experience glare during

[25] G. Barron-Gafford, Statement of Evidence by Greg Barron-Gafford on Solar Heat Islanding Issues, May 2018, www.planning.vic.gov.au/__data/assets/pdf_file/0024/126555/301-Expert-Witness-Statement-of-G-Barron-Gafford-PVHI-May-2018-Lemnos.pdf

landing from bodies of water and that glare from solar is not meaningfully different.[26] The new policy does still prohibit on-airport PV systems from creating any glare visible in the air traffic control towers.

The two closest airports in the National Plan of Integrated Airport Systems (NPIAS)[27] to the Coastal Pine Solar project are the Henderson Field Airport (ACZ) and the Wilmington International Airport (ILM). The Henderson Field Airport is about 10 miles north of the Coastal Pine Solar site and Wilmington International Airport is about 20 miles south of the site. Only the Wilmington airport has an air traffic control tower, but both airports are too far for glare from the site to impact air traffic controllers or pilots on their final landing approach. There are two tiny private airstrips, one to the east and one to the west of the site, each approximately 5 miles away from the Coastal Pine Solar site, which is also too far away for any potential glare impact. With the closest air traffic control tower being 20 miles from the Coastal Pine Solar project there is no risk of the facility creating a solar glare hazard for aviation.

Sources for Further Reading on Solar Glare:

- National Renewable Energy Laboratory (NREL): Research and Analysis Demonstrate the Lack of Impacts of Glare from Photovoltaic Modules, July 2018
- ForgeSolar: PV Planning and glare analysis software help documentation, (accessed September 2022)

Conclusions

Based on my knowledge of engineering and science, personal experience with PV technology, review of academic research, and review of materials provided by the project developers about the proposed Coastal Pine Solar PV facility in Pender County, North Carolina, my opinions are summarized as follows:

- The development and operation of the Coastal Pine Solar facility will not result in any environmental contamination or negative impacts to public health or safety.
- The Coastal Pine Solar facility will not increase the temperature of the area surrounding the site.
- The Coastal Pine Solar facility is not expected to create any glare hazard for aviation or other negative glare impacts.

[26] "Federal Aviation Administration Policy: Review of Solar Energy System Projects on Federally-Obligated Airports", https://www.federalregister.gov/documents/2021/05/11/2021-09862/federal-aviation-administration-policy-review-of-solar-energy-system-projects-on-federally-obligated

[27] The National Plan of Integrated Airport Systems (NPIAS) identifies nearly 3,310 existing and proposed airports that are included in the national airport system. The NPIAS contains all commercial service airports, all reliever airports, and selected public-owned general aviation airports. www.faa.gov/airports/planning_capacity/npias

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Coastal Pines Solar Health and Safety Report

I was requested by James Bedrin, Project Development Manager, Birch Creek Development, Binghamton, New York to evaluate and then provide an expert opinion pertaining to the Health and Safety aspects of Coastal Pines Solar, LLC facility. The conclusion after considering the location, construction methods, typical equipment, operation, maintenance and decommissioning is that this project's economic and health benefits are significant to the residents of Pender County and by far outweigh any negligible risks for any potential impacts to the public's health and safety.

Coastal Pines Solar, LLC proposes to construct a 200 MW AC Utility Scale Solar Farm on portions of a parcels (PIN2380-77-7421-0000 & 2390-54-2868-0000) in Pender County, NC located adjacent and east of Cypress Creek and north of Piney Woods Road. The explicit equipment has not been specified at this date but I am familiar with the typical Tier 1 equipment that Birch Creek Development normally specifies for this type solar facility. I have studied the siting of this proposed project, the preliminary site plan and the proposed Duke Energy Progress interconnection to the Sutton Plant to Wallace Substation 230 kV line (Queue number 6/27/2022 4:10:00 PM).



I am an independent consulting engineer with 40 years of experience in electric utility design, construction and operations and hold the following licenses and / or certifications:

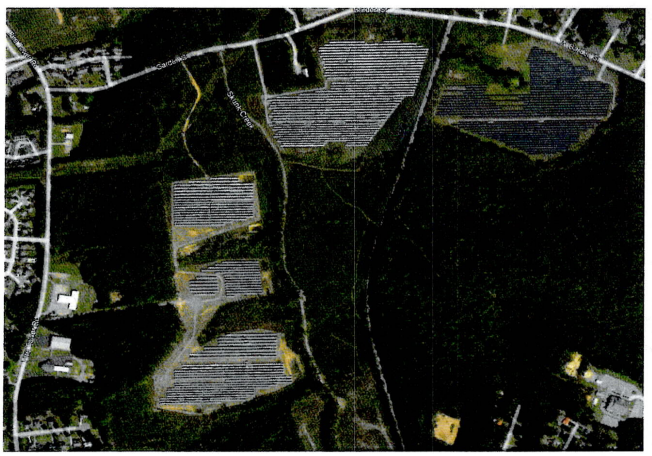
- Registered professional engineer in SC, NC, FL, GA, VA, ID, MT, & TX
- Licensed Electrical Contractor in NC with the Unlimited Classification
- Multiple FCC licenses including the General Radiotelephone Operator License

Chris Sandifer PE

- NABCEP Certified Photovoltaic System Inspector
- NC Department of Agriculture - Commercial Pesticide Applicator License
- Certified by the NC State Beekeepers Association

I have unique qualifications to evaluate a solar farm's health, safety and harmony. I have training and experience reviewing building codes as well as zoning and land use ordinances and regulations. My opinions with regard to issues related to solar farm equipment and design, solar farm locations, and solar farm safety impacts have been accepted in numerous judicial and quasi-judicial forums across the USA.

I have been self-employed in the renewable energy industry for the past twelve (12) years and am familiar with the concepts of electrical engineering and a quality design. I previously worked 30 years for Duke Energy and its predecessors in various roles, including the interconnecting of renewable energy to the electric grid. My experience in the solar industry has taught me that solar farms are a practical solution for sources of clean and renewable energy to power modern society.



Sandifer solar farm

I grew up on a farm in South Carolina and currently live on my own farm in Nash County, NC. I also manage an additional 1,700 acres of family-owned, traditional farm lands in Lee, Nash, Edgecombe and Warren Counties in North Carolina. I currently lease approximately 100 acres in Lee County, NC for 15 MWs of solar energy production. As an engineer, electrical contractor, farmer, and land owner; I have an abundance of tangible experience with solar farm design, construction, operation, maintenance and impact. Consequently, I understand the equipment, and procedures required for a safe and environmentally responsible installation as well as the decommissioning and the subsequent removal of a solar farm's facilities. The land will not suffer detriment after the solar farm is removed. The application of intensive chemicals used in typical row crop farming will be substantially reduced. The soil will again be revitalized with the natural organisms which are so vital to sustainable organic crop production. The importance of having a steady and stable cash flow for a percentage of the annual farm business income cannot be over stated.

Chris Sandifer PE

I have served on the Nash County Planning Board for seven years. Nash County was one of the first counties in North Carolina to assess and approve utility scale photovoltaic solar farms. The Nash County Board of Commissioners has approved thirty-eight (38) utility-scale solar farms to date. The Board's experience with solar farms, as well as that of the Nash County Planning Department staff has been very positive. Nash County is grateful for our solar projects that generate significant tax revenue for our community without adding the infrastructure burden on water, sewer, roads or schools. Because they are unpaved, solar farms have beneficial stormwater and ground water recharging effects.

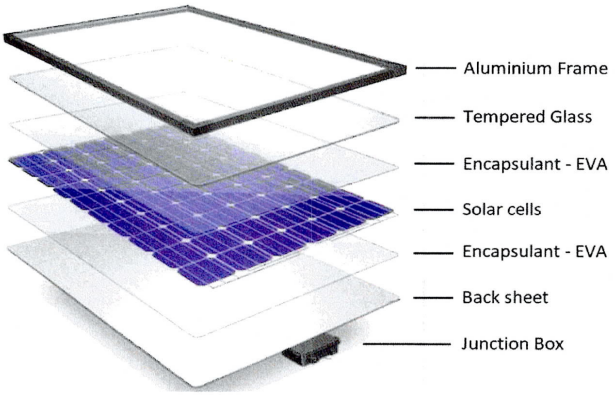
Every NC utility scale solar project must receive a Certificate of Public Convenience and Necessity (CPCN) from the North Carolina Public Utilities Commission in order to make application to the utility to connect to the electric grid. This required certificate is granted only after the project has been carefully screened by the State Environmental Clearinghouse to be in compliance with the State Environmental Policy Act. Before a construction permit can be issued, the project must still receive various other approvals as applicable: Ex.: NCDEQ Erosion and sediment control plan, NCDOT driveway permit, NC DWR wetlands, FAA glare analysis, et al just to mention a few.



After construction is completed, the proposed Solar Farm will neither emit odor nor generate dust like common uses such as farming can. This will be an unmanned site with no permanent on-site parking or loading areas with the subsequent traffic produced being much less than the average single family dwelling. Sound during full output operation will be indistinguishable from ambient background noise at the project boundary. The Solar Farm produces no noise at night. There will be no security lighting.

The proposed Solar Farm will connect to and serve the existing power grid. Power distribution lines will be located underground except for interconnection of the facility to the overhead power grid. Solar farms are safe, non-hazardous, unobtrusive, environmentally friendly, and advance the public necessity of adopting renewable sourcing of electricity.

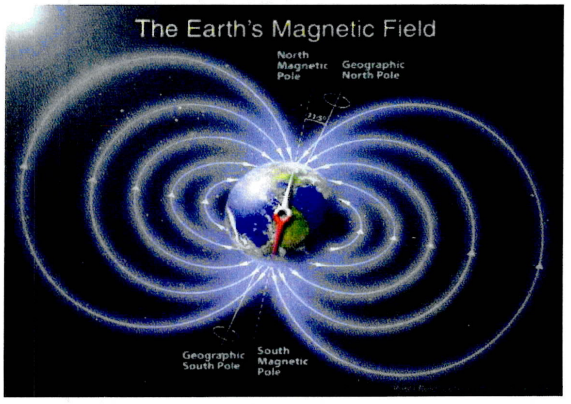
Chris Sandifer PE



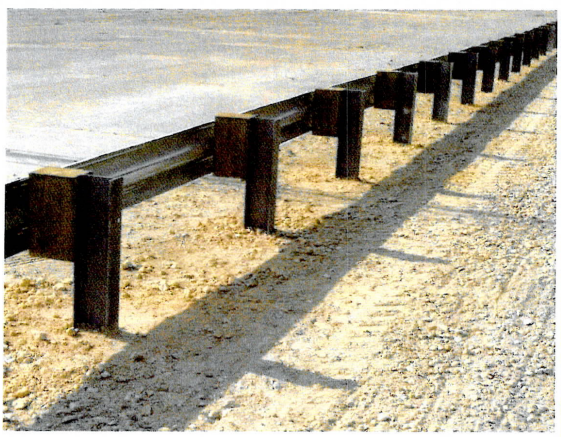
The proposed solar farm will consist of photovoltaic (PV) modules ("Panels"). The proposed solar panels do not contain any radioactive material, hazardous chemicals, or other material that could potentially cause harm to the surrounding community. The solar panels are non-combustible. They are safe and create no pollutant emissions. A solar facility is a low impact, passive use of the land. Solar farms enjoy widespread support from environmental organizations. Solar technology like that proposed for this property, is not new; solar panels have been in operation for more than fifty (50) years in the United States. All electric components will have an Underwriters Laboratories (UL) listing and will comply with the edition of the National Electrical Code in effect at the time of construction.

Solar panels are not flammable and alone cannot sustain combustion. Ground mounted panels and wiring could be damaged by the ignition of the fuel load (grasses and weeds) in the array if it was not limited by routine vegetative abatement. If the fuel load is neglected and a grass fire is started in a solar farm, the common strategy to combat this type grass fire is simply containment. The fire fighters need not enter the facility but simply plow a fire line around the fence if needed and let the fire burn its self out.

EMF is present wherever an electric current is present. For example, an EMF is produced common appliances, electric tools, computers, radio and television transmitters, mobile phones, and medical devices. EMF is also produced by a variety of natural sources such as magnets and the earth's core. PV panels produce a far weaker EMF than household appliances or the earth.



Chris Sandifer PE





The panels will be mounted on horizontal metal rails that are attached to the vertical galvanized steel piles which are hydraulically pressed into the ground to minimize soil disturbance. This is a similar application as the ubiquitous guard rails used across the country along our highways.

The inverters (a solid state electronic device) are used to convert electricity from direct current (DC) to alternating current (AC) power. Due to the economics of construction and operation, they will be located in the interior of the solar facility. Although the inverters inside the solar farm facility produce EMF, the strength of the fields decline with the inverse square of the distance such that the EMF measured at the perimeter of the physical facility is immeasurable when compared to the natural background EMF of the earth.

Electricity is vital for our everyday lives and is essential for a growing economy. Aging traditional generation plants, such as coal and nuclear, will need to be shut down and replaced with new generation facilities. Solar farms are a public necessity in that they generate clean, inexpensive, and unlimited resource that should be preferred to conventional sources of power such as coal, gas, and nuclear energy. These conventional sources of electricity are expensive as compared to solar photovoltaics, use finite resources that require significant environmental disruption and public safety risks to extract and to utilize. This facility will not

produce any byproduct waste such as coal ash, nitic oxide, sulfuric oxide, lead, cadmium, acid rain typical of a fossil fuel generator. There will be no spent nuclear fuel rods that could potentially endanger the environment.

Per the DOE, the Levelized Cost Of Electricity (LCOE) refers to the estimates of the revenue required to build and operate a generator over a specified cost recovery period. This cost includes capital cost, fixed and variable O&M cost and grid interconnection cost. Per the U.S. Energy Information Administration, Annual Energy Outlook 2022 page 10, Standalone **solar is the most economical** generator even without tax credits: https://www.eia.gov/outlooks/aeo/pdf/electricity_generation.pdf

	Without tax credits			
Plant type	Minimum	Simple average	Capacity-weighted average[b]	Maximum
Dispatchable technologies				
Ultra-supercritical coal	$73.86	$82.61	*NB*	$101.25
Combined cycle	$34.30	$39.94	$37.05	$50.09
Advanced nuclear	$82.76	$88.24	*NB*	$98.78
Geothermal	$36.86	$39.82	$39.61	$41.57
Biomass	$79.87	$90.17	*NB*	$141.03
Resource-constrained technologies				
Wind, onshore	$30.01	$40.23	$37.80	$65.65
Wind, offshore	$109.88	$136.51	*NB*	$170.31
Solar, standalone[c]	$30.13	$36.49	$36.09	$48.58
Solar, hybrid[c,d]	$43.15	$52.53	$58.62	$67.97
Hydroelectric[e]	$48.96	$64.27	*NB*	$82.65
Capacity resource technologies				
Combustion turbine	$106.02	$117.86	$123.84	$145.46
Battery storage	$114.70	$128.55	$124.84	$141.06

Source: U.S. Energy Information Administration, *Annual Energy Outlook 2022*

Per the Solar Energy Industries Association, NC had over 8,000 MW of photovoltaic generation interconnected to the grid at the end of the second quarter of 2022. The costs for solar panels and electronic equipment continue to decrease as a result of mass production synergies. The output of solar panels has doubled in the last 10 years and the rated panel outputs have been steadily rising due to improved technologies. Duke Energy for example has retired 52 coal plants since 2010 and touts it has plans to reduce carbon emissions by 50% by the year 2030 and to be net-zero by 2050. This utility has found renewables to be a cost efficient solution for their new generation.

Per the EPA, Public Health Benefits-per-kWh of Energy Efficiency and Renewable Energy in the US: A Technical Report. 2nd Ed, May 2021, https://www.epa.gov/sites/default/files/2021-05/documents/bpk_report_second_edition.pdf has calculated the health benefits from the reduced emissions and waste from fossil fuel generated electrical energy. The conservative average health benefit for the year 2019 for a utility solar project in Pender County is 2.75¢ per kWh. At this quantified rate, the improved air quality due to this project would contribute to the reduced health costs of the local community by nearly $16 million per year ($257 per resident).

An additional community advantage a solar farm provides is to keep electrical utility rates low and stabilized. These facilities enter into a long term Purchase Power Agreement (PPA) with the utility that often lasts up to 20 years. The energy purchase rate by Duke is

based on the utility's least avoidable costs. The solar farm is compensated at the lowest energy production cost which is often lower than the utility can build new facilities to produce the energy themselves. The solar energy costs to the utility are low and fixed and independent of erratically fluctuating fuel costs which and the savings are a passed on to the consumer.

Solar panels can reflect glare when the sun is low on the horizon. The reflectance of the panel surface is highly dependent on the incidence angle of the sunlight relative to the surface normal. In general, the reflectance of glass is relatively low (< 5%) at small incidence angles but increases rapidly above 60°. Higher reflectances increase the glare intensity, retinal irradiance, and potential for ocular impact. So a panel down in a valley may be easy to see from the elevation but the lower incidence angle from the sun's rays would be blocked by the terrain and would not result in glare even with fixed tilt panels. If the panels track the sun, the rays are maintained very close to the surface normal. Most times a mature vegetative buffer would obstruct any potential glare for a fixed tilt array. For a person to experience glare from a panel they would also have to be looking in the direction of the sun which could mask any glare contributions by the panels themselves. Airports and USAF bases are common locations for large solar farms. The SGHAT (Solar Glare Hazard Analysis Tool) software can be used to quantify the glare.

The 'Heat Island Effect' is a phenomenon attributed to large urban masses such as buildings, bridges, pavement and etc. These large masses absorb the sun's radiation during the day and reradiate it as thermal energy. Solar panels absorb a significant percentage of the sun's radiation and immediately export it to users in other regions. Panels basically do not possess a significant enough mass to store thermal energy and contribute to 'Heat islanding'.

This proposed project is adjacent to two existing Duke 230 kV transmission lines. A new substation and Duke switching station will be constructed to connect the project to the grid to export power throughout the region. The solar farm has to match the voltage of the line to which it is interconnecting. Therefore, the electricity generated by a solar farm does not increase the electrical voltage in the utility's existing lines. Nor does it increase the overall current on the grid because it simply replaces current from other sources.



Typical ethanol plant

Approximately 40% of the US annual corn production is refined into ethanol. In 2018 the US Dept. of Energy reported 14.34 billion bushels of corn produced with 5.60 billion bushels used for ethanol fuel. At 165 bushels per acre that is 34 million acres of corn used for fuel. The ubiquitous solar panels installed in 2021 projects would produce that same net energy by using only

0.567million acres. Photovoltaics are **60 times** more efficient land use than photosynthesis derivatives.

Solar farms make good transitional land uses in areas where suburban development is not envisioned in the immediate future. Solar farms, such as the one proposed, allow property owners to maintain large areas for future development while generating income from the property. At the end of the useful life of the proposed Solar Farm, the land is easily redeveloped for home or other land uses or restored to farming.

Based upon the above stated facts, upon my experience as the engineer of record for multiple solar farms in NC and other states across the US, and my review of this proposed Solar Farm, it is my professional opinion that:

- Coastal Pines Solar, LLC is appropriate and commendable use for the property.
- Coastal Pines Solar, LLC will not materially endanger the public health or safety
- Coastal Pines Solar, LLC will, if developed according to the plan as submitted and approved, will be in harmony with the area in which it will be located.
- Coastal Pines Solar, LLC is essential and desirable to the public convenience and welfare.
- Coastal Pines Solar, LLC Solar will conform to the applicable regulations of Pender County, the state of North Carolina and the United States.



Please feel free to contact me directly should you have any questions.

With Best Regards
Chris M. Sandifer PE

14 September 2022

SUP Standard (G)(3)

The proposed use shall not constitute a nuisance or hazard.

A. Nuisance

Merriam-Webster's dictionary defines "nuisance" as something that is "annoying, unpleasant, or obnoxious."

The following are facts common to all solar farms and demonstrate that they are not – and cannot – be considered a nuisance to adjoining owners as that term is commonly understood.

- Solar farms are unmanned facilities that only require occasional mowing or electrical maintenance. Only 3 to 4 vehicle trips per month are required for this purpose, and the mowing equipment is not louder than mowing equipment used by residential neighbors.
- Solar farms do not generate any form of smoke, fumes, or dust.
- Solar farms do not have exterior lighting and therefore are dark at night.
- Solar farms do not emit anything into the air, water, or soil.
- Solar farms are not considered by NCDEQ to be impervious structures because there is sufficient spacing between panels to allow all rain to run off to the ground below where it is absorbed by the grass-covered soil. Solar farms therefore do not create erosion or prevent rain from recharging groundwater used for wells in the area.
- This facility will be designed and placed so that it will not be seen behind vegetative screens.

B. Nonhazardous

For the following reasons, solar farms are not hazardous to neighbors or others:

- The facility will be surrounded and protected by a minimum 7-foot tall fence. While it is hypothetically possible for someone to scale the fence and enter, this hypothetical scenario cannot be the standard of safety, because otherwise all electric utility substations would not be allowed to be built.

- The only people allowed inside the facility will be maintenance workers (mowers) and electrical repair teams who are trained to do what they do.

- All equipment must meet National Electric Code standards and be UL approved.

SUP Standard (G)(4)

The requested use will be in conformity with the Pender County Land Use Plan and other official plans, or policies adopted by the Board of County Commissioners

Ultimately, the Pender County UDO is the most important land use plan the county has. When it was enacted, the county was required by statute to find that the UDO was consistent with the Land Use Plan. And since the UDO is *law* enacted by ordinance, its provisions supersede all recommendations and suggested *policies* in the Land Use Plan and other policies adopted by the County.

Importantly, the UDO provides that solar farms are allowed uses in the county and suitable uses in the RA zoning district if the applicant produces competent, material, and substantial evidence that it meets the standards in UDO Section 3.12.3(G). Pursuant to several North Carolina courts, no unwritten standards or policies or considerations can legally be applied in the discretion of members of the commission.

To further address this standard, Kara Drane, AICP, provides a report at the following tab that analyzes in great detail how this facility conforms to the county's policies

REPORT

Coastal Pine Solar, LLC
Harmony with the Area and Consistency with Comprehensive Plan

Kara W. Drane, AICP

OVERVIEW

Solar farms possess none of the characteristics of a use that creates "externalities" or disharmony with existing uses in the area. They do not produce noise, light, odor, traffic, emissions of any kind, and in this case, it won't be visible because of setbacks and vegetative buffers. This facility will be consistent with many of the provisions in the Pender County Land Use Plan.

BACKGROUND

Site Description

Coastal Pine Solar is seeking a Special Use Permit for a solar farm at 5046 Piney Woods Road, generally west of Penderlea Highway and Horse Branch Road and north of Piney Woods Road. The proposed project would involve the development of a 200 MW AC facility on approximately 2,356 acres within a 6,910-acre site plan. The existing land use on the site is agricultural.

Land Use Setting

South:

- Agricultural
- Undeveloped
- Low Density Residential

North:

- Agricultural
- Undeveloped
- Low Density Residential



West:

- Agricultural
- Undeveloped

East:

- Agricultural
- Undeveloped
- Low Density Residential



Code of Ordinances



The Pender County NC Unified Development Ordinance, Article 4 Zoning Districts and Article 5 Permitted Uses provides descriptions of the various zoning districts and lists uses as permitted, permitted with a special use permit, permitted with special use permit and additional standards, and uses with supplemental requirements.

According to the Pender County Unified Development Ordinance, §4.7.1 the Rural Agricultural (RA) District "is intended to accommodate non-residential agricultural uses and very low-density residential development (minimum of 1 du/ac), as well as limited non-residential uses, in rural areas adjacent to agricultural operations. Development in this District should rely predominantly on individual wells and septic tank systems for domestic water supply and sewage disposal."

Article 3.12.1 defines the purpose of a Special Use Permit as follows: "The development and execution of this Ordinance is based on the division of the county into districts within which the use of land and buildings and the bulk and location of buildings and structures in relation to the land are substantially uniform. It is recognized, however, that there are some land uses which are basically in keeping with the intent and purposes of the district where permitted, but which may have an impact on the area around them which can only be determined by review of the specific proposal. These uses may be established, under certain conditions and with proper controls, in such a manner as to minimize any adverse effects. In order to ensure that these uses, in their proposed locations, would be compatible with surrounding development and in keeping with the purposes of the district in which they are located, their establishment shall not be as a matter of right, but only after review and approval of a Special Use Permit as hereinafter provided."

Zoning

The property is in the RA District and Solar Farms require a Special Use Permit as per §5.2.3 Table of Permitted Uses (RA District excerpt below).

Permitted (P)	Permitted with Use Standards (D)	Special Use Approval w/ Additional Standards (SD)
• SFD: Detached Conventional • SFD-Attached: Duplex • Manufactured Home • Accessory Structures • Solid Waste Collection Public • Educational Services • Personal Care Services • Laundries and Drycleaners • Religious Organizations • Public Administration • Child Care Center • Family Child Care Home • Public Parks • Temp. Manufactured Homes • Temp. Fruit/Vegetable Stands	• Accessory Dwelling Unit • ADU on Non-Res. Principal • Home Occupation • Agrotourism Activities • Pet Care Services • Bona fide Farm Purposes • Disaster Volunteer Housing • Family Care Home • Portable Storage Containers • Private Cemetery • Private Residential Boating • Temp. Buildings for Construction/Development • Temporary Events	• Cottage Occupations • Sewage Treatment Facilities • RV Parks/Rec. Camps • Community Boating Facility • Community Boating Facility in conjunction with a Master Development Plan • Marina (Commercial) • Telecommunication Facilities • Telecommunication Facilities - Public safety
Special Use Approval (S)		
• Nonmetallic Mineral Mining & Quarrying • Other Electric Power Generation • Electric Bulk Power Transmission & Control • Artisan Manufacturing • Wholesale Trade • Motor Vehicle Parts/Dealers • Electronics/Appliance Stores • Building Material, Garden Equipment & Supplies Dealers • Food and Beverage Stores • Heath/Personal Care Stores • Gasoline Stations • Clothing/Accessories Stores • Miscellaneous Store Retailers • Non store Retailers • Activities for Road Trans. • Postal Services • Warehousing and Storage • Finance and Insurance • Real Estate, Rental, Leasing • Prof, Scientific & Tech Services • Management of Companies	• Nursing/Res. Care Facilities Except: Res. Mental Retardation, Mental Health & Substance Abuse • Social Assistance • Performing Arts Companies • Spectator Sports • Promoters of Performing Arts, Sports • Museums, Historical Sites • Amusement/Theme Parks • Golf Courses/Country Clubs • Fitness/Rec. Sports Centers • Amusement/Rec. Industries • Aviation Clubs, Recreational • Canoeing, Recreational • Fishing Clubs, Recreational • Flying Clubs, Recreational • Guide Services • Horse Riding, Recreational • Outdoor Shooting Ranges • Bed and Breakfast Inns • Admin./Support Services • Nonhazardous Waste Treatment/Disposal	• Automotive Repair/Maintenance • Electronic/Equipment Repair Maintenance • Personal and Household Good Repair and Maintenance • Funeral Homes/Services • Cemeteries and Crematories • Dry-cleaning/Laundry services • Other Personal Services • Civic and Social Organizations • Private Cemetery • Salvage Operations • Storage of Merchandise, Equipment, Excluding Salvage • Traveler Accommodation • Recreational/Vacation Camps • Rooming/Boarding Houses • Full-Service Restaurants • Limited Service Eating Places • Special Food Services • Business Schools • Technical and Trade Schools • Drinking Places (Alcoholic) • Other Schools/Instruction • Hospitals

Per the Table of Uses excerpt on the previous page, there are many uses deemed by the County to be compatible with RA districts that generate traffic, are noisy, or would have much more impact on adjoining owners, such as manufacturing, a variety of retail trade uses, warehousing, amusement and theme parks, aviation clubs, outdoor shooting ranges, and automotive repair.

§3.12 SPECIAL USE PERMITS

§3.12.3 Procedures for Reviewing Applications

Health and Safety

Although health and safety are addressed elsewhere in this report, whether a use exists safely in a community is a factor to be considered in whether it is harmonious. Otherwise expressed, unsafe = disharmonious. Factors in considering health and safety include traffic conditions, provision of services and utilities, soil erosion and sedimentation, and the protection of public, community or private water supplies. The proposed solar farm maintains a safe environment for the following reasons and therefore is not out of harmony:

- Solar farms do not generate traffic. There will be approximately three to four vehicle trips per month for maintenance purposes. Construction of the site is estimated to occur over 9 to 12 months and traffic precautions will be taken including construction area signage to inform the public that they are approaching a construction area entrance.
- The proposed solar farm will produce clean, renewable energy that will serve approximately 50,000 homes. It will not produce harmful chemical emissions or emit other noxious things such as noise or odor that could negatively impact a community. A minimum sound is generated from inverters but described as a conversation at about 50 feet in distance.
- The energy generated at the proposed facility will be distributed across the energy grid through two existing overhead utility transmission lines located across the property. These transmission lines are highly visible and have set the tone for the area, but by contrast, this solar farm will be concealed and unseen using buffers and landscaping.
- The solar panels are located outside of the floodplain and wetlands. Due to the raised nature of ground mount frames, the land underneath the panels remains pervious. Shade tolerant grass will be planted under the solar panels to absorb rainwater and prevent runoff. The solar farm will not adversely impact soils or increase stormwater runoff. A stormwater pollution prevention plan will be approved by NC Department of Environmental Quality and prevention measures installed prior to construction.

- The solar farm will not use water resources and there will be no impact to public, community, or private water supplies.

Adjoining Homes

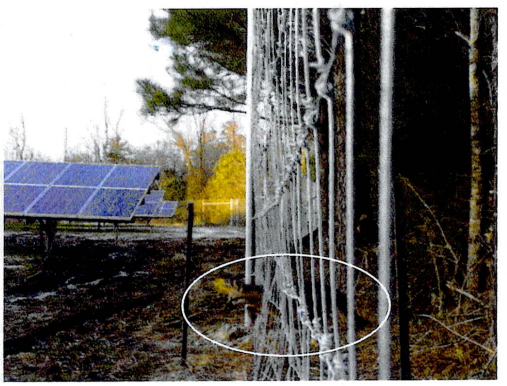
- While the closest adjoining home to the closest solar panel is 835 feet, the average distance from homes is 1,308 feet, or approximately a quarter of a mile.

Vegetative Buffers

- The landscaping and buffering requirements in the Unified Development Ordinance Article 8 include minimum buffer widths based on the permitted uses in each district certain special types of development. As per Attachment A, Zoning Site Plan, the Site Data Table describes the proposed project with 25" Type C-4 Single-Family Residential Buffer and 25" Type A-3 Street Boundary Buffer.

- The Zoning Site Plan – Site Data Table includes a proposed landscape buffer in areas along rights-of-way and adjacent parcels. Existing vegetation will be preserved for screening where possible and where established vegetation does not exist, Coastal Pine is required by ordinance to plant 25-foot-wide evergreen landscape buffers consisting of C-4 buffers with an evergreen hedge that will provide a continuous screen at least 6-feet in height within 4 years, 2 understory trees and a grass cover of at least 98% (except within 4 feet of the base of any tree) per 100 linear feet along boundary lines adjacent to residential uses). Along street boundaries, Coastal Pine Solar will, where existing vegetation is not sufficient, plant a 25-foot-wide Type A-3 buffer consisting of 1 canopy tree, 2 understory trees, and either grass cover of at least 98% coverage or 21 shrubs per 100 linear feet. The street boundary buffer is proposed as 55" along Piney Woods Road. Although setbacks will, in most places, greatly exceed the minimum setbacks required by the county, setbacks must be at least 30-feet front, 15-feet side, and 30-feet rear yard.

- Additionally, the solar farm will be enclosed by a 7' tall wildlife-permeable fence that connects habitat corridors. The fencing uses larger holes that allow small- to medium sized animals to travel across the site while also securing the property from unauthorized entry.



- Electricity is a public necessity and a critical lifeline for homes, businesses, schools, hospitals, and more. Solar farms provide clean, renewable energy without harmful emissions and support regional and local power distribution to homes.

Harmony with the Area

Meaning of "Harmony"

"Harmony" does not mean similar in use or appearance, but instead refers to uses that co-exist and are suitably sited together – a focus on functional coexistence. Homes, farms, places of worship, public parks, and child care centers are uses allowed by right in RA Rural Agricultural District and all uses have different function, design, and purpose. Nonetheless, each is considered by the Pender County Unified Development Ordinance to be compatible adjoining uses in this district because each of them easily allows the other to coexist.

Judicial Determinations of Harmony

North Carolina appellate court decisions have established that "harmony" is defined as a functional determination, holding that personal views on appearance are not relevant evidence in a special or conditional use hearing. Three such cases include *MCC Outdoor Advertising v. Town of Franklinton*; *Blair Investments v. Roanoke Rapids* (2013); and *Innovative 55, LLC and FLS Energy v. Robeson County* (2017). The 2017 case involved a denial of an application for a solar farm by Robeson County which required the board to determine whether a solar farm would be "in harmony" with the surrounding neighborhood. The Court held that whether a solar farm could be seen and was considered by some opponents to be "an 'eyesore' based upon other solar farms they have seen is not competent evidence to support the denial of the solar farm."

It is also important to note that the NC Supreme Court in *Woodhouse v. Board of Commissioners of the Town of Nags Head*, 299 NC 211, 216, 261, SE. 2d 882, 886 (1980) held that listing a particular use as allowed in a certain zoning district subject to a special use permit constitutes a legislative determination that the use is harmonious with other uses in the district.

Harmony Demonstrated by Meeting Development Standards

The Pender County Unified Development Ordinance §4.14 has dimensional standards for uses within the RA, Rural Agricultural District. Jurisdictions typically adopt and impose setbacks and other requirements to create compatibility with adjoining properties. In other words, Pender County has established standards for creating harmonious coexistence between uses in the RA District. The fact that Coastal Pine Solar, LLC meets and, in some cases, exceeds the required Pender County development standards is further evidence that it is a harmonious use as a matter of law.

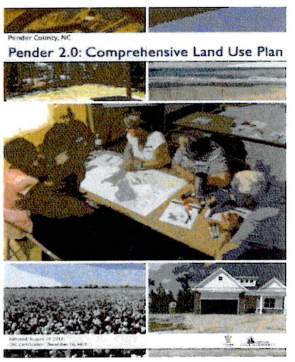
The proposed development should also be deemed in harmony with the area based on the following:

- As a low intensity use, the proposed solar farm will complement the surrounding rural community. It will not adversely impact farming and agriculture, low density residential,

or natural resources. Furthermore, this use allows for the continued farming of the land surrounding the solar farm.

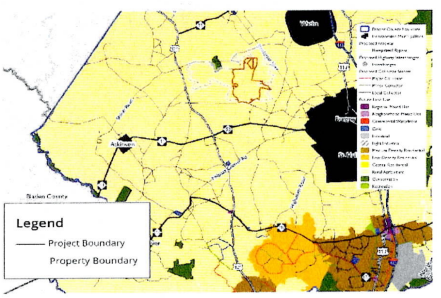
- The Kirkland Appraisals, LLC Solar Impact Study includes criteria that supports compatibly between the solar farm and the rural and agricultural land uses. The Solar Impact Study states on page 1 under conclusion that the proposed solar farm "is a compatible use for rural/residential transition areas and that it would function in a harmonious manner with this area."
- The proposed use will not generate noise, odor, or traffic that could affect the rural character of the community. The minimum sound from inverters is comparable to a conversation at appropriately 50 feet in distance. Solar farms, particularly when well screened as this application proposes, serve as good neighbors to low density rural development.

Consistent with Comprehensive Land Use Plan



The proposed development will be consistent with the Pender County Comprehensive Land Use Plan, titled *Pender County NC Pender 2.0 Comprehensive Land Use Plan*. The property is zoned RA Rural Agricultural District and conforms to the Future Land Use Plan for the area as rural agricultural. The Future Land Use Plan confirms the uses listed by Pender County for the RA District on §5.2.3 Table of Permitted Uses under the Rural Agricultural District as compatible with the area. The proposed use supports the Pender County Vision Statement and a number of Land Use Goals and Objectives. The proposed project is consistent with the Future Land Use Plan and project consistency is described as follows:

Pender County Comprehensive Land Use Plan

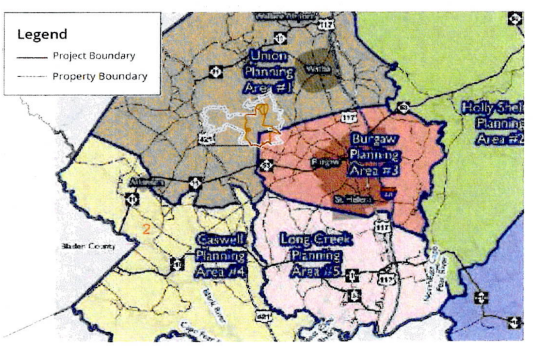


The proposed solar farm is within the Rural Agricultural area on the Pender County Future Land Use Plan. This land use category is an "essential part of the County's economy and agricultural heritage," with priorities toward agricultural uses, preservation of prime farmland soils, low density residential. Other uses are permitted "where compatible with existing neighborhoods and as a resource or employment opportunity for area residents."

The proposed solar farm supports the Pender County Vision Statement, which seeks to "Protect Pender County's ...agricultural heritage through strategic growth management by focusing development in key locations to minimize impacts to transportation systems, natural habitats, and existing neighborhoods...."

In addition, the Land Use Plan includes a Goal of Land Use and Growth Management, with a Policies of requiring all development to adhere to the land use regulations in the county's UDO, (Policy 5.1.A.), and of Land Use Plan Consistency, requiring "any official land use and development related actions...remain consistent with the policies adopted in this plan and any other applicable plan" (Policy 5.1.B.). The Goals go on to state in the Rural Residential and Agricultural subsection that the "county shall continue to accommodate limited non-residential uses in rural areas" (Policy 5.1.FF.).

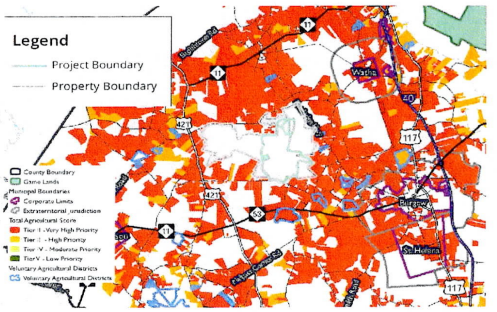
Additionally, the subject property straddles both the Burgaw Planning Area and the Union Planning Area. The Burgaw Planning Area seeks to "protect the low-density land use patterns," and "ensure that rural land use patterns are maintained" (Goal 5.5). The Union Planning Area prioritizes maintaining "the continued viability of agricultural operations and the predominant low density rural lifestyles," and "ensur[ing] that rural land use patterns are maintained" (Goal 5.3).



The Vision, Goals, and Policies described are advanced by the proposed solar facility, in that it minimizes impacts through the provision of a non-residential use in a rural area, adhering to the zoning and Special Use approvals process. In addition to serving as a clean, renewable energy source that does not generate harmful emissions or negatively impact the rural character of the community, the site has ample buffering proposed, further protecting wetlands and floodplains and diminishing any impact, visual or otherwise, that could be associated with the site.

The solar farm will be designed to protect the environment, screened from adjoining properties, and exist in harmony with the existing and future Rural Agricultural land uses. Unlike developed new houses, the site has the flexibility to be converted back to an agricultural use at a future date. The proposed solar farm is in the Rural Agricultural category on the Future Land Use Plan map and supports the natural and agricultural features important to Pender County.

The proposed solar farm supports the Goals of the Pender County Land Use Plan as related to Agricultural Lands. Specifically, the objective that the county be "proactive in developing policies and recommendations that allow for the continued operation of working farms and preservation of prime agricultural lands" (Objective 3.3). The Goals go on to recommend "establishing a guidance manual for the siting and/or installation of solar panels/farms..." (Recommended Action 3.3.C.3).



Map 3.11 Agricultural Lands Assessment and Voluntary Agricultural Districts shown above illustrates the subject parcel in light blue outline at the center of the map. This area is in white, demonstrating that it is not in an Agricultural Priority Area. Therefore, the proposed use supports the preservation of Priority Areas by locating outside of such areas. Moreover, the Recommendations of the Land Use Plan acknowledge and anticipate the siting of solar farms in such areas through their recommendation to establish guidance on such uses. The proposed use, therefore, is not unexpected and is consistent with the Land Use Plan.

PLANNING SUPPORT FOR SPECIAL USE PERMIT

FINDING 1

The use requested is listed among the special uses in the district for which application is made, or is similar in character to those listed in that district.

The proposed use is allowed in a RA Rural Agricultural District and is listed in the §5.2.2 Table of Permitted Uses, page 5-3 as "Other Electric Power Generation" and allowed with a Special Use Permit.

FINDING 2

The requested use **will not impair the integrity or character of the surrounding or adjoining districts, nor adversely affect the safety, health, morals, or welfare of the community or of the immediate neighbors of the property.**

The proposed use will not impair the integrity or character of the surrounding uses or adversely affect the health, safety, and welfare of the community. Based on the studies and reports submitted with the Special Use Permit application, all recommendations find the proposed solar farm will not cause harm to the adjoining properties. The Solar Impact Study states on page 2 that the "subject property will have no impact on the value of the adjoining or abutting property."

The solar farm is a clean, renewable energy source that does not generate harmful emissions or negatively impact the rural character of the community and the surrounding natural resources. The proposed facility is designed with buffers to protect wetlands and floodplains from development and the use will not harm water quality or adjacent agricultural uses within the Cape Fear River Basin. The solar farm will be designed to protect the environment, screened from adjoining properties, and exist in harmony with the existing and future Rural Agricultural land uses.

FINDING 3

The proposed use **shall not constitute a nuisance or hazard.**

The proposed solar farm will produce clean, renewable energy that will serve approximately 50,000 homes. Electricity is a public necessity and a critical lifeline for homes, businesses, schools, hospitals, and more. Solar farms provide renewable energy without harmful emissions and support regional and local power distribution to homes.

Based on the studies and reports submitted with the Special Use Permit application, all recommendations find the proposed solar farm will not cause harm to the adjoining properties. The Solar Impact Study states on page 2 that the "subject property will have no impact on the value of the adjoining or abutting property and that the proposed use is in harmony with the area in which it is located."

The Coastal Pine Solar Health and Safety Report states on page 8, the proposed use "will not materially endanger the public health and safety" and "if developed according to the plan as submitted and approved, will be in harmony with the area in which it will be located."

Access will be limited into the site as the facility will include either be a 7-foot wildlife permeable fence or, if the county does not allow this form of fencing, a 6-foot chain link fence and topped with a least three strands of barbed wire to prevent unauthorized access into the site. All standards of the National Electric Code will be met or exceeded during construction to ensure all solar farm electrical devices and components are stamped by the Underwriters Laboratories, a safety consulting and certification company.

FINDING 4

The requested use will be **in conformity with the Pender County Land Use Plan and other official plans, or policies adopted by the Board of County Commissioners.**

The proposed solar farm will be consistent with the *Pender County Land Use Plan*. The proposed special use supports the Future Land Use Plan of Pender County as it is planned:

- in adherence with the land use regulations in the county's UDO (Policy 5.1.A.)
- through consistency with the policies adopted in the plan (Policy 5.1.B.)
- as a limited non-residential use in a rural area (Policy 5.1.FF.)
- through maintaining, without conflict, low-density land use patterns (Burgaw Planning Area Goal 5.5)
- through maintaining the continued viability of agricultural operations and the predominant low density rural lifestyles, ensuring that rural land use patterns are maintained (Union Planning Area Goal 5.3)
- supportive of the preservation of prime agricultural lands (Objective 3.3)
- with a use that the plan recommends establishing a guidance manual for the siting and/or installation of solar panels/farm (Recommended Action 3.3.C.3)

The proposed development will function in harmony with the surrounding low-density residential and agricultural uses. No external impacts will be generated by the solar farm that could cause disharmony with the adjacent properties or would prevent the uses from reasonably co-existing. Common externalities that create conflicts with surrounding properties include excessive light, dust, odor, noise, non-managed traffic, and environmental impacts. Also, North Carolina appellate courts have issued opinions that affirm that "harmony" is a functional determination and that subjective views on appearance are not relevant evidence in a special use permit hearing.

While there are no negative impacts anticipated, the applicant has noted that adequate screening will be provided between the solar farm installation and adjacent properties. It is the intension of the applicant to establish and operate the facility being mindful of protecting the general welfare of neighboring property owners. The proposed development will be in harmony with the area in which it is located.

FINDING 5

Adequate utilities, access roads, drainage, sanitation or other necessary facilities have been or are being provided.

The solar farm does not require much in the way of public services or utilities. To the contrary, the solar farm will produce a new source of clean energy that will go to the power grid to help address electric needs of the community. The distribution of electricity is a critical lifeline. Weighing the costs and benefits related to required public services and utilities, the solar farm is much less of a drain on the local system than other permitted land uses in the zone.

Soil erosion and sedimentation concerns are not applicable to the operation of a solar farms. The solar cells are placed on support poles that are installed in the ground and require minimal site grading. Native shade tolerant grasses are planted under the panels and provide soil stability. Prior to construction, the necessary stormwater pollution prevention permits will be obtained, and best management measures will be

implemented prior to land disturbance. Stormwater and erosion control measures will be maintained during construction of the facility.

The solar panels are designed to allow rainwater to fall to the grasses below and permeate the ground with no runoff. The proposed use does not adversely affect surface waters or groundwater. Solar farms provide clean energy, and the solar panels produce emission-free electricity.

The proposed solar farm includes access roads for ingress and egress for construction and routine maintenance. Access will be limited into the site as the facility will include either be a 7-foot wildlife permeable fence or, if the county does not allow this form of fencing, a 6-foot chain link fence and topped with a least three strands of barbed wire to prevent unauthorized access into the site. All standards of the National Electric Code will be met or exceeded during construction to ensure all solar farm electrical devices and components are stamped by the Underwriters Laboratories, a safety consulting and certification company.

FINDING 6

That adequate measures have been or will be taken to provide **ingress and egress so designed as to minimize the traffic congestion in the public roads.**

The solar farm will not generate additional traffic in the community. Once constructed, the facility will generate only occasional traffic three to four times per month for routine equipment service and landscaping maintenance as required for mowing.

In contrast, if the site were developed for single-family residential home, the standard national average for trip generation for one home is 9.52 vehicle trips per day, established by the Institute of Transportation Engineers (*Trip Generation Manual*, 9th ed). The site is minimum one acre lot for residential land uses. With a footprint for the solar farm of approximately 2,356 acres, the potential low-density residential yield with associated vehicle trips would be a substantially greater traffic generator than a solar farm at the subject site. The solar farm use will not impact traffic or roadway conditions in the community.

FINDING 7

That the special use shall, in all other respects, **conform to the applicable regulations of the district in which it is located.**

The proposed use meets, and in some cases, exceeds the Pender County development standards for buffers, landscaping, and setbacks. For example, the Zoning Site Plan, exceeds the required front, side, and rear setbacks, and the required landscaping standards. Descriptions are included in the Site Data Table in the Zoning Site Plan attached as Appendix A. There are no supplemental requirements for solar farms.

FINDING 8

The proposed use **shall not adversely affect surrounding uses and shall be placed on a lot of sufficient size to satisfy the space requirements of said use.**

The solar farm is a clean, renewable energy source that does not generate harmful emissions or negatively impact the rural character of the community and the surrounding natural resources. The proposed facility is designed to protect wetlands and floodplains from development and the use will not harm water quality or adjacent agricultural uses within the Cape Fear River Basin. The solar farm will be designed to protect the environment, screened from adjoining properties, and exist in harmony with the existing and future Rural Agricultural land uses.

CONCLUSION

Based on my analysis of the facts herein, it my professional opinion that Coastal Pine Solar meets the standards related to harmony and consistency, and the requested special use permit should be granted because:

1. The use is in harmony and compatible with the surrounding area, and
2. The use is compatible with the Future Land Use Plan.

I would offer that the special use permit be granted for reasons previously mentioned, as well as the fact that the proposed use, once operational, will be a quiet, innocuous neighbor and provide a societal benefit.

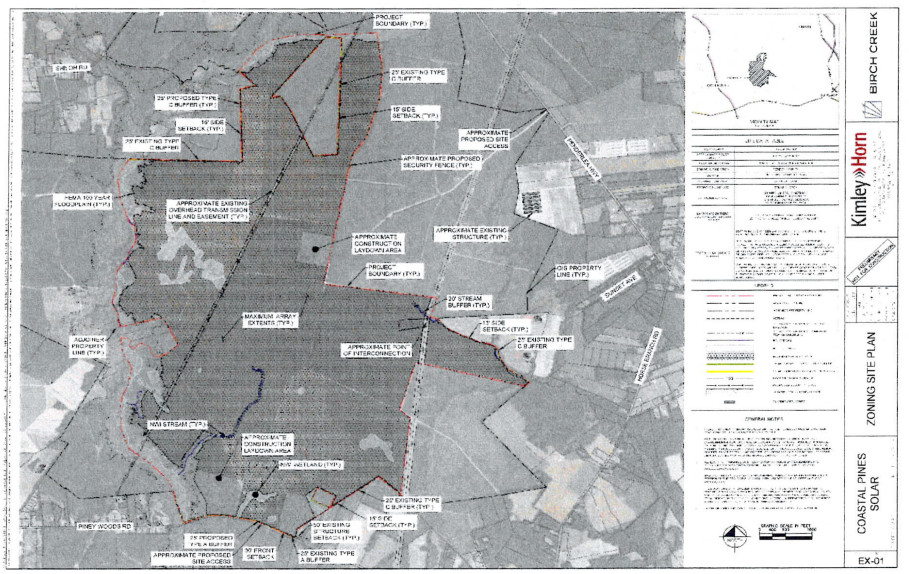
Kara W. Drane, AICP

Education
BS, Community and Regional Planning, University of Southern Mississippi, 1991

Credentials
American Institute of Certified Planners (AICP), 1995

Ms. Drane is a Senior Project Manager with Colliers Engineering and Design. She was previously a Senior Planner with Catawba Regional Council of Governments, during which time she managed projects ranging from strategic plans, capital improvement programs, comprehensive plans, special area plans, land development codes, hazard mitigation planning, and transit planning. Her former positions include Planning Director for Forrest County, MS and Planning Administrator for Hattiesburg, MS. Ms. Drane previously served as a member of the Board of Directors for the American Planning Association.

Appendix A: Zoning Site Plan



SUP Standard (G)(5)

Adequate utilities, access roads, drainage, sanitation or other necessary facilities have been or are being provided

A. Utilities

A solar farm's utility needs are different than other uses. Rather than needing access to electrical power, a facility requires access to the power grid, which this site has through access to a 230 kilovolt transmission line that crosses the site. Beyond that, it needs an adequate location to construct a substation where the current generated by the panels can be increased to the power level on the transmission lines and placed onto the grid.

As an unmanned facility, no water or sewer services are needed.

B. Access Roads

A solar farm does not generate daily traffic. Most days will see no traffic at all. The same roads that have provided access for the timber company that owns this tract will likely be used as access, and the roads have been adequate for timber purpose as well as for hunters who have used the same roads regularly. A solar farm would have fewer vehicles each month, and a driveway permit must be issued by NCDOT that applies the same safety principles to this site's access as it does to other sites in Pender County.

The likely points of access are shown on the illustrative site plan. This site plan has not been fully engineered and points of access shown are subject to minor relocations.

C. Drainage

This site will be designed and engineered by Kimley-Horn, one of the premier engineering firms in the Southeast. All sedimentation and erosion control plans and stormwater drainage plans will be sealed by a North Carolina licensed professional engineer and subject to review by Pender County and NCDEQ and must meet all regulatory standards imposed for best management practices. By law, these plans must include all required setbacks from streams and wetlands.

D. Sanitation

As an unmanned site, there will be no sanitation facilities (septic, sanitary sewer, or onsite garbage). Additionally, there are no other necessary facilities required for this site. (In the absence of a UDO or generally accepted definition of the term "facilities," the Applicant is unable to provide more information on this standard).

SUP Standard (G)(6)

Adequate measures have been or will be taken to provide ingress and egress so designed as to minimize the traffic congestion in the public roads

A. Construction stage

This solar farm, despite its size, can be constructed in approximately 12 to 14 months. During the early phases of construction, trucks will deliver earth moving equipment (which will remain on site), metal frames (called racks), fencing, wiring, and other basic components. These materials will be stored on site in staging areas so that daily deliveries of each component are not necessary. The size of the delivery trucks is no different than the same trucks that use NCDOT roads in Pender County for logging, farming, poultry, and other industries.

There will be approximately 300 total workers coming to this site, but not many of them will only be there for discrete parts of construction. They will generally arrive in the morning and leave late in the afternoon in the same types of vehicles that workers arrive at any job site in Pender County.

B. Post-Construction stage

Post-construction and for the life of the project until decommissioning, there will be 3 to 4 vehicles visiting the site *each month* for maintenance. For context, according to the Institute of Transportation Engineer's manual *Trip Generation Statistics,* 11th ed., an average single-family home generates 9.52 vehicle trips per day. Using very conservative statistics, if this site were subdivided into 10-acre tracts for single-family homes, there would be approximately 2200 vehicle trips generated by this same tract *each day.*

Statewide, most rural roads and highways operate at less than 20% of their NCDOT rated capacity, and roads such as Horse Branch and Piney Wood typically operate at less than 10% of their NCDOT rated capacity. Although road counts have not be required or done, site visits during peak hours confirm that these data would be consistent for these three roads.

C. Decommissioning

Decommissioning, the period when the facility is removed and the site restored take about one-third the time as construction. There will be 75 to 100 workers on site and the same types of trucks as used during construction, but needed at this stage to deliver panels, steel, wiring, and other components from the site to locations for recycling.

SUP Standard (G)(7)

That the special use shall, in all other respects, conform to the applicable regulations of the district in which it is located

A. General Zoning Requirements

Coastal Pine Solar has no choice but to follow all regulations imposed by the Pender County UDO. These regulations, including, but not limited to, stream setbacks, setbacks from property lines, height restrictions, etc. are regulated and enforced at site plan review. If submitted plans do not conform with county regulations, the plans must be changed.

Similarly, the conceptual site plan submitted with this application will undergo numerous minor revisions and updates as more detailed engineering is completed, but each of those changes must meet or exceed all UDO requirements.

B. Requirements of RA District

The primary requirements of the RA district applicable to this project are use related, and the Table of Permitted Uses shows that solar farms are allowed in this district.

C. Other Regulations

Coastal Pine Solar's application for an SUP does not seek or request to be relieved from any legal requirements or regulations applicable, and Coastal Pine submits that any inconsistencies with environmental, building, zoning, or other regulations shown on building plans or site plans will be immediately remedied.

If submitted plans do not meet any required code or regulation, no building permits should be issued. Thus, the county ultimately can enforce this standard.

SUP Standard (G)(8)

The proposed use shall not adversely affect surrounding uses and shall be placed on a lot of sufficient size to satisfy the space requirements of said use.

A. Surrounding Uses

As stated previously in other sections of these SUP materials, this facility will not be seen, heard, felt, or smelled by surrounding owners, nor will it prevent surrounding uses from continuing in their normal and ordinary courses.

B. Size

Whether the site is adequate for a solar facility is ultimately a question for the engineers and developers who are involved with site selection, and all have determined to their satisfaction that this site meets their requirements for size and spacing. The site plan submitted with this application shows the maximum extent of panel arrays and includes all necessary setbacks and buffers from streams, wetlands, and property lines as required by the UDO. All panels can be adequately spaced within this tract.

If a site constraint presents itself during or prior to final engineering, the setbacks would either be increased or panel placement would be altered to accommodate the problem.

Decommissioning

What is decommissioning?

Decommissioning is nothing but how a facility will be removed after its useful life, allowing the land to be returned to timber or agriculture.

When does it occur?

Decommissioning occurs at the end of the useful life of the facility. Most solar farms are on leased land with a total lease term of between 30 and 40 years. This tract will be purchased and owned by Coastal Pine Solar.

How does it work?

The decommissioning process is relatively quick and uncomplicated. Solar panels are easily removed and re-used for other projects or broken down into recyclable parts. The frames are unbolted from the support posts and the support posts are simply lifted out of the ground. After that, wiring is taken out and inverters are removed on trucks. Removal of all parts takes a fraction of the time and cost of initial installation.

Recycling

More than 90% of the solar farm components are recyclable today, including steel, glass, copper wires, fencing, concrete, and even trees used for vegetative buffers. By the time this facility reaches its end life, close to 100% of solar farm components will be recyclable.

Surety

Unlike homes, farms, and businesses that have no assurance of removal once they reach the end of their usefulness and are often just abandoned, Coastal Pine offers to bond the removal of this project. As offered, "within 45 calendar days of issuing Full Notice to Proceed under the applicable Engineering, Procurement and Construction contract, the applicant shall provide a surety and decommissioning plan in a form and substance satisfactory to County planning staff." This condition allows a surety to be provided closer to the time of construction rather than at zoning approval.

Stream and Wetlands Protection

NCDEQ Regulation. Stormwater will be regulated by the North Carolina Department of Environmental Quality's (NCDEQ) Wilmington Division of Water Quality (DWQ). NCDEQ regulations are designed to be effective protection for streams and adjoining properties.

Low Density Project. Coastal Pine Solar will have a proposed impervious area of approximately 3% to 4% which is 6 to 8 times lower than the trigger which would require permanent stormwater storage by the state. Per NCDEQ regulations, permanent stormwater storage is not required for "low density" projects (projects which have under 24% proposed impervious area). Solar development is typically always in this bucket as it is around 5-10% max impervious.

N.C. Stormwater Manual. NCDEQ is familiar with solar development and has a dedicated solar chapter in the North Carolina Stormwater Manual which is the basis of North Carolina stormwater design.

Solar Panels Not Impervious Cover. The solar panels on site are considered pervious by NCDEQ as outlined in the solar chapter of the manual. This is due to the width of the grass rows between the panels being greater than or equal to the panel widths. In this case, the solar panels have been found through empirical testing to have a negligible effect on stormwater runoff.

Stabilized Meadow Grass as Cover. The land cover at this site changes from the existing site condition, which is a mix of pine forests and cleared forests being revegetated, to a post-development condition, which would be a majority of managed open space consisting of stabilized meadow grass.

3% to 4% Impervious Area and Negligible Effect. There will be no more than 3% to 4% impervious area from gravel access roads. For these reasons, the facility is anticipated to have a negligible effect on peak stormwater discharge from the project site.

Stream Crossings. Any crossings or impacts to jurisdictional streams or wetlands must be permitted through the United States Army Corps of Engineers (USACOE) and the North Carolina Division of Water Resources (NCDWR). There are three proposed crossings of a jurisdictional stream on the project site. Cross sections and design information must be submitted and approved by the agencies above and must typically show that impacts are being minimized to the maximum extent practical. Any crossings would have an appropriately sized culvert based on the upstream drainage area. The

crossings are traditionally armored on the upstream and downstream sides with large rock to prevent potential erosion.

Erosion Control to Follow State Manual. Erosion control will be regulated by NCDEQ using the North Carolina Erosion and Sediment Control Manual. This manual outlines best management practices that can be used to prevent offsite sedimentation.

Diversion Ditches. It is anticipated that the erosion control design would consist of temporary diversion ditches around the perimeter of the site's disturbed area. This measure consists of a ditch with a berm on the downstream side. The diversion ditches would be appropriately sized through engineering calculations for the upstream drainage area and may be matted with erosion control blanket product. These temporary diversion ditches will convey runoff to temporary erosion control basins located at the low points around the perimeter of the site. These temporary basins will trap sediment laden runoff and release it through a water surface skimming device over 2-5 days. This allows sediment in the runoff time to settle out of suspension and for clean surface water to discharge from the site. All of these measures would typically be enclosed with temporary perimeter silt fencing to provide further protection during the construction phase of the project. The proposed erosion control plan would be submitted to NCDEQ for review and approval prior to the start of construction.

Contractor Inspection. As a part of legal requirements for complying with the approved erosion control permit, the contractor is required to self-inspect and monitor all erosion control measures on a weekly basis or within 24 hours after any rainfall greater than 1" during the project's construction. A record of this monitoring as well as daily precipitation data must be collected and kept on the project site.

NCDEQ Inspection. NCDEQ inspectors may visit the site at random to conduct inspections and ensure compliance with the issued permit. If NCDEQ finds the design is failing to prevent off site sedimentation, they have the authority to stop work on the project and issue substantial fines until additional measures are put into place which remediate the situation.

Vegetative Stabilization. Once the site has achieved approximately 80% vegetative stabilization of any disturbed areas, the contractor can request NCDEQ visit the site and provide permission to remove the temporary diversions ditches and temporary basins. Once the contractor has decommissioned these measures and stabilized the areas where they once were, the contractor can request NCDEQ to visit the site and conduct a final inspection before closing the permit and removing any remaining perimeter erosion control measures.

Offered and Requested Conditions

A. Offered Conditions

Coastal Pine Solar offers the following two conditions be made a part of the order:

1. Buffer – where the project abuts Piney Woods Road, the applicant shall leave a natural, vegetative buffer of at least 55 feet from Piney Woods Road.

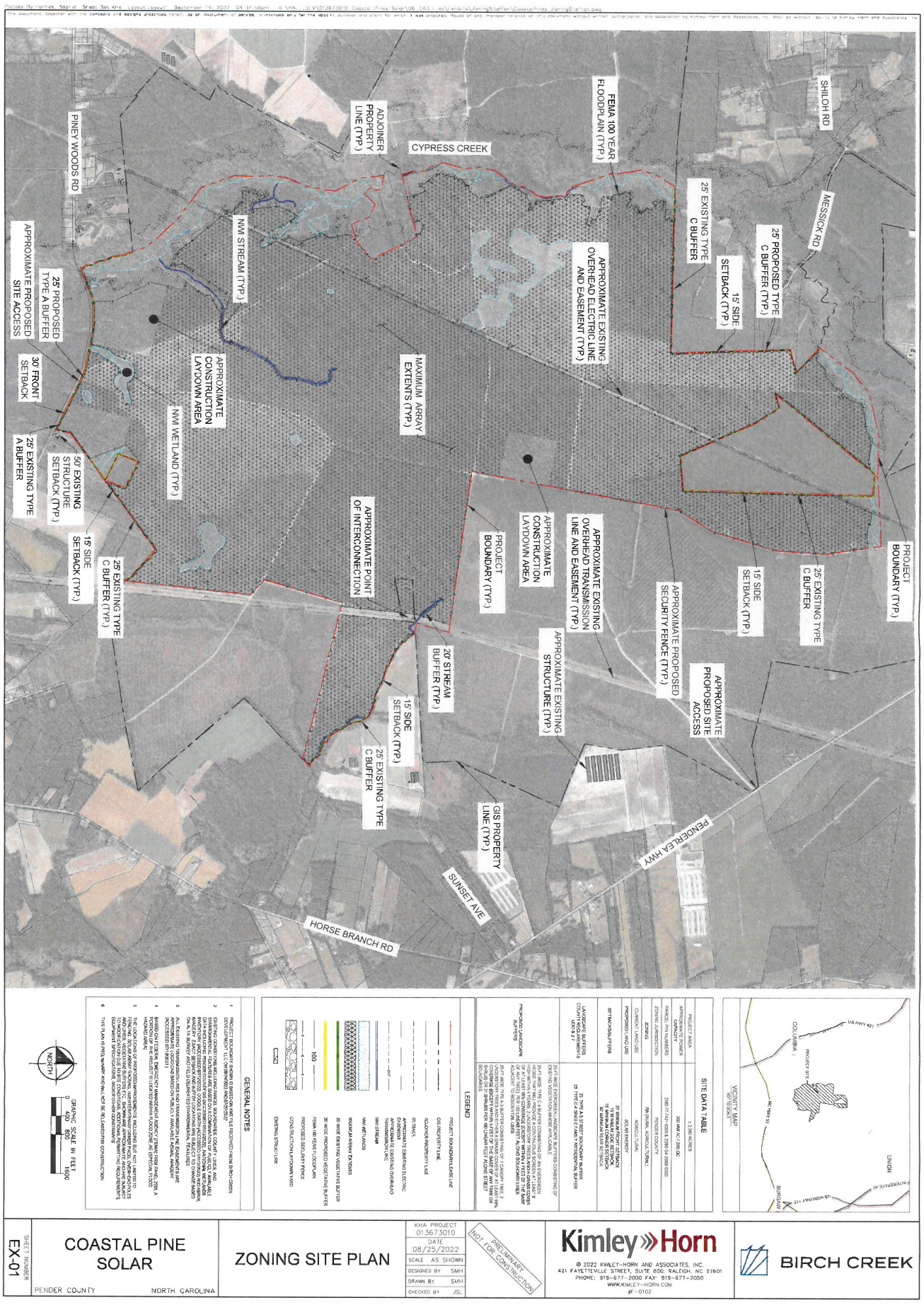
2. Decommissioning – within 45 calendar days of issuing Full Notice to Proceed under the applicable Engineering, Procurement and Construction contract, the applicant shall provide a surety and decommissioning plan in a form and substance satisfactory to County planning staff.

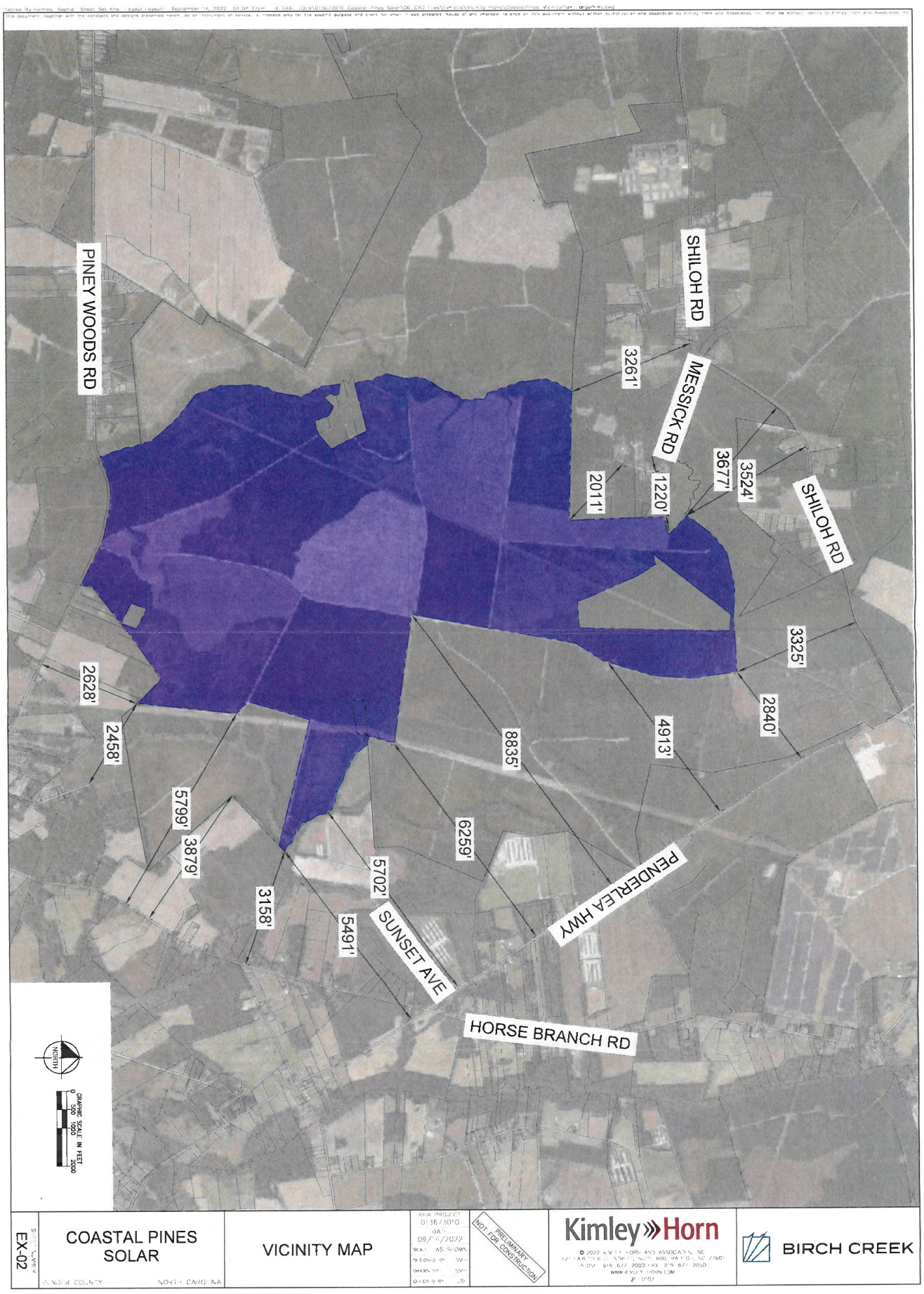
B. Requested Conditions

Pursuant to UDO § 3.12.4(C), Coastal Pine Solar hereby requests that the following two conditions be added to a Special Use Permit:

1. The County shall allow 36 months rather than 24 months for the applicant to receive final Zoning Approval, based on the fact that Coastal Pine Solar, like all solar developers, is subject to timetables controlled by Duke Energy, the North Carolina Utilities Commission, NCDEQ, the US Army Corps of Engineers, and various financing entities. It is not uncommon for solar farms to complete all approvals beyond two years following SUP approval.

2. Prior to the end of two years, the County shall also permit Coastal Pine Solar to present to the county staff and the county attorney a listing of all expenditures made in good reliance on a valid SUP and request a determination that common law vesting of the project and the SUP has occurred based on those expenditures


PINEY WOODS RD
ADJOINER PROPERTY LINE (TYP.)
CYPRESS CREEK
FEMA 100 YEAR FLOODPLAIN (TYP.)
SHILOH RD
MESSICK RD
25' EXISTING TYPE C BUFFER
25' PROPOSED TYPE C BUFFER (TYP.)
15' SIDE SETBACK (TYP.)
APPROXIMATE EXISTING OVERHEAD ELECTRIC LINE AND EASEMENT (TYP.)
NWI STREAM (TYP.)
APPROXIMATE PROPOSED SITE ACCESS
25' PROPOSED TYPE A BUFFER
30' FRONT SETBACK
APPROXIMATE CONSTRUCTION LAYDOWN AREA
NWI WETLAND (TYP.)
MAXIMUM ARRAY EXTENTS (TYP.)
50' EXISTING STRUCTURE SETBACK (TYP.)
25' EXISTING TYPE A BUFFER
15' SIDE SETBACK (TYP.)
25' EXISTING TYPE C BUFFER (TYP.)
APPROXIMATE POINT OF INTERCONNECTION
PROJECT BOUNDARY (TYP.)
APPROXIMATE CONSTRUCTION LAYDOWN AREA
APPROXIMATE EXISTING OVERHEAD TRANSMISSION LINE AND EASEMENT (TYP.)
APPROXIMATE EXISTING STRUCTURE (TYP.)
APPROXIMATE PROPOSED SECURITY FENCE (TYP.)
APPROXIMATE PROPOSED SITE ACCESS
20' STREAM BUFFER (TYP.)
15' SIDE SETBACK (TYP.)
25' EXISTING TYPE C BUFFER
GIS PROPERTY LINE (TYP.)
PROJECT BOUNDARY (TYP.)
15' SIDE SETBACK (TYP.)
25' EXISTING TYPE C BUFFER
PENDERLEA HWY
SUNSET AVE
HORSE BRANCH RD
NORTH
GRAPHIC SCALE IN FEET
0 400 800 1600
GENERAL NOTES
LEGEND
SITE DATA TABLE
VICINITY MAP
US HWY 421
COLUMBIA
PROJECT SITE
NC HWY 53
US HIGHWAY 117
INTERSTATE 40
BURGAW
UNION
KHA PROJECT 013673010
DATE 08/25/2022
SCALE AS SHOWN
DESIGNED BY SMH
DRAWN BY SMH
CHECKED BY JSL
PRELIMINARY NOT FOR CONSTRUCTION
Kimley»Horn
© 2022 KIMLEY-HORN AND ASSOCIATES, INC.
421 FAYETTEVILLE STREET, SUITE 600, RALEIGH, NC 27601
PHONE: 919-677-2000 FAX: 919-677-2050
WWW.KIMLEY-HORN.COM
#F-0102
BIRCH CREEK
SHEET NUMBER EX-01
COASTAL PINE SOLAR
PENDER COUNTY NORTH CAROLINA
ZONING SITE PLAN


PINEY WOODS RD
SHILOH RD
MESSICK RD
SHILOH RD
PENDERLEA HWY
SUNSET AVE
HORSE BRANCH RD
3261'
2011'
1220'
3677'
3524'
3325'
2840'
4913'
8835'
6259'
5702'
5491'
3158'
5799'
3879'
2458'
2628'
NORTH
0 500 1000 2000
GRAPHIC SCALE IN FEET
COASTAL PINES SOLAR
PENDER COUNTY NORTH CAROLINA
VICINITY MAP
KHA PROJECT 011615010
DATE 09/14/2022
PRELIMINARY NOT FOR CONSTRUCTION
Kimley»Horn
BIRCH CREEK
SHEET NO. EX-02

Pender County
Request for Board Action

TO:	Board of County Commissioners
FROM:	Kenneth Keel
DATE:	October 3, 2022
SUBJECT:	Approval of Budget Ordinance Amendment Assigning Revenue Received from SEDC Grant of $10,000 for US 421 Sewer Project Fund 86

SUMMARY:
We received grant funding from the Southeastern Economic Development Commission (SEDC) for $10,000 for work associated with utilities extensions for the Pender Commerce Park. This revenue needs to be assigned to expenses within the project.

ACTION REQUESTED:
Approve Budget Ordinance Amendment assigning the SEDC grant funds to project engineering expenditures

ATTACHMENTS:
Budget Ordinance Amendment

Tuesday, September 20, 2022

Pender County Budget Ordinance Amendment

Date Monday, October 3, 2022

Board Meeting Date (If Applicable) Monday, October 3, 2022

Fiscal Year FY 2022-2023

Fund 72 - RP/T W&S

Division, Program, Project, etc. SEDC Grant Fund Revenue Assignment

Department 072 - WATER OPERATIONS

Purpose of Request

Grant funds have been received from the Southeastern Economic Development Commission (SEDC) for $10,000 for work associated with utilities extensions for the Pender Commerce Park. This revenue needs to be assigned to expenses within the project.

REVENUES

	Account # (ORG-OBJECT)	Account Description	Amount
1	86-387004-6963	SEDC Grant	10000
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			

Proposed Amendment:

EXPENDITURES

	Account # (ORG-OBJECT)	Account Description	Amount
1	86-404505-6963	Contract Services-Engineer	10000
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			

	Account # (ORG-OBJECT)	Account Description	Amount
12			
13			

Total Revenues 10000

Total Expenditures 10000

Budget Amendment Balances when Zero. 0

Prepared By: Kenny Keel

Email kkeel@pendercountync.gov

Pender County
Budget Ordinance Amendment-Holly Shelter Shooting Range for NRA Foundation Award

TO:	
FROM:	Dee Turner
DATE:	October 3, 2022
SUBJECT:	Budget Ordinance Amendment - Holly Shelter Shooting Range for NRA Foundation Award

SUMMARY:
Pender County Parks and Recreation Department was awarded a grant through the NRA Foundation for supplies for Women on Target Clinics. We were awarded $5740 worth of firearms which were sent to a business with its Federal Firearms License. One of the firearms we requested is out of production until the first of the year so the NRA Foundation sent a check for $648 for us to purchase the additional handgun for the Women on Target Clinics.

ACTION REQUESTED:
Approval of Budget Ordinance Amendment for Holly Shelter Shooting Range for NRA Foundation Award

Tuesday, September 20, 2022

Pender County Budget Ordinance Amendment

Date Tuesday, September 20, 2022

Board Meeting Date (If Applicable) Monday, September 4, 2023

Fiscal Year FY 2022-2023

Fund 10 - GENERAL

Department 667 - SHOOTING RANGE

Purpose of Request
Received money from NRA Foundation

REVENUES

	Account # (ORG-OBJECT)	Account Description	Amount
1	667-334301	NRA Foundation Award	648.00
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			

Proposed Amendment:

EXPENDITURES

	Account # (ORG-OBJECT)	Account Description	Amount
1	667-403300	Supplies & Materials	648.00
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

	Account # (ORG-OBJECT)	Account Description	Amount
13			

Total Revenues 648

Total Expenditures 648

Budget Amendment Balances when Zero. 0

Prepared By: Dee Turner

Email dturner@pendercountync.gov

Pender County
Request Board Approval

TO:	Board of County Commissioners
FROM:	Carolyn Moser
DATE:	October 3, 2022
SUBJECT:	Request Approval for Demolition of Dental/COVID Trailer and Purchase Order to Robert Palmer & Son's in the amount of $10,900.

SUMMARY:
There is a double wide trailer behind the health department that had been used as a dental clinic until the clinic was moved into the main health department. The trailer is approximately 25 years old and has served mostly as a storage space for the health department. The building has experienced water damage through the years, leaving exposed walls, electrical, and rotting floors. A small area was recently used for COVID testing which has ended. Recent rain storms caused additional water damage. Through the years, assessments have been done which indicated the building would cost more to repair than to replace.

Andy DeVane assessed the building and recent water damage. A claim was submitted to the county's insurance and the county was reimbursed $9,900. Recommendations were to find quotes for building demolition and removal, grading and gravel for new parking spaces.

Quotes were requested from Robert Palmer & Sons, 4 Seasons Demolition, Rhino Demolition and Cape Fear Demo. Only two vendors have supplied quotes. The health department requests approval for Robert Palmer & Sons to provide demolition services. The cost will be $10,900, a thousand dollars more than the reimbursement from insurance.

ACTION REQUESTED:
To approve demolition of the Dental/COVID trailer and approve the purchase order to Robert Palmer & Son's for the demolition and gravel in the amount of $10,900.



PO Box 15590, Wilmington, NC 28408
www.4seasonsdemolition.com

September 6, 2022

Chasity Smith
Purchasing Agent
Pender County
910 259-1908
cjsmith@pendercountymc.gov

Demolition Proposal for: Office Trailer Pender County

1. Obtain necessary state and local permits.
2. Locate underground utilities.
3. Demolish, haul, and dispose of office trailer.

Total Job Cost: $10,000.00

Payment due upon completion.
Contaminated / Hazardous materials not included.

Proposal Authorized By: Chuck Ohnmacht, President

Proposal Accepted By: _____ Date:_____



PO Box 15590, Wilmington, NC 28408
www.4seasonsdemolition.com

September 6, 2022

Chasity Smith
Purchasing Agent
Pender County
910 259-1908
cjsmith@pendercountymc.gov

Demolition Proposal for: Office Trailer Pender County

1. Obtain necessary state and local permits.
2. Locate underground utilities.
3. Demolish, haul, and dispose of office trailer.
4. 20 Ton of gravel and grading.

Total Demolition Cost:	**$10,000.00**
Gravel and Grading Cost:	**$ 1,000.00**
Total Job Cost:	**$11,000.00**

Payment due upon completion.
Contaminated / Hazardous materials not included.

Proposal Authorized By: Chuck Ohnmacht, President

Proposal Accepted By: _____ Date:_____

Sedgwick Claims Management Services, Inc
P O Box 14436
Lexington, KY 40512-4436

0007527-0022051 0106 001 449101 SWK

. PENDER COUNTY
PO BOX 1578
BURGAW NC 28425

DATE	CHECK AMOUNT	CHECK NUMBER
09/01/2022	9,900.00	130719136
PAYEE		TAX ID
PENDER COUNTY		None
SCMS UNIT		PAGE
184 Sedgwick Claims Management Services, Inc		01 of 01

Claimant Name	Loss Date	Claim Number
PENDER COUNTY	07/21/2022	4A22080NC05-0001
Amt Paid: 9,900.00	Description:	Damage to building
Dates: 07/21/2022 - 07/21/2022	Comment:	Health Dept COVID trailer - Demo

RECEIVED
SEP 06 2022
PENDER FINANCE

SWK.RM.SDM.00.NP

THE FACE OF THIS CHECK IS PRINTED BLUE - THE BACK CONTAINS A SIMULATED WATERMARK - SEE BACK FOR DETAILS

Sedgwick Claims Management Services, Inc
On behalf of
NCACC Liability and Property Pool

ORIGIN 1841278 Wells Fargo Bank, N.A.

VOID AFTER 60 DAYS

DATE: 09/01/2022

130719136
62-22
311

PAY: ******NINE THOUSAND NINE HUNDRED AND 00/100 DOLLARS

$9,900.00

PAY TO THE ORDER OF PENDER COUNTY
ATTN: ANDY DEVANE

MEMO: MP

NC Counties of Liability and P, Principal
Sedgwick Claims Management Services, Inc., Agent By:

Bob Blankenship

1508624493

⑈130719136⑈ ⑆031100225⑆ 207995005970 3⑈

ROBERT PALMER & SON'S
PO BOX 10326
WILMINGTON, NC 28404
(910)233-2510

QUOTE

Wednesday, August 10, 2022

PENDER COUNTY

BID ON SITE WORK TO BE DONE AT 803 WALKER STREET BURGAW, N.C.

Terms	Tax ID
~~HALF DUE UPON START OF JOB~~	56-2221642

Description	Discount %	Total
TEARING DOWN OFFICE TRAILER LOADING & HAULING TO LANDFILL		$8,650.00
DEMOLITION PERMIT		$ 100.00
2 QUAD LOADS OF ROCK @ $750.00=$1,500.00 FREIGHT @ $200=$400.00		$1,900.00
GRADING ROCK@ $125.00=		$ 250.00
Full Amount due upon completion of project.	TOTAL	$10,900.00
	1/2 DOWN	~~$5,450.00~~
THANK-YOU FOR ALLOWING OUR COMPANY TO SUMIT A QUOTE	Bal. Due:	~~$5,450.00~~

Quotation valid for 30 days.

REFERENCES BELOW:

Mr. JOHN LARE (910) 686 –1234

Mr. Trent Westmoreland (910) 471-7100

City of Wilmington
Mrs. Theresa Campo
(910) 341-3236

THIS BID COVERS ALL DUMPING FEES AND PERMITS.
I WILL HAVE ALL UTILITIES LOCATED AND MARKED TO PREVENT DAMAGE TO UNDERGROUND UTILITIES.

This is a quotation on the goods named, subject to the conditions noted below:

HALF DUE UPON STARTING JOB.
BALANCE DUE UPON COMPLETION
CUSTOMER AGREES TO PAY ALL COST ASSOCIATED WITH THE COLLECTION OF DELINQUENT BALANCE TO INCLUDE COLLECTION AGENCY ATTORNEY FEES & COURT COST

ANY FILL DIRT NEEDED WILL COST $375.00 PER QUAD LOAD
GRADING FILL WILL BE $4.00PER TON 20 TONS = $80.00.

Page 6 of 6

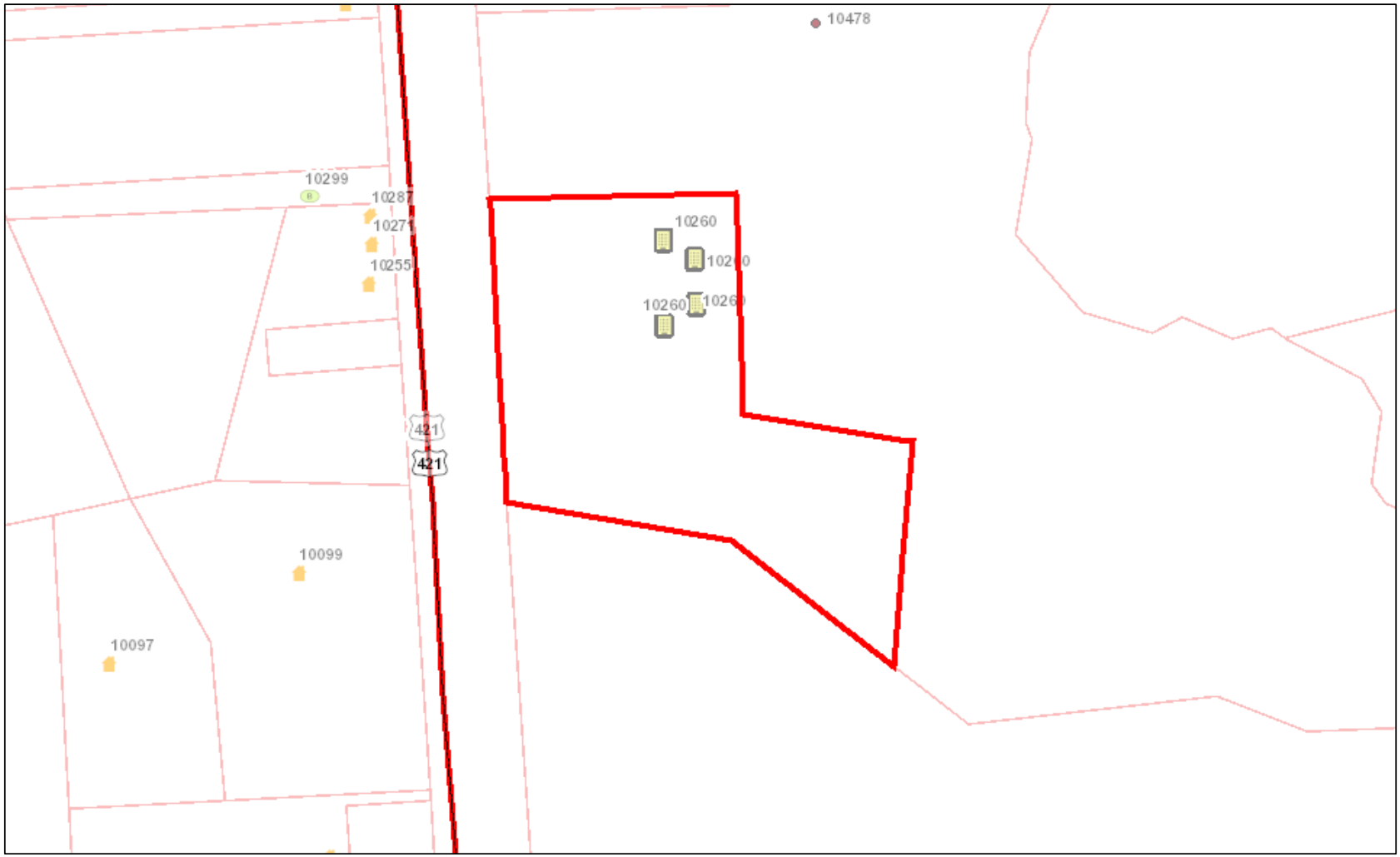
Pender County
Approval of Offer & Authorize Closing Process for Sale of Surplus Property - Parcel 2286-65-9062-0000 Country Court Apartments US Hwy 421

TO:	Board of County Commissioners
FROM:	Meg Blue
DATE:	October 3, 2022
SUBJECT:	Approval of Offer & Authorize Closing Process for Sale of Surplus Property - Parcel 2286-65-9062-0000 Country Court Apartments US Hwy 421

SUMMARY:
Please consider attached documentation of bid for surplus property - parcel number 2286-65-9062-0000 Country Court Apartments on US Hwy 421. Note that because this property was authorized for public auction previously and auctioned on GovDeals, no upset bid period is required.

It is recommended that the $655,000 bid from Preston Harrell of Currie for this parcel be accepted by the County and authorize County Manager's Office to begin closing process. The attached letter indicates the details of the bid for this property. The tax value for this property is listed at $393,140. The County acquired through charitable contribution in 1982.

ACTION REQUESTED:
Approval of Offer & Authorize Closing Process for Sale of Surplus Property - Parcel 2286-65-9062-0000 Country Court Apartments US Hwy 421



PIN: 2286-65-9062-0000
Owner: PENDER CO HOUSING AUTHORITY
505 E SATCHWELL ST
BURGAW, NC 28425
Deed Ref: 615/33

Property Address: 10260 US HWY 421
Description: E/S 421

Sale Price:
Sale Date: LAST_SALE_DATE
Plat: NOPLAT
Account No: 31993
Township: GRADY
Subdivision:
Tax Codes: G01 F25 R40

Acres: 20.58
Land Value: $68,980
Building Value: $324,160
Total value: $393,140
Deferred Value: $0
Exempt Amount: 393140
PCL Class: EX-1
Heated Sq Feet: 2128

Pender County

1:4,402
0 0.0325 0.065 0.13 mi
0 0.05 0.1 0.2 km
1 inch = 367 feet

12/31/1969

N W E S

Pender County Finance Department
PO Box 1578
Burgaw, North Carolina 28425

Asset Manager
Andy Devane
(910) 259-1467
e@pendercountync.gov

Auction results for sale of real property

9/19/2022

Dear County Manager,

For your consideration is the results of the auction for parcel number 2286-65-9062-0000 located at 10260 US HWY 421 in Burgaw. Mr. Preston Harrell of Currie was the highest bidder at $655,000. After talking to Mr. Harrell, he has stated his plans for the property is to repair the issues on site and rent the housing units out to as either work force housing or low-income housing. Upon Board approval of the results of the auction the County will move forward with closing on the parcel.

Sincerely,

Andy Devane
Asset Manager

From: ClientServices@GovDeals.com
To: Andy Devane
Cc: Andy Devane
Subject: [External]GovDeals Seller"s Certificate: 6-0916221539-22325
Date: Friday, September 16, 2022 3:41:20 PM

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Congratulations, Pender County - Real Estate, NC has sold another item on the GovDeals Auction Server.

BUYER (#308520)	
Name:	preston harrell
Company:	the wherehouse llc
Title To:	preston harrell
Phone:	910-540-1623
Email:	preston.landis1@yahoo.com
Address:	3626 Brinson Rd po box 65 Currie, NC 28435

SELLER (#22325)	
Agency:	Pender County - Real Estate, NC
Contact:	Andy Devane
Phone:	910-259-1467
Fax:	910-259-1574
Email:	adevane@pendercountync.gov
Address:	805 S Walker St PO Box 1578 Burgaw, NC 28425-5001

ITEM INFORMATION FOR ASSET ID: 6			
Item:	COUNTRY COURT APARTMENTS with 17.54 Acres		
Pick Up Location:	805 S Walker St, PO Box 1578, Burgaw, NC 28425-5001		
Inventory ID:	2286-65-9062-0000	Account ID:	22325
Condition:	Used/See Description	Quantity:	1 each
Make/Brand:	Not Provided	Model:	Not Provided
VIN/Serial:	2286-65-9062-0000	Model Year:	Not Provided
Meter:	Not Provided	Title Restrictions:	Not Applicable

Date	Item		Amount
16 Sep 2022 03:39 PM ET	COUNTRY COURT		USD

	APARTMENTS with 17.54 Acres		$655,000.00
	Buyer's Premium	7.50%	USD $49,125.00
		Total	USD $704,125.00

Payment Instructions:

Wire Transfer is the only payment option for this item. The Wire Transfer Transaction Summary page will provide payment and account information. The Wire Transfer must be completed within 5 days unless otherwise specified below.

PAYMENT

If you are the winning bidder, you will facilitate payment by referring to the My Bids section of your account.

Note:

1. Payment is due no later than five days after the next commissioners'' meeting.

2. Any invoice $5,000 or above requires payment via wire transfer.

3. Depending on your history with GovDeals, you may be limited to the number of auctions/transactions that you can participate in simultaneously AND/OR the dollar amount that you can pay via credit card, debit card or PayPal. For additional insight, please visit the Probation FAQ.

SALES TAX

When applicable, sales tax is calculated based upon the auction's advertised location.

If you are seeking sales tax exemption, you must complete Liquidity Services' tax exemption form(s). We recommend doing this prior to the auction's closure or before making payment. To do so, please visit Liquidity Services' Tax Exemption Submission Tool.

Removal Instructions:

*****SHIPPING IS NOT AVAILABLE*****

The buyer is responsible for all aspects of pick-up / removal, including but not limited to packing, loading, transportation and exporting. **Note: Shipping is NOT available.**

Removal is by appointment only. All items must be picked-up / removed within 10 (ten) business days from auction closure, unless otherwise stated in the asset description. If any item(s) is not removed within the allotted timeframe, the item(s) may be declared abandoned.

At the time of pick-up / removal, you will be required to present the seller with a copy of your Buyer's Certificate and/or bill of sale, and potentially other documentation (e.g., copy of driver's license, Authorization of Release, etc). When making a removal appointment, please confirm with the seller what is needed to release the item(s).

Special Instructions:
NOTICE: If you are the winning bidder and default by failing to adhere to this seller's terms and conditions, your account with Liquidity Services WILL BE LOCKED. **Guaranty Waiver:** All property is offered for sale “AS IS, WHERE IS.” (Seller) makes no warranty, guaranty or representation of any kind, expressed or implied, as to the merchantability or fitness for any purpose of the property offered for sale. Please note that upon removal of the property, all sales are final.

Description:
Up for auction is Country Court apartments located 10260 US HWY 421 Currie NC 28435. The County acquired the parcel on June 11,1982. The County was using this parcel for Rural Development Housing Program. The parcel consists of eight apartments on 17.54 acres. The apartments consist of 850 to 1000 square ft. to include three bedrooms, one bathroom, kitchen with granite counter top, stainless steel appliances, stackable washer and dryer, new central heat and air, all appliance are electric and spacious living room. Septic system repair required. The tax value for this parcel is $393,140.00 to include building and land values. Open House will be on 8/19, 8/26, 9/9 and 9/16 from the hours of 9:00 am to 12:00 PM. The County encourages all bidders to do their due diligence prior to submitting any bids. Winning bid is subject to seller approval. Pender County reserves the right to accept or decline any and all bids. In addition to the winning bid, the winning bidder will pay all closing costs including the seller’s representation fee of $400.

Pender County
Approval of Surplus Property Advertisement for Auction - 2907 Englishtown Road, Willard

TO:	Board of County Commissioners
FROM:	Meg Blue
DATE:	October 3, 2022
SUBJECT:	Approval of Surplus Property Advertisement for Auction - 2907 Englishtown Road, Willard

SUMMARY:
Please consider attached documentation requesting authorization to advertise auction of surplus property located at 2907 Englishtown Road in Willard. Parcel ID number 2373-58-7162-0000.

Note that this authorization only allows it to be publicly posted for auction, the final sale will require formal Board approval.

ACTION REQUESTED:
Approval of Surplus Property Advertisement for Auction - 2907 Englishtown Road, Willard

Pender County Finance Department
PO Box 1578
Burgaw, North Carolina 28425

Asset Manager
Andy Devane

adevane@pendercountync.gov

Letter of recommendation for sale of real property

9/19/2022

Dear County Manager,

For your consideration is a proposed sale of parcel number 2373-58-7162-0000 located at 2907 Englishtown rd. in Willard that we acquired on 03/24/2016 thru tax foreclosure proceedings. The parcel consists of a house in poor condition on a wooded lot on 0.46 of an acre. The estimated tax value of the land is $53,421.00 in GIS.

I recommend the sale, via auction, of this parcel on the GovDeals.com website as it reaches a global audience. I recommend the starting bid for this parcel will be the current tax value of the land and go up from there. The County will not make any guarantees on the use of these properties.

Published notice of the summary of this resolution and subsequent auction will be by electronic advertisement only on the County's website located under "Bid & RFP's." The electronic publication will provide a link to the GovDeals.com auction website. The electronic published notice and auction is pursuant to G.S. Chapter 160A-270(c).

Sincerely,

Andy Devane

Asset Manager

Pender County Finance Department
PO Box 1578
Burgaw, North Carolina 28425

Asset Manager
Andy Devane

adevane@pendercountync.gov

Resolution

Resolution declaring the sale of a surplus asset to be Sold at Electronic Auction on GovDeals.com

LEGISLATIVE INTENT/PURPOSE:

The resolution declares the real property (2373-58-7162-0000) as a surplus asset that will be sold as is on GovDeals.com after board approval for a duration of 31 days.

Published notice of the summary of this resolution and subsequent auction will be by electronic advertisement only on the County's website located under "Bids and RFP's." The electronic publication will provide a link to the GovDeals.com auction website.

THEREFORE, BE IT RESOLVED:

THAT, the real property more particularly described in Exhibit "A" is hereby declared surplus and the Asset Manager is authorized to publish notice and disposal of the property at public auction of the summary of this resolution and subsequent auction pursuant to G.S. Chapter 160A-270(c).

Adopted at a _____ meeting on

_____ 2022

_____

Pender County Authorized Representative

ATTEST:

_____

County Clerk

STATE OF NORTH CAROLINA

COUNTY OF PENDER
PENDER COUNTY
Plaintiff(s),
v.
GORDON WILLIAM FOWLER, owner et. al.
Defendant(s).

IN THE GENERAL COURT OF JUSTICE
SUPERIOR COURT DIVISION
COURT FILE #: 15-CVS-598

FINAL REPORT

The undersigned Commissioner shows the Court that he has delivered the deed as ordered and received the sums and made the disbursements as follows:

Item	Incoming	Outgoing	POC
Purchaser	$6,616.84		
Pender County - Costs (court filings)			$220.00
Pender County - Costs (publications)			$187.50
Pender County ROD (revenue stamps)		$14.00	
Pender County - (ROD) Deed Filing Fees		$26.00	
Pender County - Taxes			$4,088.28
Lawrence Boehling - GAL		$200.00	
Lawrence Boehling - US Military Attorney		$200.00	
Sherman & Rodgers - Costs Advanced		$80.97	
Sherman & Rodgers - Legal Fees		$1,285.00	
Sherman & Rodgers - Commissioner's Fees		$315.09	
Totals		***$2,121.06***	$4,495.78

Distribution Statement

Check to Pender Registry	$40.00
Lawrence Boehling (GAL & US Military)	$400.00
Check to Sherman & Rodgers	$1,681.06
Totals	***$2,121.06***

Richard T. Rodgers, Jr, Commissioner

Assistant/Clerk of Superior Court

Date of Audit and Approval

SV 2373-58-7162-0000
Gordon William Fowler
15-CVS-598

Doc No: 20011589
Recorded: 06/15/2016 02:09:02 PM
Fee Amt: $26.00 Page 1 of 2
Excise Tax: $14.00
Pender County North Carolina
Sharon Lear Willoughby, Register of Deeds
BK **4622** PG **597 - 598 (2)**

2 Barbara

Excise Tax $14.00	Return after recording to →	Sherman & Rodgers, PLLC PO Box 250 Burgaw, NC 28425
Parcel ID # 2373-58-7162-0000	*Prepared by* Richard T. Rodgers, Jr.	

BRIEF DESCRIPTION FOR INDEX → 0.46 ACRES

STATE OF NORTH CAROLINA
COUNTY OF PENDER

DATE
3/24/2016

COMMISSIONER'S DEED

Richard T. Rodgers, Jr., Commissioner Sherman & Rodgers, PLLC PO Box 250 Burgaw, NC 28425	Pender County Post Office Box 5 Burgaw, NC 28425
"Grantor"	**"Grantee"**

Enter in appropriate block for each Grantor and Grantee: title vesting name, mailing address, and, if appropriate, character of entity, (e.g.,corporation, partnership, trust, unincorporated association, etc.)

NOTE: When reference herein is made to the GRANTOR and/or the GRANTEE, the singular shall include the plural, the neuter shall include the masculine as well as the feminine.

WITNESSETH

That whereas, Richard T. Rodgers, Jr. was appointed commissioner under an order of the Superior Court of Pender County, North Carolina in the tax foreclosure proceeding entitled Pender County et. al. v. Gordon William Fowler et. al filed at 15-CVS-598 with the Pender County Clerk of Superior Court; and Richard T. Rodgers, Jr. was directed by the order as commissioner to sell the property hereinafter described at public sale after due advertisement according to law; and

Whereas, Richard T. Rodgers, Jr., commissioner, did on 02/26/2016, offer the land hereinafter described at a pubic sale at the Pender County Courthouse door, and Pender County became the last and highest bidder for said land for the sum of $6,616.84; and the sale having been confirmed, and Richard T. Rodgers, Jr., commissioner, having been ordered to execute a deed to the purchaser upon payment of the purchase money;

FOR VALUABLE CONSIDERATION RECEIVED, receipt of which is hereby acknowledged, the GRANTOR hereby has bargained sold and conveyed in fee simple unto the GRANTEE all that certain lot or parcel of land in Pender County more particularly described as follows:

2

BEGINNING at an iron pipe in the Northern right of way line of Pender County Secondary Road No. 1300, said iron pipe being located North 12 deg. 05' East 30.00 feet from a nail and cap in the centerline of Secondary Road No. 1300 and said nail and cap being located North 77 deg. 55' West 461.29 feet from a railroad spike in the centerline of Secondary Road No. 1300 that is located directly above a concrete culvert under the roadway, and said railroad spike being North 77 deg. 55' West 417.69 feet from a nail and cap that marks the Southeastern corner of a tract of land recorded in Book 483, Page 1336 of the Pender County Registry; running thence from the BEGINNING iron pipe, so located, with the Northern right of way line of Secondary Road No. 1300 North 77 deg. 55' West 100.00 feet to an iron pipe; thence North 12 deg. 05' East 200.00 feet to an iron pipe; thence South 77 deg. 55' East 100.00 feet to an iron pipe; thence South 12 deg. 05' West 200.00 feet to the BEGINNING, containing 0.46 acre, more or less, and is as surveyed in March, 1977.

Parcel ID: 2373-58-7162-0000.

TO HAVE AND TO HOLD this realty and all privileges and appurtenances thereto belonging unto the GRANTEE its heirs, successors and/or assigns in as full and ample manner as Richard T. Rodgers, Jr., commissioner, is authorized and empowered to convey the same subject to Pender County and Municipal property taxes, the payment of which shall be assumed by the purchaser.

IN WITNESS WHEREOF, the Grantor has duly executed the foregoing.

(*Entity Name*)

By: _____
Title

By: _____
Title

USE BLACK INK ONLY

_____(Seal)
Richard T. Rodgers, Jr., Commissioner

_____(Seal)

TAMMY C. SHERMAN NOTARY PUBLIC PENDER COUNTY, NC (Official Seal)

My commission expires: 4-1-18

STATE OF NORTH CAROLINA, PENDER COUNTY

I certify that the following person(s) personally appeared before me this day, acknowledging to me that he is the Commissioner identified in this document evidencing this by (name evidence here) _____ and signed this document in my presence: **name(s) of principal(s).**

Richard T. Rodgers, Jr., Commissioner

↓↓***Official Signature of Notary***↓↓

Tammy C Sherman 3-24-16

Tammy C Sherman ← ***Printed (or typed) Name of Notary*** **Date:**

Pender County
Request for Board Action

TO:	Board of County Commissioners
FROM:	Kenneth Keel
DATE:	October 3, 2022
SUBJECT:	Approval of Capital Project Ordinance and Budget Ordinance Amendment for LCFWASA Parallel Raw Water Main to PCU Water Plant

SUMMARY:
Lower Cape Fear Water and Sewer Authority (LCFWASA) is the entity that provides raw water from the Cape Fear River to the Pender County Surface Water Plant (as well as Brunswick County's plant, CFPUA's plant, and two industries on US 421). They recently completed a 54" parallel pipeline from the source at Lock & Dam # 1 in Riegelwood to the raw water ground storage tank at the Brunswick County water plant for additional capacity as well as redundancy. A single 48" raw water pipe runs from that location across the Cape Fear River to the Pender County Surface Water Plant, the industries on 421, and to CFPUA. This pipeline had a major break in late 2021 which jeopardized the water supply of Pender and New Hanover Counties. LCFWASA and its partners then began discussing a project to parallel the 48" pipeline from Brunswick to CFPUA.

LCFWASA received a $23.5 million special appropriation towards this project from the NC General Assembly. Attached are graphics depicting three construction options to spend these funds. The utility directors came together, and Option #3 is our minimum recommended investment. It covers the high-risk areas and uses all $23.5 million in special appropriations. Option #2 would require an additional $11.7 million in funding. This would have to come from CFPUA, Pender County and the two industrial users along highway 421, who directly benefit from this parallel line (in keeping with past precedent). Option #2 has the advantage of providing Pender County with full redundancy and demonstrating to the NCGA that the local communities “have some skin in the game” in terms of partial funding of the final project. Pender County and CFPUA have a planned water system interconnection on Highway 421 that will occur in the new few years, so this redundancy also benefits CFPUA.

CFPUA Executive Director Kenny Waldroup and I have been discussing possible funding structures. We have come up with a two-tiered approach. We are recommending dividing the cost using raw water allocations. Right now, Pender has a 6 MGD allocation but in the future that will grow to 11 MGD, so we are recommending an initial division upon current system allocations and a later charge some period of time afterwards… say 5-years after Pender acquires the 5 MGD currently held in trust for Pender by Brunswick County (acceptance deadline is 7/1/28). We are designing the lower section to deliver the full future 61 MGD river allocation for all downstream partners. Using that logic, the tables below provide the full cost breakdown.

Agency	Initial Funding Structure MGD	Initial Funding Structure (%)	Cost Share (Million)
CFPUA	38	0.83	9.67
Pender County	**6**	**0.13**	**1.53**
421 Industries	2	0.04	0.51
Total	46		11.7

Agency	Final Funding Structure MGD	Final Funding Structure (%)	Cost Share (Million)
CFPUA	48	0.79	9.21
Pender County	**11**	**0.18**	**2.11**
421 Industries	2	0.03	0.38
Total	61		11.7

Under the two-tiered approach, Pender County's initial costs would be $1.53 million and five years after Pender County purchases their additional capacity from Brunswick County, they would provide a similar reimbursement to CFPUA (the difference between $1.53 million and $2.11 Million, or $580,000). CFPUA would initially fund $9.67 million of the project. If Pender County agrees with this concept, CFPUA will start drafting an Interlocal Agreement and their ED will bring a funding request to the CFPUA Board in October.

Next year LCFWASA & its partners will approach the NC General Assembly delegation to fund the final segment of this parallel line project, which is estimated to cost approximately $21 million, which will parallel the pipeline all the way to CFPUA. That request will be much easier to make if we demonstrate the local funding as described above.

ACTION REQUESTED:
Approve Capital Project Ordinance and Budget Ordinance Amendment to participate in the LCFWASA parallel raw water main project

ATTACHMENTS:
Capital Project Ordinance
Budget Ordinance Amendment

Exhibit 2 - Parallel Main to PCU for maximum redundancy, at PCU initial cost of $1.53 million
Exhibit 3 - Parallel Main only through wetlands and across Cape Fear River to PCU, no additional cost to PCU
Exhibit 1 - Parallel Main only from Brunswick tank to west side of Cape Fear River, not best use of funds

CAPITAL PROJECT BUDGET ORDINANCE
LCFWASA PARALLEL RAW WATER MAIN PROJECT

WHEREAS, the Board of Pender County Commissioners desire to adopt a capital project budget ordinance pursuant to and as provided by NCGS 159- 13.2; and

WHEREAS, the Board of Pender County Commissioners desire to partner with Lower Cape Fear Water and Sewer Authority (LCFWASA) and its other partners to construct a LCFWASA Parallel Raw Water Main Project to provide critical capacity and redundancy for Pender County Utilities Water Plant;

NOW, THEREFORE, BE IT ORDAINED, by the Board of Pender County Commissioners, as follows:

SECTION 1: The amounts herein set forth are hereby appropriated for the expenses related to the project:

Design-Build Fees	$ 1,530,000.00
TOTAL PROJECT COST (PCU share)	**$ 1,530,000.00**

SECTION 2: The amounts herein set forth are hereby designated as the funding to be made available for the project to meet the foregoing appropriations:

Transfer from Fund 72	$ 1,530,000.00
TOTAL PROJECT FUNDING	**$ 1,530,000.00**

SECTION 3: Authorized activities for the LCFWASA Parallel Raw Water Main Project include the expenditure of budgeted funds for design-build services which shall include engineering, construction, and site work. The officials of Pender County are hereby directed to proceed with the project within the terms of the budget contained herein,

SECTION 4: The Finance Director is hereby directed to maintain within the Capital Project Fund sufficient detailed accounting records to provide the accounting of federal, state and local regulations.

SECTION 5: Funds may be advanced from the enterprise fund for the purpose of making payments as due.

SECTION 6: Copies of this ordinance shall be filed with the Finance Director and the Clerk to the Board of Commissioners to be kept by them for their direction in carrying out this project.

This ordinance was introduced and passed at this meeting of the Board of Pender County Commissioners and was adopted this the ____ day of _____, 2022.

_____
Fred McCoy, Chairman

ATTEST:

_____
Tera Cline, Clerk to the Board

RESOLUTION

NOW, THEREFORE BE IT RESOLVED by the Board of Pender County Commissioners:

that the Capital Project Budget Ordinance for the LCFWASA Parallel Raw Water Main Project to document the proposed project expenditures and funding in the amount of $1,530,000.00 is approved and adopted.

The Chairman/County Manager is authorized to execute any document necessary to implement this resolution.

AMENDMENTS:

MOVED_____ SECONDED_____

APPROVED_____ DENIED_____UNANIMOUS

YEA VOTES: McCoy ___ Tate ___ Brown ___ Newton ___ Piepmeyer ___

_____ _____
Fred McCoy, Chairman Date

ATTEST:

_____
Tera Cline, Clerk to the Board

Tuesday, September 20, 2022

Pender County Budget Ordinance Amendment

Date Monday, October 3, 2022

Board Meeting Date (If Applicable) Monday, October 3, 2022

Fiscal Year FY 2022-2023

Fund 72 - RP/T W&S

Division, Program, Project, etc. LCFWASA Parallel Raw Water Main

Department 072 - WATER OPERATIONS

Purpose of Request

Participation in costs of the LCFWASA Parallel Raw Water Main project to provide additional capacity and redundancy to the PCU water plant

REVENUES

	Account # (ORG-OBJECT)	Account Description	Amount
1	072-399000	Water Unappropriated Fund Balance	1530000
2	68-399072-6966	Transfer from Fund 72	1530000
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			

Proposed Amendment:

EXPENDITURES

	Account # (ORG-OBJECT)	Account Description	Amount
1	68-404500-6966	Contracted Services	1530000
2	072-409068	Transfer to Fund 68	1530000
3			
4			
5			
6			
7			
8			
9			
10			
11			

	Account # (ORG-OBJECT)	Account Description	Amount
12			
13			

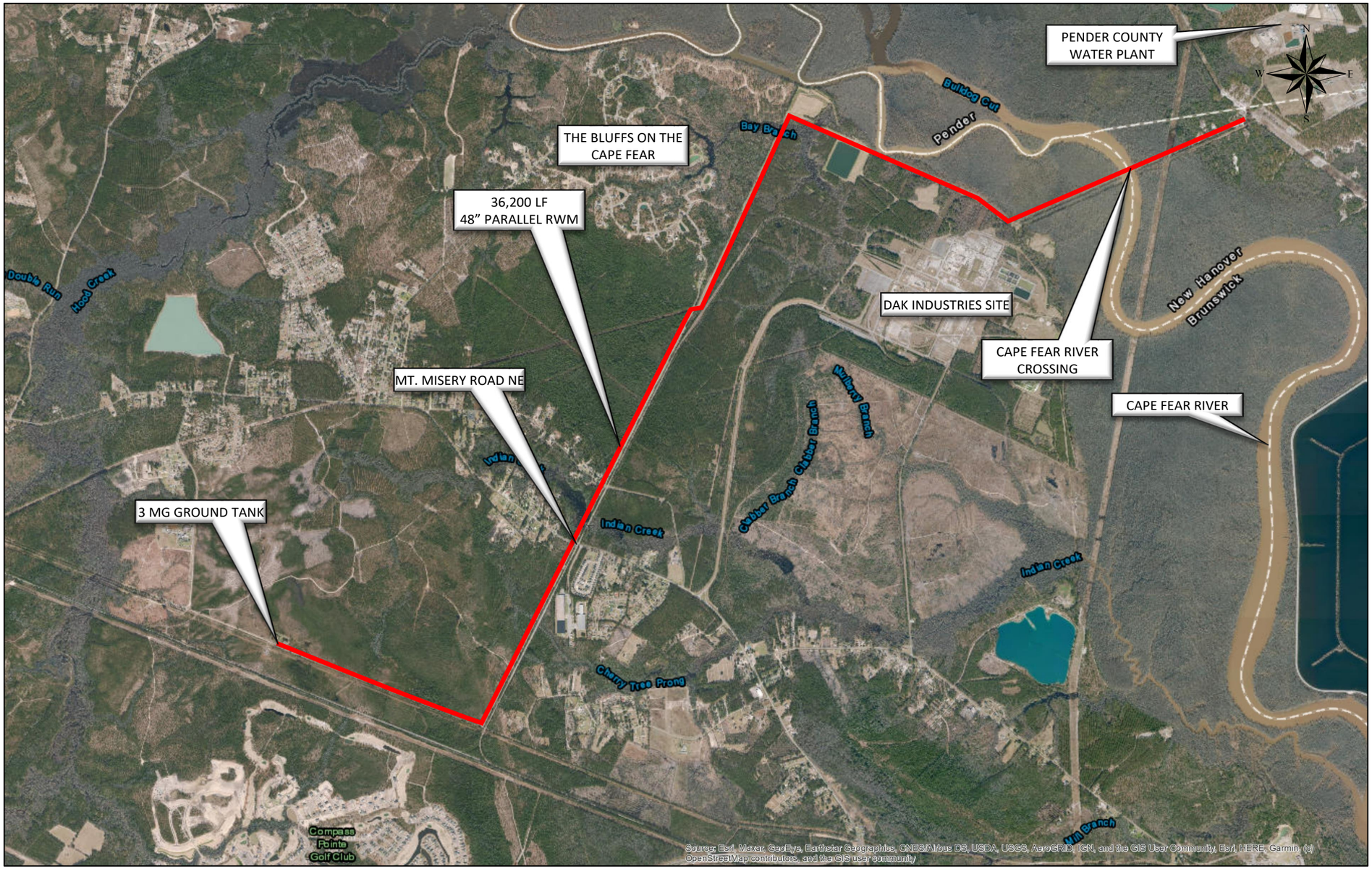
Total Revenues 3060000

Total Expenditures 3060000

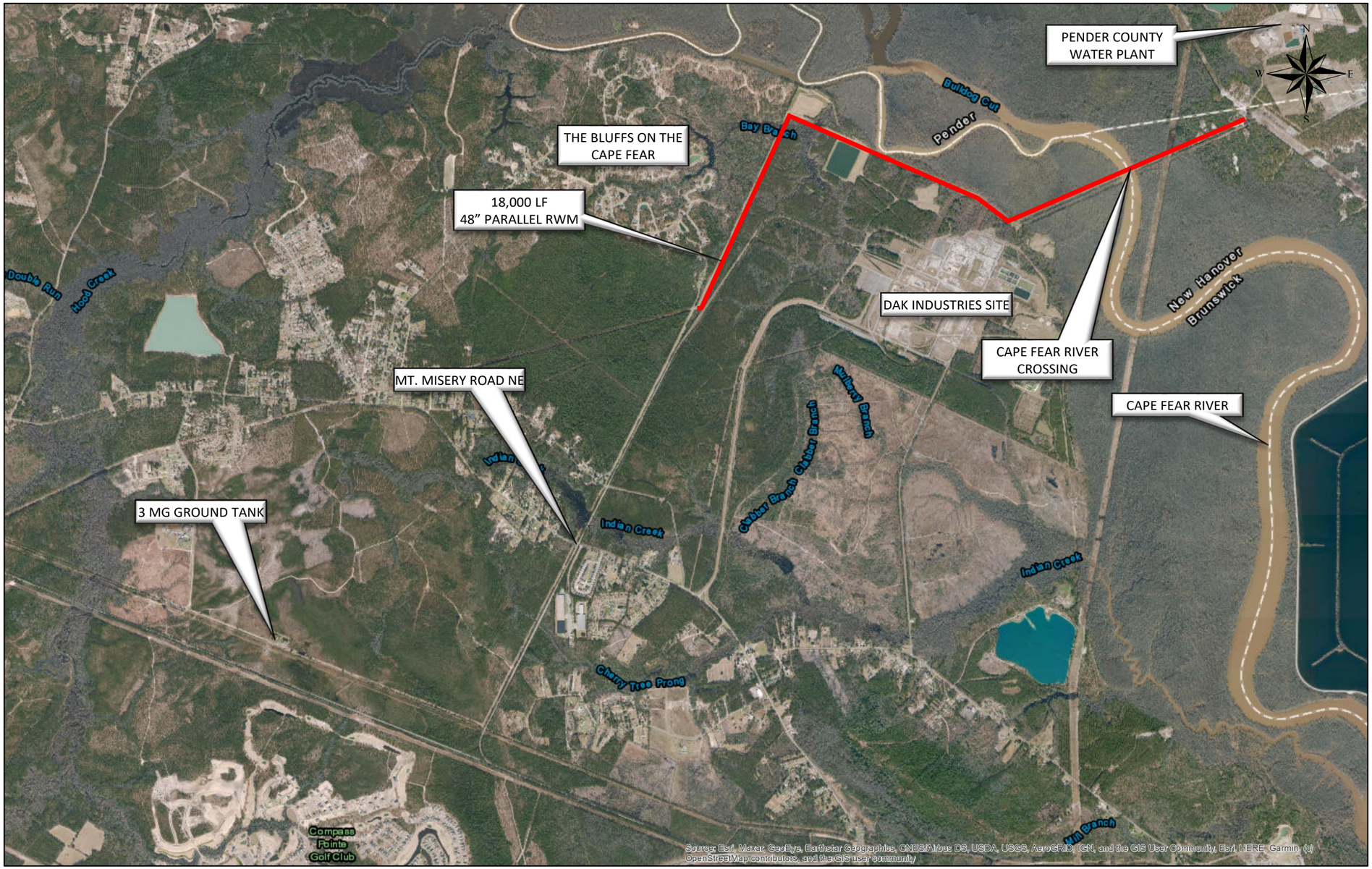
Budget Amendment Balances when Zero. 0

Prepared By: Kenny Keel

Email kkeel@pendercountync.gov



McKIM&CREED ENGINEERS SURVEYORS PLANNERS	LOWER CAPE FEAR WATER & SEWER AUTHORITY	OPTION 2 CONSTRUCT 48-INCH RWM BEGINNING AT 3 MG RAW TANK TO PENDER VAULT	EXHIBIT 2



McKIM&CREED ENGINEERS SURVEYORS PLANNERS		LOWER CAPE FEAR WATER & SEWER AUTHORITY	OPTION 3 $23.5MM BUDGET TO CONSTRUCT 48-INCH RWM ACROSS RIVER & WETLANDS	EXHIBIT 3



McKIM&CREED ENGINEERS SURVEYORS PLANNERS		LOWER CAPE FEAR WATER & SEWER AUTHORITY	OPTION 1 $23.5MM BUDGET TO CONSTRUCT 48-INCH RWM BEGINNING AT 3 MG RAW TANK	EXHIBIT 1

Pender County
Request for Board Action

TO:	Board of County Commissioners
FROM:	David Piepmeyer
DATE:	October 3, 2022
SUBJECT:	Resolution Requesting Safety Feasibility Study from NCDOT on the NC 210 Corridor Between Hampstead and Rocky Point

SUMMARY:
The North Carolina Highway 210 Corridor between Hampstead and Rocky Point is already one of the most important corridors in Pender County. With projected population growth, a future interchange with the Hampstead Bypass, and future County infrastructure projects in the area including schools, this importance will only increase. Yet, the corridor remains a narrow, two-lane road with little to no shoulders. As such, Pender County proposes the attached resolution requesting a safety study of the corridor from NCDOT that will identify solutions to increase the safety and reliability of the corridor in the future.

ACTION REQUESTED:
To review and approve the attached resolution requesting a safety study of the NC 210 corridor between Hampstead and Rocky Point.

ATTACHMENTS:
1. Resolution

Board of County Commissioners
Archibald "Fred" McCoy- Chairman
Jimmy Tate-Vice Chairman
George R. Brown, Jr.
Jaqueline A. (Jackie) Newton
David A. Piepmeyer

PENDER COUNTY NC

County Manager
David Andrews
County Attorney
Carl W. "Trey" Thurman
Clerk to the Board
Tera C. Cline

Resolution Requesting that the North Carolina Department of Transportation Conduct a Safety Feasibility Study that Once Completed, Will Support the Initiation and Funding of a Future Project to Widen (and Increase the Roadside Shoulder Area) on the Highway 210 Corridor between Hampstead and Rocky Point in Pender County.

WHEREAS, Pender County supports efforts towards a safe and reliable transportation system across the County and the Cape Fear Region; and

WHEREAS, Pender County's rapid growth is being felt in the Hampstead and Rocky Point communities and across the County overall; and

WHEREAS, North Carolina Highway 210 (NC 210) is a vital corridor across the County and is a posted Hurricane Evacuation Route between Hampstead and Rocky Point; and

WHEREAS, NC 210 will have an interchange with the currently under construction Hampstead Bypass (NC 417) in the near future, further exacerbating existing traffic volumes; and

WHEREAS, NC 210 plays a major role in the safe evacuation of Pender County citizens and visitors in advance of incoming storms and tropical systems and in recovery efforts following natural disasters; and

WHEREAS, Pender County owns property along the corridor and anticipates constructing vital infrastructure along it, including schools, to respond to current and future population growth; and

WHEREAS, the current distance between the roadside edge and the ditch on each side of the roadway along the corridor does not enable a vehicle to pull safely and completely off the road either because it is mechanically disabled, involved in an accident, or being stopped by law enforcement.

NOW THEREFORE, be it resolved that the Pender County Board of Commissioners requests the completion of a safety study by the North Carolina Department of Transportation to examine methods and actions that could be taken to increase the safety of the NC 210 corridor between Hampstead and Rocky Point, including shoulder widening, sight line improvements, and any other method that may be appropriate to ensure that the corridor is safe and reliable for all travelers.

Adopted this the 3rd Day of October, 2022

_____
Fred McCoy, Chairman
Pender County Board of Commissioners

Board of County Commissioners
Archibald "Fred" McCoy- Chairman
Jimmy Tate-Vice Chairman
George R. Brown, Jr.
Jaqueline A. (Jackie) Newton
David A. Piepmeyer

PENDER COUNTY NC

County Manager
David Andrews
County Attorney
Carl W. "Trey" Thurman
Clerk to the Board
Tera C. Cline

ATTEST:

_____
Tera Cline
Clerk to the Board

Pender County
Information for Discussion

TO:	Board of County Commissioners
FROM:	Kenneth Keel
DATE:	October 3, 2022
SUBJECT:	Eastern Pender Water Improvements Project Cost Updates & Comparisons

SUMMARY:
Three conceptual capital cost estimates are provided as a guide to the costs to provide drinking water for the growth of eastern Pender County. As in the 2019 report, the estimates provide a near-term (i.e., immediate need) cost as well as a long-term (future 2040 project) cost for three alternatives:

- **Alt 1**: Expand the existing surface water plant at US 421, install parallel piping where needed, and use this source for all future county water needs.
  - This option includes a near-term expansion to 6 mgd, parallel pipes along Montague Road, NC 210, and US 17 to the new Scotts Hill elevated tank, and new 210 Booster Pump Station (BPS).
  - Long-term improvements needed are a plant expansion to 10 mgd, parallel pipeline on US 421 to Montague and US 17 to the Hampstead tank, additional elevated tank at Rocky Point, and larger 210 BPS pumps.
- **Alt 2**: Build a new Reverse Osmosis (RO) water plant in central Hampstead area and some pipeline improvements.
  - This option includes a near-term 3 MGD RO plant construction, parallel pipelines on NC 210 between Little Kelly Rd & US 117, along US 17 to the new Scotts Hill elevated tank, and a new concentrate discharge pipe to the discharge point..
  - Long-term improvements include expansion of the RO plant to 5 mgd, expansion of the surface water plant to 6 mgd, parallel pipeline on Montague Rd and Little Kelly Rd to NC 210, and an additional elevated tank at Rocky Point.
- **Alt 2b**: This alternative is mostly identical to Alt 2, except with an RO plant location at the DBL property on NC 210. This would represent the northwesternmost potential location of an RO plant to remain economically feasible.

- This option includes a near-term 3 MGD RO plant construction, parallel pipelines on NC 210 between Little Kelly Rd & US 117, along US 17 to the new Scotts Hill elevated tank, new pipeline from the plant to US 17, repurposing the existing 12" water line from the plant to US 17 as our concentrate discharge pipe, and a new concentrate discharge pipe to the discharge point.
- Long-term improvements include expansion of the RO plant to 5 mgd, expansion of the surface water plant to 6 mgd, parallel pipeline on Montague Rd and Little Kelly Rd to NC 210, and an additional elevated tank at Rocky Point.

The cost of 2b (DBL site) is the most expensive near-term option, but less expensive than Alt 1 (421 plant) in the long-term, primarily due to the cost of expansion of the surface water plant to 10 mgd and parallel 421 pipeline. Also, there are current unknowns regarding potential increased regulations over our surface water supply at the 421 plant which could increase its cost of expansion (and current operation).

Without question, our best alternative is Alt 2 (RO plant in central Hampstead), as long as we can secure a plant site within somewhat close proximity to US 17 and the intracoastal waterway. Depending on the site we ultimately utilize, the cost of the RO plant option will likely be somewhere between Alt 2 and 2b. The estimates provided are our best effort at this time with our current knowledge. Once a site is secured and actual design begins, we will be better able to determine the ultimate cost of the project.

ACTION REQUESTED:
Review conceptual estimates for guidance on future decisions regarding how to proceed with provision of water to eastern Pender County

ATTACHMENTS:
Conceptual Estimate: Alternative 1, Existing Surface Water Plant & Parallel Pipelines
Conceptual Estimate: Alternative 2, RO Water Plant in Central Hampstead Area
Conceptual Estimate: Alternative 2b, RO Water Plant at DBL Property-NC 210
Figures 4-1 & 4-18 from 2019 Report showing piping improvement needs

Table 4-3. Alternative 1 Conceptual Capital Cost Estimate

Improvement Type	Location	Description	Diameter (inches)	Length (feet)	Conceptual Cost Estimate
Near-Term (2025) Improvements					
Transmission	Segment B	Montague Road from Highway 421 to Highway 210 and Highway 210 to Little Kelly Road	30	31,100	$21,770,000
	Segment C	Highway 210 from Little Kelly Road to Highway 117	36	27,700	$20,082,500
	Segment D	Highway 210 from Highway 117 to Highway 210 Booster PS	24	32,700	$19,620,000
	Segment E	Highway 210 from Highway 210 Booster PS to Highway 17	24	40,300	$24,180,000
	Segment G	Highway 17 from Highway 210 to New Pender Fire Station Tank	8	13,800	$2,760,000
Storage	New Scotts Hill	New 0.3 EST on Highway 17 near Pender Fire Station 18/EMS in Scotts Hill			$1,950,000
Pumping	New Highway 210 Booster PS	• Build station for full capacity • Install 2 smaller pumps (2,300 gpm @ 50 feet TDH, 40 hp each) • Install pump bases/piping for future pumps			$4,680,000
	HSPS	Add pumps to increase HSPS capacity to 6.5 mgd			$650,000
WTP	Existing WTP	Increase treatment capacity from 2 to 6 mgd			$1,690,000
				Costs (2022 Dollars)	$97,382,500
				Inflation (2.4% per year through 2024)	$4,700,000
				Total costs (2025 Dollars)	**$102,082,500**
Long-Term (2040) Improvements					
Transmission	Segment A	Highway 421 from WTP to Montague Road	36	43,200	$31,320,000
	Segment F	Highway17 from Highway 210 to Hampstead Tank	16	17,100	$5,130,000
Storage	New Rocky Point	New 0.7 MG EST near existing Rocky Point Tank.			$3,510,000
Pumping	New Highway 210 PS	Add larger pumps to Highway 210 pump station (3,400 gpm at 100 ft TDH, 70 hp)			$390,000
	HSPS	Add pumps to increase HSPS capacity to 10 mgd (7,000 gpm @ 165 ft TDH)			$3,900,000
WTP	Existing WTP	Increase treatment capacity from 6 to 10 mgd			$35,100,000
				Costs (2022 Dollars)	**$79,350,000**
				Inflation (2.4% per year through 2035)	$28,700,000
				One Time Fee to Brunswick Co. for Raw water pipeline uupgrades	$5,000,000
				Total costs (2040 Dollars)	**$113,050,000**
				Sub Total Planning-Level Cost (2025 and 2040)	**$215,132,500**
				Engin/Admin/CM Fees (Assume 15%)	**$31,519,875**
				TOTAL	**$246,652,375**

Table 4-x. Alternative 2 Conceptual Capital Cost Estimate

Improvement Type	Location	Description	Diameter (inches)	Length (feet)	Conceptual Cost Estimate
Near-Term (2025) Improvements					
Transmission	Segment C	Highway 210 from Little Kelly Road to Highway 117	20	27,700	$13,850,000
	Segment G	Highway 17 from Highway 210 to New Pender Fire Station Tank	8	13,800	$2,760,000
Storage	New Scotts Hill	New 0.3 EST on Highway 17 near Pender Fire Station 18/EMS in Scotts Hill			$1,950,000
WTP	New RO WTP	Install a new RO WTP in Hampstead area with initial capacity of 3 mgd			$57,460,000
				Costs (2022 Dollars)	$76,020,000
				Inflation (2.4% per year through 2024)	$3,700,000
Total					**$79,720,000**
Long-Term (2040) Improvements					
Transmission	Segment B	Montague Road from Highway 421 to Highway 210 and Highway 210 to Little Kelly Road	16	31,100	$9,330,000
	Segment F	Highway17 from Highway 210 to Hampstead Tank	16	17,100	$5,130,000
Storage	New Rocky Point	New 0.7 MG EST near existing Rocky Point Tank.			$3,510,000
Pumping	HSPS	Add pumps to increase HSPS capacity to 6.5 mgd (4,300 gpm @ 220 feet TDH, xx hp)			$650,000
WTP	Existing WTP	Increase treatment capacity from 2 to 6 mgd			$1,690,000
	New RO WTP	Increase RO WTP to 5 mgd			$13,000,000
				Costs (2022 Dollars)	$33,310,000
				Inflation (2.4% per year through 2035)	$12,000,000
				One Time Fee to Brunswick Co. for Raw water pipeline upgrades	**$5,000,000**
				Total costs (2040 Dollars)	**$50,310,000**
				Sub Total Planning-Level Cost (2025 and 2040)	**$130,030,000**
				Engin/Admin/CM Fees (Assume 15%)	**$18,754,500**
				TOTAL	**$148,784,500**

RO WATER PLANT AT DBL PROPERTY-NC 210

Table 4-x. Alternative 2b Conceptual Capital Cost Estimate

Improvement Type	Location	Description	Diameter (inches)	Length (feet)	Conceptual Cost Estimate
Near-Term (2025) Improvements					
Transmission	Segment C	Highway 210 from Little Kelly Road to Highway 117	20	27,700	$13,850,000
	Segment G	Highway 17 from Highway 210 to New Pender Fire Station Tank	8	13,800	$2,760,000
	210 finish water to 17	plus 800 ft HDD @$1.528m	24	31,680	$34,288,000
	Repurp 12" pipe in 210		12	31,680	$3,168,000
	Concent: 17 to ocean	plus 800 ft HDD @$960,000	12	10,560	$3,864,000
Storage	New Scotts Hill	New 0.3 EST on Highway 17 near Pender Fire Station 18/EMS in Scotts Hill			$1,950,000
WTP	New RO WTP	Install a new RO WTP in Hampstead area with initial capacity of 3 mgd			$57,460,000
				Costs (2022 Dollars)	$117,340,000
				Inflation (2.4% per year through 2024)	$5,700,000
Total					**$123,040,000**
Long-Term (2040) Improvements					
Transmission	Segment B	Montague Road from Highway 421 to Highway 210 and Highway 210 to Little Kelly Road	16	31,100	$9,330,000
	Segment F	Highway17 from Highway 210 to Hampstead Tank	16	17,100	$5,130,000
Storage	New Rocky Point	New 0.7 MG EST near existing Rocky Point Tank.			$3,510,000
Pumping	HSPS	Add pumps to increase HSPS capacity to 6.5 mgd (4,300 gpm @ 220 feet TDH, xx hp)			$650,000
WTP	Existing WTP	Increase treatment capacity from 2 to 6 mgd			$1,690,000
	New RO WTP	Increase RO WTP to 5 mgd			$13,000,000
				Costs (2022 Dollars)	$33,310,000
				Inflation (2.4% per year through 2035)	$12,000,000
				One Time Fee to Brunswick Co. for Raw water pipeline upgrades	**$5,000,000**
				Total costs (2040 Dollars)	**$50,310,000**
				Sub Total Planning-Level Cost (2025 and 2040)	**$173,350,000**
				Engin/Admin/CM Fees (Assume 15%)	**$25,252,500**
				TOTAL	**$198,602,500**

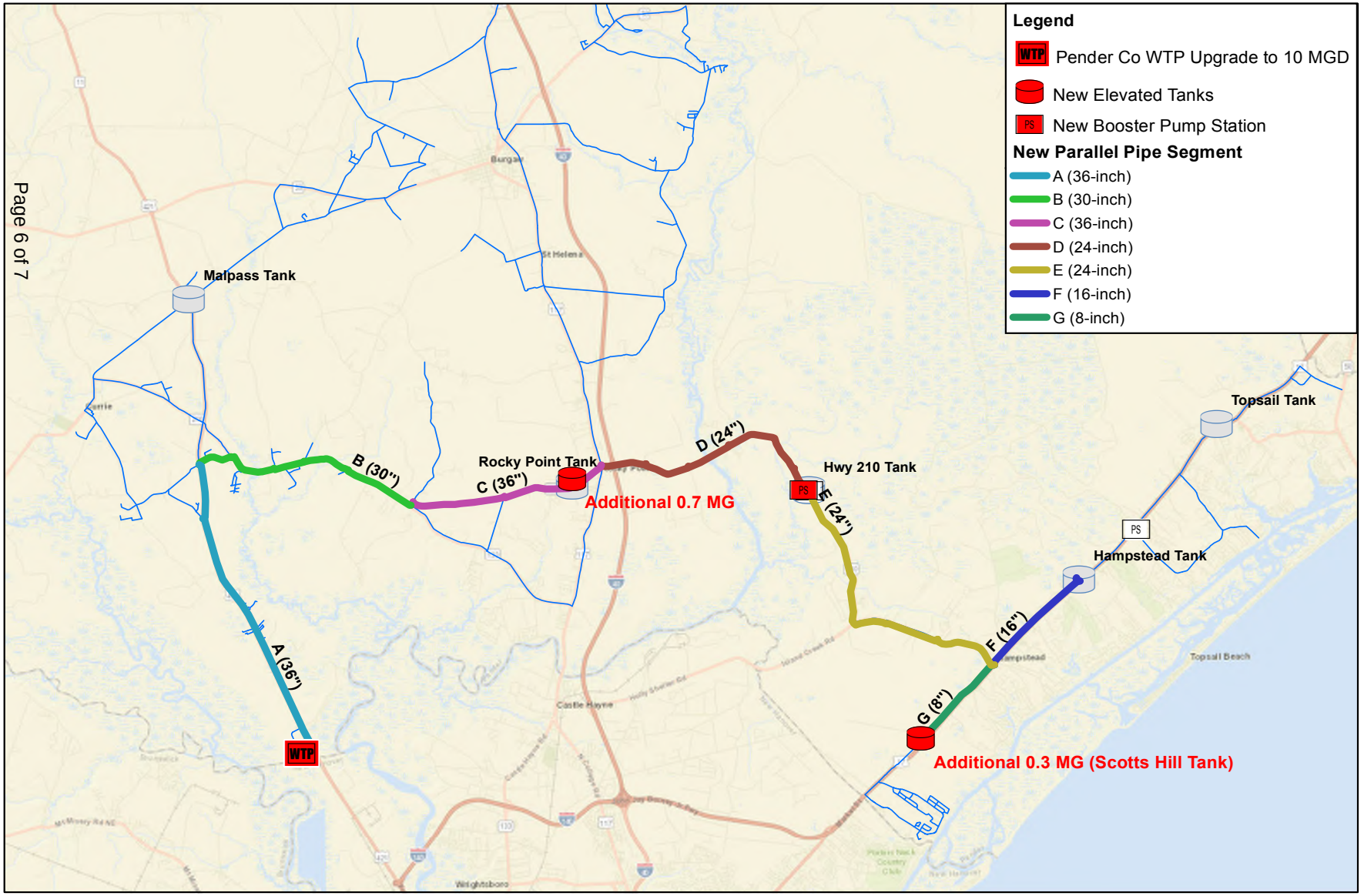


Figure 4-1: Alternative 1 Recommended Improvements
Water Supply from Existing WTP
Pender County Utilities

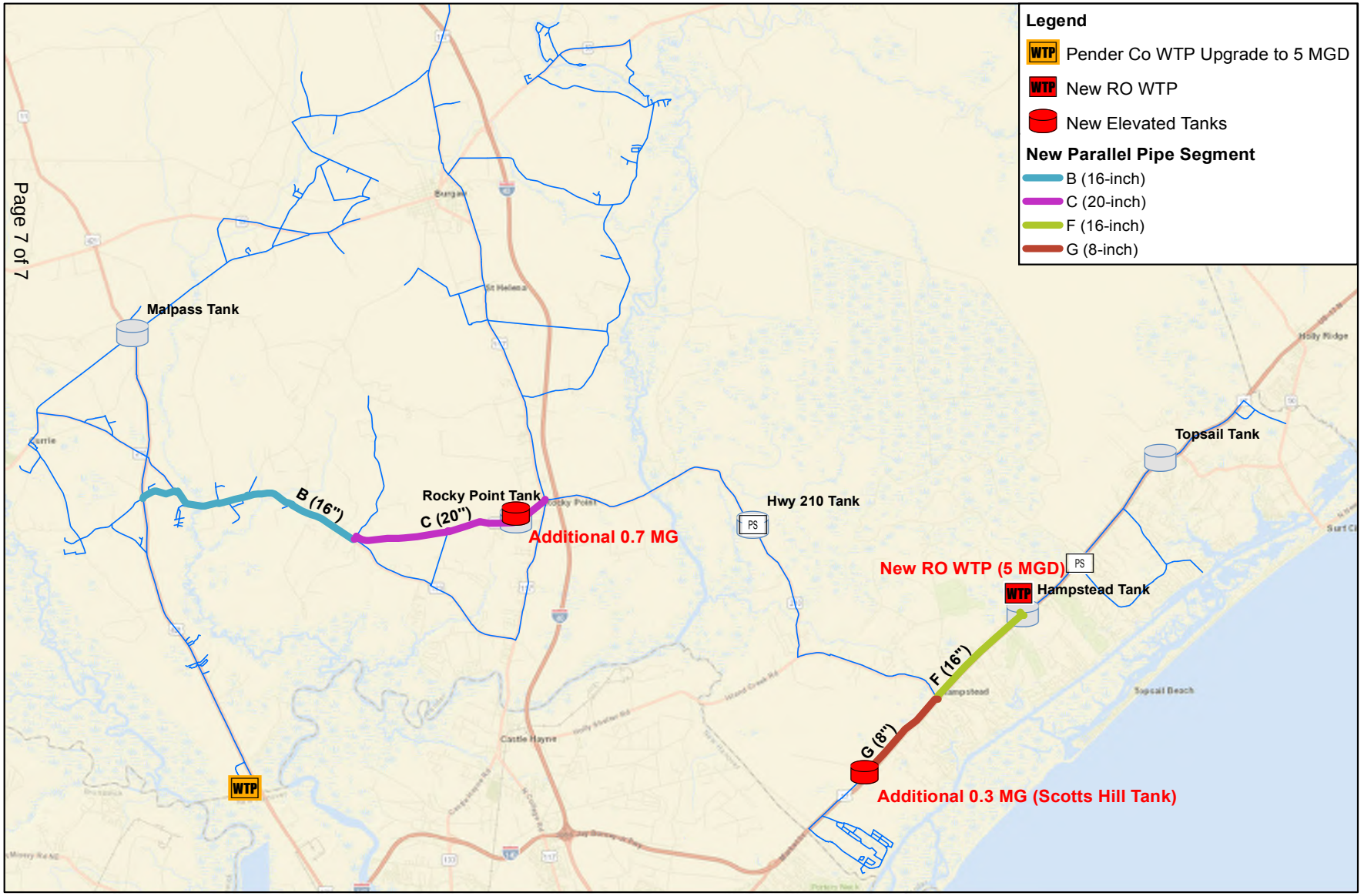


Figure 4-18: Alternative 2 Recommended Improvements
Water Supply from New RO WTP
Pender County Utilities

CDM Smith

Pender County
Approval of Re-appointment to the Pender County Advisory Board of Health

TO:	Board of County Commissioners
FROM:	Tera Cline
DATE:	October 3, 2022
SUBJECT:	Approval of Re-appointment to the Pender County Advisory Board of Health

SUMMARY:
Robert Jennings is applying for reappointment to the Pender County Advisory Board of Health. His application is attached for the board to review. If approved, this appointment will be 3 years and expire June 30, 2025. This would be his 2nd term in the veterinarian seat.

ACTION REQUESTED:
Approval of Re-appointment

PENDER COUNTY

Application for Appointment to Boards/Commissions/Committees

Appointees to Pender County Boards/Commissions/Committees must be a Pender County resident and must be at least 18 years of age. Please complete this application and return to: Pender County Manager's Office, PO Box 5, Burgaw, NC 28425.

APPLICANT INFORMATION			
Last Name: Jenning	First: Robert	M.I: S	Date: 7-24-22
Physical Address: 337 Olde Point Loop			Apartment/Unit #
City: Hampstead	State: NC		ZIP: 28443
Mailing Address (if different from above)			
City	State		ZIP
Home Phone	Work Phone		E-mail Address 1
Fax Number			E-mail Address 2
Board Interest(s)			
How long have you been a resident of Pender County? 13 yrs.			

EDUCATION							
High School: AC Flora					Location: Columbia SC		
From		To		Did you graduate?	YES ☑	NO ☐	
College: Clemson Univ					Location: Clemson, SC		
From		To		Did you graduate?	YES ☑	NO ☐	Degree: BS animal science
Other: UGA - CVM					Location: Athens GA		
From		To		Did you graduate?	YES ☑	NO ☐	Degree: Doctor of Veterinary Med.

EMPLOYMENT HISTORY			
Current Employment	Johnson Breeders	Job Title	Corporate Veterinarian
Responsibilities			
Previous Employment	Carroll's Foods	Job Title	Corporate Veterinarian
Previous Employment		Job Title	
Previous Employment		Job Title	

COMMUNITY INVOLVEMENT

Please list current and past membership in civic or other organizations and offices held:
Jane Sprunt Community College Board of Trustees

Have you ever served or are you currently a member of any Pender County or other local government board/commission/committee?

YES [✓] NO [ ] If yes, explain (including length of service).

Board of Health Advisory

State reasons why you feel qualified for this appointment(s):

Veterinarian & experience

MILITARY SERVICE

Branch	From	To
Rank at Discharge	Type of Discharge (optional)	

CONFLICTS OF INTEREST

Are you aware of any legal, ethical or personal conflict of interest by serving as a member of this Pender County board/commission/committee?

YES [ ] NO [✓] If yes, explain.

Are you or any member of your family employed by Pender County, or currently serving on any Boards/Committee/Commission appointed by or affiliated with Pender County?

YES [ ] NO [✓] If yes, list family member name(s) and position/board or committee(s).

Please add any additional information you would like to share supporting your interest and qualifications for this appointment.

DISCLAIMER AND SIGNATURE

NOTE: This information will be used by the Pender County Board of Commissioners in making appointments to Pender County Boards/Commissions/Committees. In the event you are appointed, it may be used as a news release to identify you to the community. This application is considered a public record.

Signature	Date
[signature]	9/12/22