Alachua County – Growth Management Staff Report

Application ZOX-01-20

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Planning Commission Hearing Date: August 19, 2020 & September 2, 2020
Board of County Commissioners Hearing Date: September 29, 2020

Project Timeline

- Submitted: May 26, 2020
- Planning Commission Hearing: August 19, 2020 & September 2, 2020

Requested Action: A request by Archer Solar Project LLC (Mark Dypiangco, Agent) on behalf of various owners for a special exception to permit a major utility (solar array and associated distribution lines) on approximately 650.6 acres located in an 'A' (Agriculture) district with a Rural/Agriculture land use designation (one dwelling unit per five acres). The project is located on the northeast corner of SW 170th Street and SW 95th Avenue on parcel numbers 04588-000-000, 04588-001-000, 04588-001-001 and portions of parcels 04595-000-000 and 04631-000-000.

Land Use: Rural Agriculture

Zoning: Agriculture

Applicant/Agent: Archer Solar Project LLC

PC Recommendation

The Planning Commission recommended denial of this items by a vote of 3-2.

Staff Recommendation

Staff recommends that the Commission approve the special exception with the conditions and bases as noted.

Background and Analysis

Description of Proposed Request

The request that is the subject of this application is for a special exception to the Unified Land Development Code (ULDC) for a major utility in an 'A' (Agriculture) zoning district. First Solar Corporation is proposing the installation of a solar array on approximately 650 acres, to include panels and associated distribution facilities. The project will connect to the distribution grid via an existing Duke Energy Substation located to the south of the proposed array site.

At maximum output, the array would produce approximately 74.9 megawatts (MW) of electricity. As a comparison, the maximum output for all plants associated with Gainesville Regional Utilities (GRU) is approximately 513.5 megawatts at maximum output (Source: GRU 2017 Ten Year Plan) from its four operating plants (Deerhaven #1 and #2, the John Kelly Plant in downtown Gainesville and the Biomass Plant).

The present application is the fourth for a solar array that has been considered by the Board. Previous applications include a small array near Paynes Prairie (Prairie Solar Facility: 1.5 MW), SYBAC Solar Facility on 53rd Avenue near the Murphree Water Treatment Plant (6.0 MW) and, most recently, an Florida Power and Light (FPL) facility on the Putnam County Border in eastern Alachua County (74.9 MW).

The arrays used in this proposed facility will be tracking arrays that move with the sun. Previous installations reviewed by the Board have been static (non-moving). The use of tracking arrays results in increased energy output and maximum efficiency per panel. As shown in the photo below, they are identical to those used in a similar facility that just recently opened outside of Ft. White (also constructed by First Solar).

Figure – Photograph of photovoltaic panels

The panels themselves do not generate noise and operate during daylight hours. As the sun rises and activates the photovoltaic arrays, energy production begins although full production does not occur immediately. Similarly, as evening approaches, the arrays loose power generating ability and gradually shut down. Power generated by the arrays goes to a piece of equipment known as an inverter (pictured below).

Figure – Photograph of Inverter

The purpose of the inverter is to convert the electricity, which emerges from the arrays as direct current (DC) into alternating current (AC). This power is then transmitted to an intermediate substation (see photo below) where the current is stepped up in power so that it can be transferred to the larger substation and then onto the grid for distribution.

The power that emerges from the substation is the same as would emerge from a coal or oil plant. Degradation and power loss of electricity occurs over longer distances so location of these facilities tend to occur in areas approximate to their need and this is one of the factors in the location of various solar arrays. Once the power is on the grid, it can serve a variety of customers including those in Alachua County. These include, but are not limited to:

- Towns/Cities of Archer, High Springs, LaCrosse, Micanopy
- University of Florida
- Seminole Electric Co-op, Central Florida Electric Co-op, Clay Electric Co-op

Figure – Photograph of Substation

Description of Surrounding Development

An aerial view of the property is shown below. The primary parcel is bounded on the west by SW 170th Avenue, to the south by SW 95th Street, to the east by SW 154th Avenue and to the north by SW 79th Place.

Figure – Aerial View of the Subject Parcel

As can be seen in the aerial photograph, an existing powerline bisects the site and leads to the previously mentioned Duke Energy Substation. Also present on the site is an existing graveyard that is associated with St. Peter's Baptist Church on the west side of SW 170th Street. Apart from these two uses, the remainder of the approximately 640 acre array site consists either of planted pines or natural growth vegetation (see Environmental Protection Department (EPD) comments for more detailed analysis of environmental features associated with the property).

The figure below highlights surrounding residential development. A yellow dot has been used to designate the locations of surrounding residential structures. In the rural agriculture area, typical residential lots average five acres in size although some can be as small as one acre or as large as hundreds of acres. Also common in this area of varying types of agricultural activities such as horticulture (for example greenhouses), silviculture (tree farms) or farms for the raising of crops or livestock. Interspersed with these are usually dedicated infrastructure facilities such as the previously mentioned transmission power line and substation as well as personal wireless service facilities (cell towers) needed for telecommunications for the rural population.

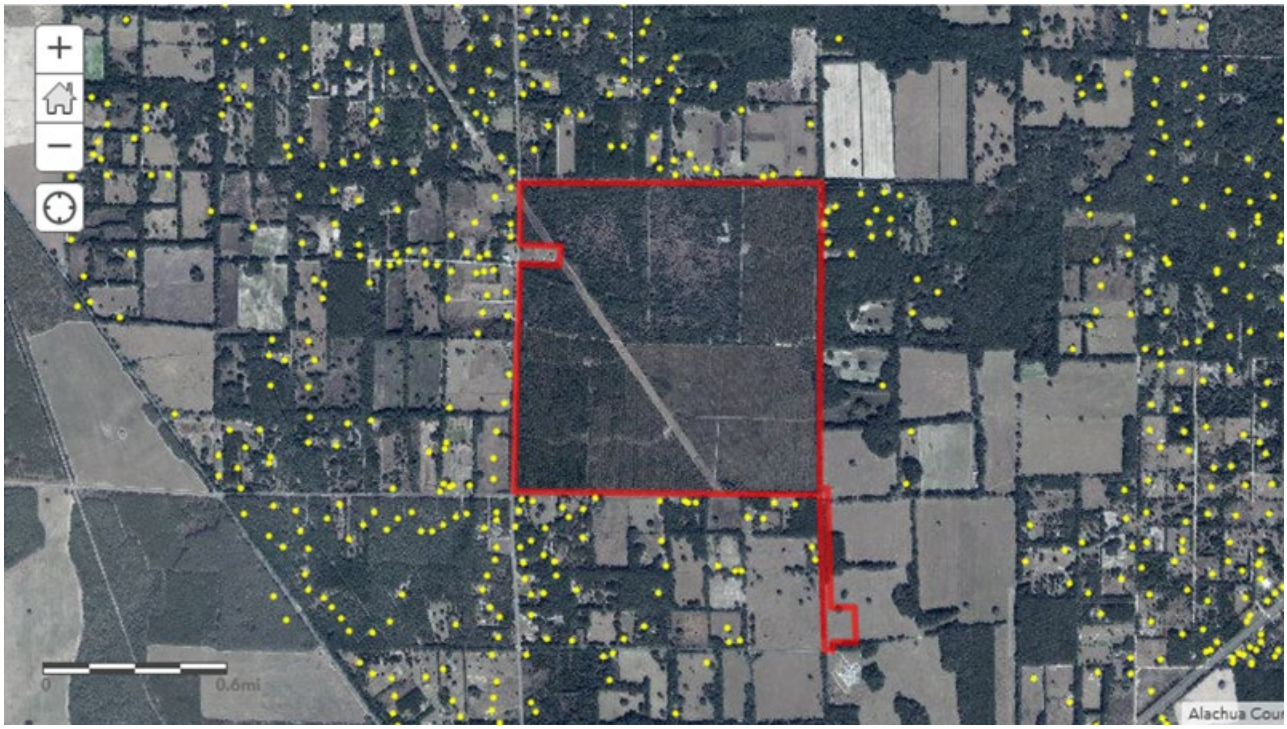

Figure – Aerial View Showing Surrounding Residential Development

Comprehensive Plan and Unified Land Development Code Consistency

Staff is charged with providing the Board analysis of consistency with the Alachua County Comprehensive Plan (Plan) and Unified Land Development Code (ULDC). In order to accomplish this, we look at a number of areas within the Plan and ULDC that might be applicable to the request at hand. With the First Solar application, there are numerous policies located in various elements of the Plan that apply to this request. In addition, the ULDC has specific criteria that must be evaluated before any approval of a special exception can be granted. As these overlap, staff will provide a general analysis of various aspects of the proposal and then follow with specific analysis of how these relate to both the Plan and the ULDC.

Levels of Service

The Alachua County Comprehensive Plan Capital Improvement Element requires that the public facilities and services needed to support development be available concurrent with the impacts of development and that issuance of a Certificate of Level of Service Compliance (CLSC) be a condition of all final development orders. 'Concurrent' shall mean that all adopted levels of service (LOS) standards shall be maintained or achieved within a specified timeframe. Per **Policy 1.2.4 and Policy 1.2.5 of the Capital Improvements Element** of the Alachua County Comprehensive Plan, LOS standards have been adopted for various types of public facilities.

As shown with previous solar facilities approved by the BoCC, solar arrays do not present significant impacts to adopted level of service standards found in the Plan.

Traffic

The applicant has indicated that there will be anywhere up to 10 daily trips at the property as required for site maintenance once the facility is in operation. Any non-residential development will also require mitigation through the transportation impact fee program.

Water and Sewer

Policy 1.2.4 (d) of the Capital Improvements Element describes the minimum Level of Service standards for potable water and sewer. These are summarized in the following table:

	Peak Residential & Non Residential	Pressure	Storage Capacity
Potable Water	200 gallons/day/du	40 p.s.i.	½ peak day volume
Sanitary Sewer	106 gallons/day/du	N/A	N/A

There will be no impacts to water and sewer levels of service resulting from this request. Any irrigation needs for the site will be handled through on-site wells

Drainage

Policy 1.2.4 (c) of the Capital Improvements Element states that the minimum drainage LOS standard for non-residential development requires a floor elevation of one (1) foot above the 100-year/critical duration storm elevation or flood resistant construction. Any future development on this site will be required to meet this standard.

Emergency Services

Policy 1.2.5 (a) of the Capital Improvements Element states that the LOS standard for fire services in the area in the rural area is as follows:

- In the rural area, initial unit response LOS guideline is within 12 minutes for 80% of all emergency responses within a 12-month period. Fire suppression/protection service level for all properties

in the Rural Area shall be at the ISO (Insurance Service Office) Class Protection of <10. Development will provide adequate water supply for fire suppression and protection, and fire service compliant fire connections, required through land development regulations.

All development will be required to meet these standards.

Solid Waste

The level of service (LOS) standard for solid waste disposal, used as the basis for determining availability of disposal capacity to accommodate the demand generated by existing and new development in Alachua County, is at a minimum, at 0.8 inbound tons per person per year at the Leveda Brown Environmental Park in 2018 and thereafter.

Schools

The proposed use is non-residential in nature. There will be no impact to school capacity levels as a result of this request.

Recreation

The proposed use is non-residential in nature. There will be no impact to recreational level of service standards as a result of this request.

Impact Analysis

Noise

Contrary to general belief, solar arrays are not silent. The panels generate power that is sent to a device known as an inverter. These inverters are responsible for transforming the DC current generated by the panels into AC current and then transmitting this power to a dedicated substation nearby. Here it is converted to a voltage that can then be sent using transmission lines already in place and connecting to the Duke Energy Substation. The panels themselves will be placed 150 feet in from the parcel boundary. This setback area will include a minimum 50-foot wide buffer per the applicant's site plan. However, of greater importance is the placement of the inverters, especially in relation to the rest of the site. Inverters are placed where they will provide maximum efficiency for distribution of the generated power to the substation and then onto the grid. As such, placing these units in perimeter areas is not efficient, as this would entail longer runs from the panels to the inverters. The most efficient placement is therefore in the midst of the array, where runs from panels will be shorter. A good example of this can be found in the FPL array built in the eastern part of Alachua County in 2016-2017.

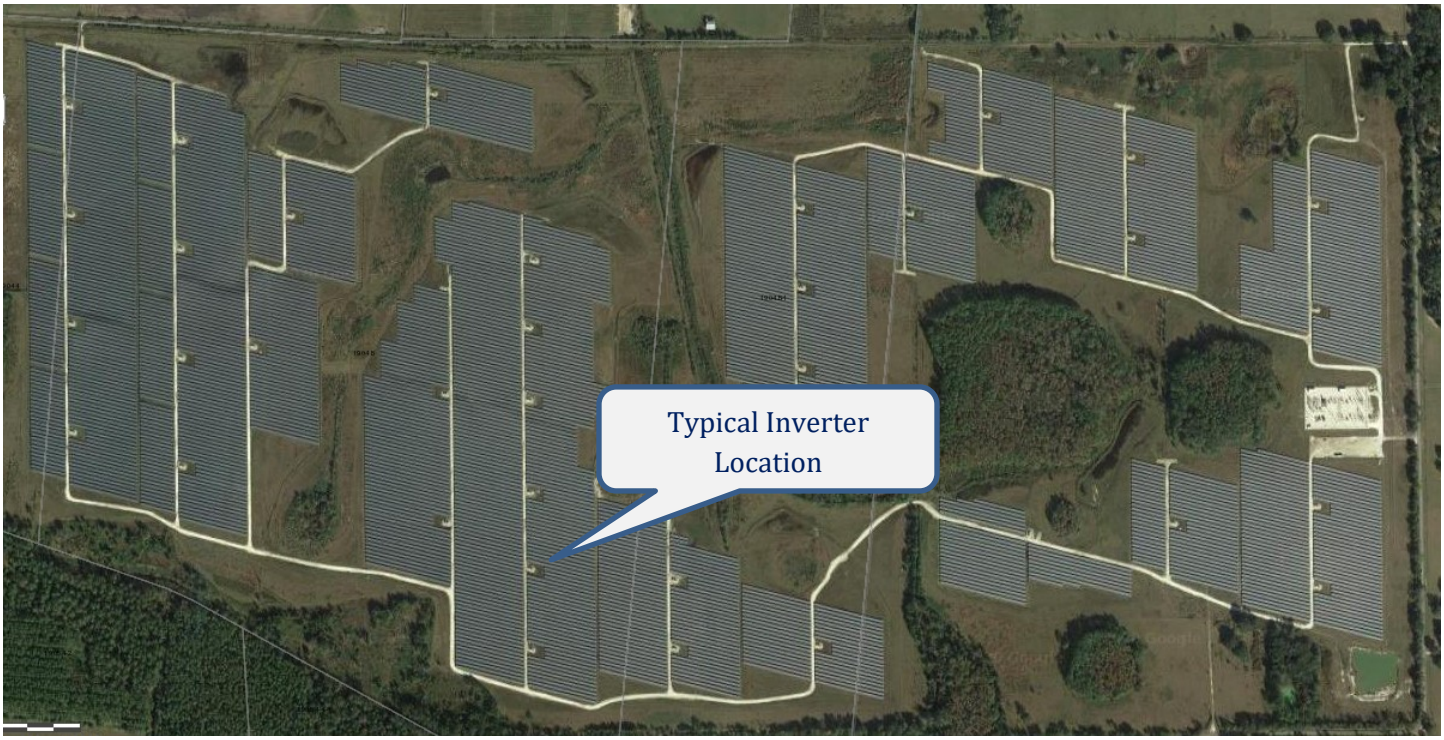

Figure – Aerial View of FPL Solar Array in eastern Alachua County. Note inverter locations in relation to the arrays.

As shown in the above figure, inverters are clearly seen as being located internal to the panel installations on the site. These panels do act to buffer the noise generated from the inverters. However, more importantly, their location provides added distance between these units and the parcel boundary. The applicant has stated, and the special exception is conditioned, that inverters will be a minimum of 350 feet from the parcel boundary. The distance, combined with the noise attenuation provided by both the panels and the vegetative buffer, will mitigate any noise impacts caused by the inverters.

Per the applicant (6/5/2020 Michael Richard email to staff):

The exact decibel level is difficult to estimate because most manufacturers do not readily provide that information and the impact depends on the amount of noise already in the area. Studies measuring noise levels at solar sites have found that noise from inverters usually drops to ambient levels at the project fence, and the vegetated buffer we propose will certainly help to reduce noise. Inverter noise is constant but inverters only function when the plant is in operation during the day, and would not generate noise at night. Noise from the substation is also constant but typically drops to ambient levels around 0.25 mile. There is a baseline noise level due to the Duke substation which will not be substantially exceeded by our project substation.

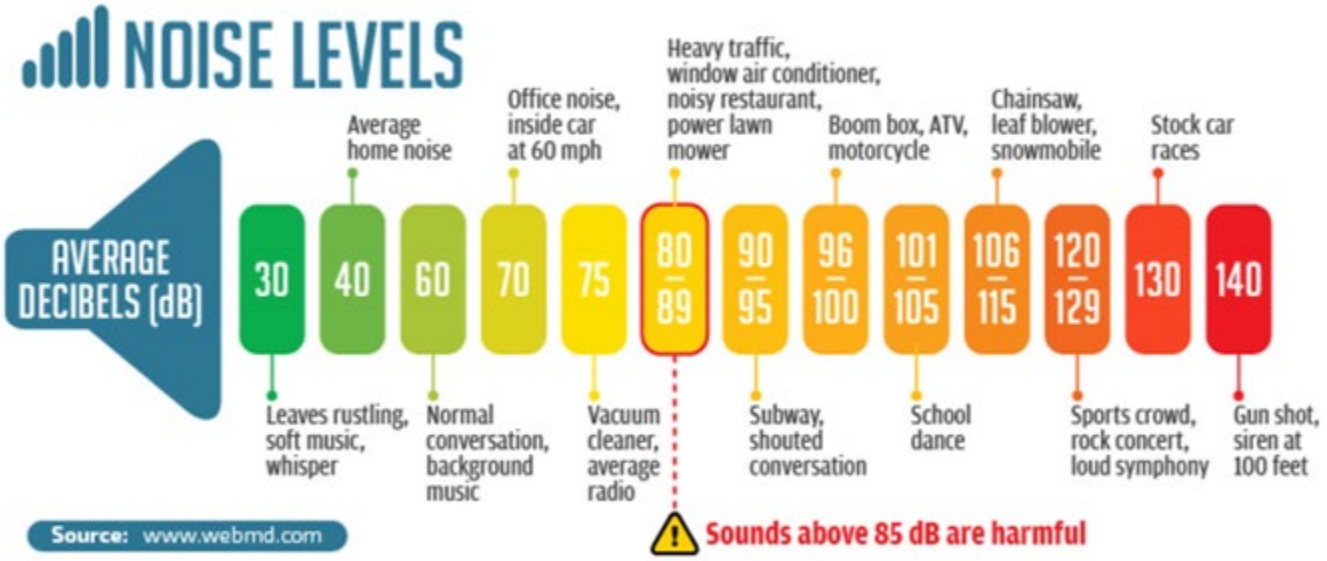

Figure – Table Showing Typical Noise Levels

Typical noise levels are shown the figure above. While it is acknowledged that some noise is generated by these facilities, studies have found that these usually fall within the spectrum of background noise that is present even in areas where population density is low (e.g. 30 decibels). A study made by the Massachusetts Clean Energy Center concluded the following (*Study of Acoustic and EMF Levels for Solar Photovoltaic Projects*, Massachusetts Clean Energy Center: 2012):

At the utility scale sites, sound levels along the fenced boundary of the PV (ed: photo voltaic) arrays were generally at background levels, though a faint inverter hum could be heard at some locations along the boundary. Any sound from the PV array and equipment was inaudible and sound levels are at background levels at set back distances of 50 to 150 feet from the boundary.

As noted, the arrays will be set back 150 from the property boundary and include a vegetative buffer. As stated by the applicant after discussion with the project engineers, inverters will be placed a minimum of 350 feet from the parcel boundary with the average inverter 550 feet away. Such distances, when combined with buffering should reduce any noise levels to ambient levels. No evidence has been found to support any conclusion that background noise levels will produce harmful effects on surrounding residential or agricultural development. It should be noted that existing electrical transmission infrastructure already exists in the area (powerlines, Duke Energy Substation) without apparent impact to surrounding residential properties. The overhead transmission facilities were not observed during site visits to produce noise levels much above ambient levels.

Property Values

A second area of identified potential concern is to home/property values resulting from the construction of a facility such as the one being proposed. Staff discussions with the Alachua County Property Appraiser's Office (Sheila Crapo, 6/17/20) indicate that, in Alachua County, previously approved solar facilities (mentioned earlier in this report) had not had an adverse impact on property values. This

understanding is further supported by the executive summary for a recent study for Ogle County, Illinois (Adjacent Solar Property Value Impact Study: A Study of Nine Existing Solar Farms, 2018) that concluded the following:

We have also reviewed published methodology for measuring impact on property values as well as published studies that specifically analyzed the impact of solar farms on nearby property values. We have also interviewed market participants, including Township Assessors, to give us additional insight as to how the market evaluates farm land and single-family homes with views of the solar farm. These studies found little to no measurable and consistent difference in value between the Test Area Sales and the Control Area Sales attributed to the proximity to solar farms and are generally considered a compatible use. Considering all of this information, we can conclude that since the Adjoining Property Sales (Test Area Sales) for the existing solar farms analyzed were not adversely affected by their proximity to solar farms, that properties surrounding other solar farms operating in compliance with all regulatory standards will similarly not be adversely affected, in either the short or long term periods.

Lighting

Per the applicant, (Conversation with Michael Richard: 6/17/20) lighting at the facility will consist of the following:

- Security lighting around the proposed substation. This is a high voltage facility and the lighting is necessary to ensure public safety.
- A security light at the main entrance to the arrays.

An existing security building at the Duke Energy Substation is proposed to be used by staff from Duke Energy. It is possible that this building will have security lighting (similar to porch lights) on it as well. No other lighting is proposed or needed for the remainder of the facility. Staff visited a similar facility near Ft. White that is newly commissioned, built by First Solar and run by Duke Energy. The only exterior lighting sources visible on the property were those associated with the substation. These were shielded downlights similar to street lights but in clusters of four. These are for the security of the substation, which is a high voltage area. There were no lights associated with the arrays themselves. The overall effect is consistent with lighting associated with development permitted in the rural/agriculture area (e.g. farm or agricultural processing facility).

Traffic

Traffic impacts associated with the Archer Solar project can be divided into two phases: land clearing/construction and operations. The estimated construction period for the site is one year from initiation of clearing to the facility going operational. During that period, there will be construction traffic associated initially with the clearing of the land and then additional construction traffic for the building of the arrays and substation. Upon completion of the construction phase, traffic is reduced to maintenance of both the arrays as well as quarterly mowing of the property to control growth. For comparison, a typical single-family residence (in any zoning district) generates 10 daily trips (5 each way). The proposed solar facility will generate 6-10 trips per day, similar to a single-family residence.

Visual Impacts

As proposed, the PV arrays will occupy the majority of the property with exceptions as noted on the site plan (see Figure below). The entire site will be surrounded by a 50-foot wide buffer consisting primarily of existing vegetation. The arrays themselves will be set back an addition 100 feet beyond that for a total of 150 feet between the property boundary and the beginning of the array placement.

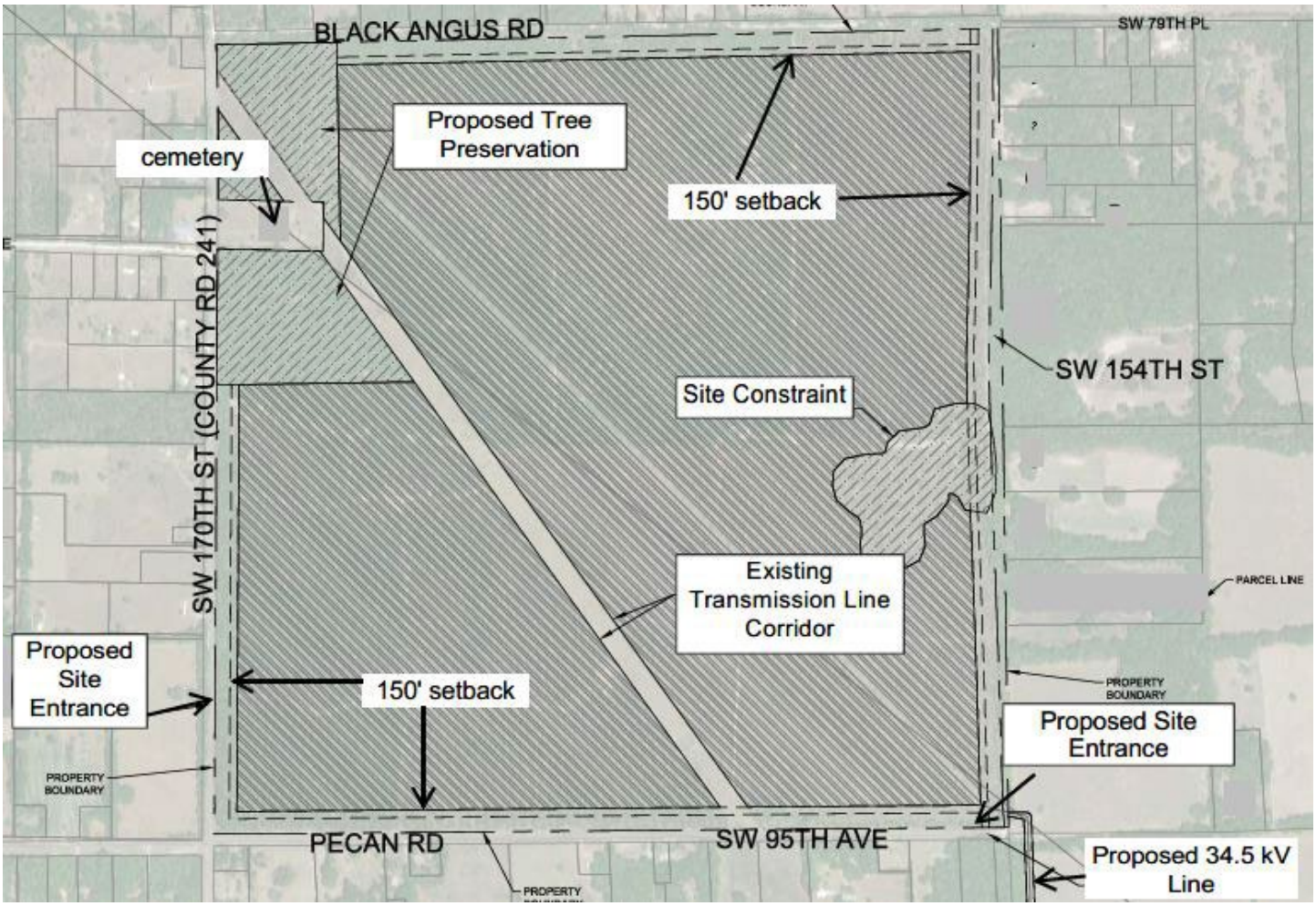

Figure – Site Plan for Proposed Facility

While the site plan calls for a 50-foot wide buffer, the special exception is being conditioned to require that this be a medium density buffer as defined in the ULDC. While this contemplates using existing vegetation as much as possible, the DRC can require additional plantings to ensure that opacity requirements of the Code are being met.

Environmental Justice

Siting of large solar arrays is based on a set of criteria employed by companies to assure maximum efficiency. These include (but are not limited to) the following:

- Large tracts of flat land to accommodate solar arrays, preferably under single ownership or limited to a small number of owners;
- Lack of treed vegetation if at all possible;
- Limited natural or other environmental resources that may impact the overall project;
- Proximate and ready access to the power grid via a substation to provide transmission of generated power;
- Maximum southern exposure.

Solar energy is an alternate, renewable energy source that can be placed almost anywhere that meets the above criteria. As shown on the map below, previous solar facilities approved by the BoCC are not situated in any one area of the county. Rather, they have been placed in areas whose location meets the previously mentioned thresholds. Beyond these factors, availability of land and a willing seller play a part in deciding final siting of such arrays within the County. As such, larger arrays, such as the one being proposed with this application, are not normally located within urbanized areas where scarcity of large tracts of land needed for such a project would render the project infeasible. Siting of the arrays is thus predicated on a set of factors that will optimize operation of the facility and not on surrounding population demographics.

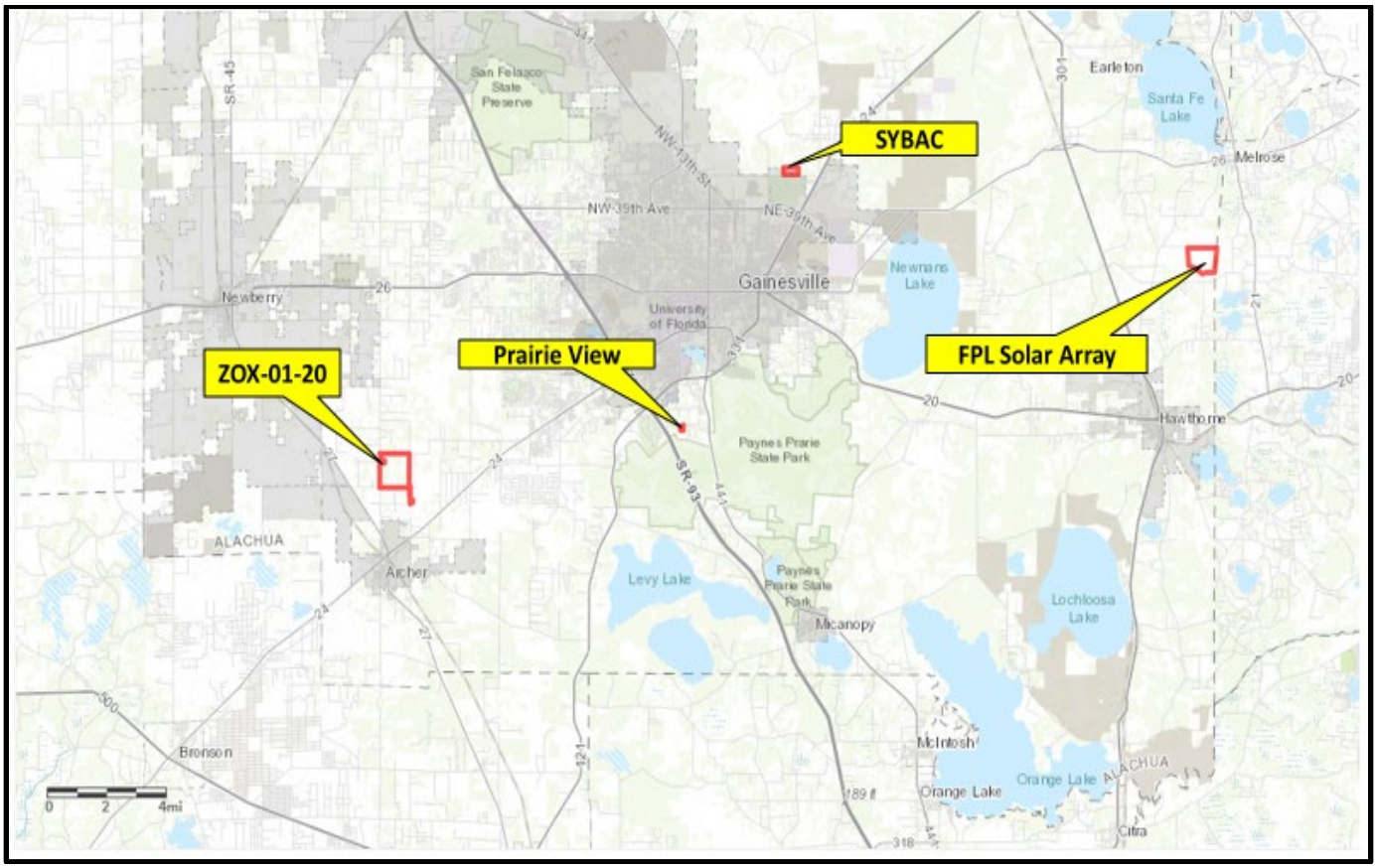

Figure – Location of Existing and Proposed Solar Arrays in Alachua County

Impacts to Natural and Historic Resources

The total project area is approximately 643 acres, 628 acres of which is proposed for the actual solar facility (Solar Site) with another 15 acres proposed to be under easement (Gen-Tie Easement) in order to tie into the existing power grid. This 15 acres will include a proposed combination or overhead and underground transmission cables to connect the arrays to an existing Duke Energy Substation. The majority of the project area consists of relatively young industrial pine plantation (approximately 389 acres) or dense, young, second- or third-growth hardwoods dominated by upland laurel oak (approximately 220 acres). Approximately six acres of the Gen-Tie Easement consists of mature, high quality hardwoods (largely Live Oak). The remainder of the project area consists of previously cleared electrical transmission lines (approximately 19 acres) and improved pasture (approximately nine acres).

The project area contains none of the following natural resources afforded special protection in the comprehensive plan and land development code: surface waters, wetlands, 100-year floodplains, strategic ecosystems, significant plant and wildlife habitat, listed species habitat (more on this in the listed species discussion below), conservation/preservation/recreation lands, wellfield protection areas, or mineral resource areas.

A number of state-regulated gopher tortoises have been observed within the project area, though not within high quality natural vegetative communities and not in population densities that would suggest designation of the pine plantation as "listed species habitat." There may be other species of state-regulated wildlife (e.g., gopher tortoise commensals, eastern indigo snakes, Florida pine snakes, southeastern fox squirrels, etc.) that have not yet been documented on the property. Potential impacts to all state-regulated wildlife species are subject to a permitting process administered by the Florida Fish and Wildlife Conservation Commission (FWC). Should the Special Exception be approved by the BoCC, staff will ensure appropriate coordination with the FWC during the development plan review process.

The project lies within a county-designated "high aquifer recharge area." Should the Special Exception be approved, all relevant protective provisions of the Comprehensive Plan, land development regulations and environmental codes will be applied during the development plan review process.

One potentially significant geologic feature, a sinkhole, was discovered near the eastern boundary of the Solar Site. Currently, the applicant proposes to protect and buffer it as part of a larger area set aside to avoid disturbance of a potentially significant historic resource area.

The applicant conducted a professional Phase I Cultural Resource Assessment Survey (CRAS) of the project area. As a result of this effort, three new archaeological sites were identified. Two of the three do not appear to be consistent with accepted criteria for designation as "significant." The third was identified as a site that may have potential to meet significance criteria, pending further study. This third site included the sinkhole feature mentioned above. Rather than conduct a Phase II survey, the applicant has chosen to identify this entire area as a site constraint and to avoid any disturbance of the resource. The Florida State Historic Preservation Office (SHPO) has reviewed the CRAS and found it to be complete and sufficient (Division of Historic Resources Letter: 6/5/2020). No National Register eligible structures were found in the project area.

Creation of Heat Islands

Another area of concern is the creation of so-called 'heat islands.' The theory is that large amounts of glazing from the arrays create pockets of air where the temperature levels can increase. Studies have shown that this indeed can be a phenomenon resulting from the placement of arrays but is more pronounced in urban areas where there is a lack of porous or vegetative surfaces. The effect is mostly mitigated in rural areas when arrays are located above ground and air is allowed to circulate. The arrays cool at night with temperatures returning to ambient levels. As with noise, distance is a mitigating factor. In their study *Analysis for the Potential of a Heat Island Effect in Large Solar Farms*, Columbia University Scientists Fthenakis and Yu conclude:

> *The field data and our simulations show that the annual average of air temperatures at 2.5 m of the ground in the center of simulated solar farm section is 1.9H higher than the ambient and that it declines to the ambient temperature at 5 to 18 m heights. The field data also show a clear decline of air temperatures as a function of distance from the perimeter of the solar farm, with the temperatures approaching the ambient temperature (within 0.3H), at about 300 m away. Analysis of 18 months of detailed data showed that in most days, the solar array was completely cooled at night, and, thus, it is unlikely that a heat island effect could occur*

The heat island effect does exist. However, the nature of the environment in which the array is placed has an effect on the degree of effect. Grassy soils absorb more than desert sand, for example. The effects are localized and can be mitigated through use of vegetation and distancing/buffers.

Health Impacts

Potential health impacts can be divided into three categories:

- Impacts from ongoing maintenance at the site;
- Impacts from materials used in the arrays themselves;
- Impacts from the operation of the array on surrounding residents.

As previously mentioned, ongoing mowing of the site will occur on a quarterly basis. This is necessary to control vegetated growth and thus ensure maximum efficiency from the solar panels. The applicant has stated that a commercially available herbicide is used along fence perimeter areas and also at the proposed substation to control weed growth (Michael Richard: 6/17/20). Herbicide is not applied on a wide scale around arrays as it is unnecessary due to the mowing protocols in place. Use of herbicides is common in the rural/agriculture area, especially in connection with farm operations. The application and use of such products at the proposed solar array will be limited in scope and consistent with agricultural operations permitted by right in rural areas. A condition requiring a plan for herbicide use will be submitted for review and approval by the Environmental Protection Department as part of the site plan approval process.

First Solar's panels use thin-film technology which is different from crystalline silicon solar panels. Thin film panels have been studied on numerous occasions and are safe under normal operation. The associated components are materials typically used in construction like galvanized steel and aluminum. The posts and racking which hold the panels are made of galvanized steel or aluminum, and the electrical inverters are housed in weatherproof steel enclosures to protect the electrical components.

Arguments for health impacts from solar arrays frequently center around electro-magnetic fields (EMF's). Photovoltaic (PV) systems do not emit any material during their operation; however, they do generate electromagnetic fields (EMF), sometimes referred to as radiation. EMF produced by electricity is nonionizing radiation, meaning the radiation has enough energy to move atoms in a molecule around (experienced as heat), but not enough energy to remove electrons from an atom or molecule (ionize) or to damage DNA. Modern humans are all exposed to EMF throughout our daily lives without negative health impact. Someone outside of the fenced perimeter of a solar facility is not exposed to significant EMF from the solar facility. Therefore, there is no negative health impact from the EMF produced in a solar farm. (North Carolina Clean Technology Center: *Health and Safety Impacts of Solar Photovoltaics*: May 2017).

There does not appear to be conclusive evidence that solar photovoltaic facilities produce any harmful effects either from the cells and their associated components or from their operation. In addition, the ongoing maintenance of the facility with limited use of commercially available herbicides (e.g. Round-Up) does not suggest long-term negative effects on surrounding residential uses through groundwater contamination. However, in order to address this issue, a condition has been proposed as part of the special exception (should it be approved) that will require the applicant to submit an herbicide plan for review by EPD staff as part of the Development Review process.

Comprehensive Plan Consistency

Energy Element

The stated goal of the energy element is to *reduce greenhouse gas emissions and fossil fuel consumption; mitigate the effects of rising energy costs and promote the long-term economic security of Alachua County through energy conservation, energy efficiency* ***and renewable energy production.*** Further, the strategy section to achieve these goals has three priorities, the third of which is to ***promote and invest in renewable energy production***. The present application will fulfill this goal by permitting the placement of renewable energy production facilities within the County, consistent with the policies found elsewhere in the Element

OBJECTIVE 6.1 of the Energy Element states that Alachua County shall ***Encourage renewable energy production and a countywide system of distributed residential and commercial power generation.*** The present application for a solar array fulfills this objective by location a commercial solar energy generation facility within the County. Such a facility will feed into the commercial grid and provide clean, renewable power while reducing dependency on non-renewable energy sources such as coal and oil. The proposed plant can provide power generation to users both within the County as well as surrounding areas. Duke Energy supplies the following local distributors and municipalities (Vanessa Goff email: 6/30/2020):

- Cities of Archer, High Springs, LaCrosse, Micanopy
- University of Florida
- Seminole Electric Co-op, Central Florida Electric Co-op, Clay Electric Co-op

Future Land Use Element

Institutional Policies

Policy 5.1.1 of the Future Land Use Element (Institutional Uses) states that *Potential locations for major future institutional uses are identified on the Future Land Use Maps.* ***Institutional uses may be allowed in other land use categories designated on the Future Land Use Map, and implemented in accordance with the guidance and policies within this Section 5.0., and within the Comprehensive Plan as a whole.*** The proposed use as a solar array is identified in this section of the Future Land Use Element as an institutional use (Policy 5.1.2(c) – Public Utility, Communications or Infrastructure Services). The location of this utility (in an area designated Rural/Agriculture on the Future Land Use Map) is appropriate in that the parcel in question meets the characteristics necessary for a major photovoltaic array. The site is adjacent to distribution facilities (there is an existing electrical substation nearby and transmission lines bisect the proposed array site); has ready access to roads needed to provide access to the site and has an orientation necessary to provide maximum exposure.

Policy 5.1.2 of the Future Land Use Element (Institutional Uses) identifies institutional and governmental uses in Alachua County. Specifically, **Policy 5.1.2(c)** states that public utilities and infrastructure services are considered institutional uses. The specific policy language for public utilities and infrastructure services is found in **Policy 5.5.1** of the Future Land Use Element. This language states that *Public utilities distribution facilities (electrical, gas, telephone, and cable) shall be located in common corridors where practical from an engineering and economic standpoint to reduce land costs and to minimize the impacts of exposing new land to such uses. The land development regulations shall specify the factors that would be applicable to the location of such utilities distribution facilities in common corridors to the extent such locational decisions are within the County's legal authority. Factors that shall be addressed in determining practicality include things such as compliance with federal, state and local codes, safety and maintenance requirements relating to horizontal and vertical separation of facilities, soil and subsurface conditions and structures, efficiency and sustainable delivery to the end user, and ability of different utility providers to secure necessary coordination with other providers in a timely manner.* The proposed utility is located near a common corridor (SW 170th Street and SW 95th Avenue). First Solar will be constructing a substation on property leased near the site for distribution of the generated electricity to a power grid that will feed into its larger network. It is therefore suited to feed into the existing power grid with minimal intrusion on the landscape.

Objective 5.5 of the FLUE states that *Infrastructure and utility structures, such as communication towers, personal wireless service facilities, radio and television antennas, water and sewer, and energy generation and distribution facilities shall be designed and located to eliminate or minimize adverse visual impacts on the landscape.*

The site plan proposed for this site indicates that a 50-foot wide vegetative buffer will be provided around the entire facility. The nature of the existing vegetation on the site is a mixture of native species and planted pines. In certain areas of the site, the planted pines will provide partial screening from visual impacts on the surrounding properties. If necessary, this buffer can be supplemented with additional planting needed to provide a more complete buffer if so condition by the special exception. In addition, there is a 100-foot wide setback beyond the buffer to the placement of the arrays. This will also serve to partially mitigate the visual impact of these arrays on surrounding properties.

Policy 5.2.1 provides location criteria for institutional uses. *The following criteria shall determine the appropriateness of potential institutional locations and uses requiring special use permits shall be demonstrated prior to establishing the institutional use:*

a. Optimum service area.

The proposed solar array is considered an institutional use as defined in the Plan. The service area as such is regional in nature. In feeding into the electrical grid, the proposed Archer facility can provide power for an area within Alachua County as well as extending beyond Alachua County's borders.

b. Optimum operating size.

The proposed facility will produce 74.9 megawatts at full capacity. This is the output generated by a typical facility of this size. Due to the nature of surrounding development, a larger facility at this site is not possible. This size, however, is the nominal operating capacity for facilities of this nature and is typical of other solar arrays found elsewhere in north central Florida.

c. Access to clientele.

An existing substation facility and distribution lines are located in the area with the main power transmission line bisecting the project site. These will be used for distribution of generated electricity to the grid and then onto the customer base of the utility.

d. Compatibility of the scale and intensity of the use in relationship to surrounding uses, taking into account impacts such as, noise, lighting, visual effect, traffic generation, odors.

The nature of the facility is such that adverse impacts as listed will be minimal. Noise generation at the site is primarily centered on the units known as inverters that are located throughout the site. This equipment is responsible from converting the DC current produced by the panels into AC current suitable for consumption. As the panels power up with the sun, these inverters switch on and, at full production, produce what can be described as a humming noise similar to an air conditioning unit operating. When evening arrives and the sun goes down, these units switch off and cease operation with darkness. There are no noise levels overnight. The placement of these inverters within the arrays themselves will help mitigate any noise. More importantly, distance and the provision for buffering at the property line will do much to offset any noise produced by these units.

Lighting at the site will be limited to security lighting at the substation facility. There will be no lighting of the arrays themselves. In addition, it is possible that a security light may be employed at the entrance(s) to the facilities.

The facility will produce no odors. Traffic generation will be from 3-5 cars a day (6-10 trips). As a means of comparison, a typical single-family residence will generate approximately 10 trips per day (I.T.E. Generation Manual, 8th Edition). Therefore, the

traffic generated by this use will be no more than that of a single-family household in the area.

A buffer of 50 feet is being proposed for the entire site to mitigate visual impacts to surrounding residential uses.

e. Nature of service provision.

The proposed facility is being built to provide electrical power. The trend toward renewable energy sources and away from fossil fuels means that older plants that rely on coal or oil for their power source can gradually be decommissioned as more clean energy plants come online. The proposed plant is one in a series being built in North Central Florida to achieve this purpose. The placement of these facilities can be correlated to cell towers, where the infrastructure is being disbursed closer to the population that it serves.

f. Needs of the clientele.

The proposed facility is one of a series in North Central Florida being brought online to reduce emissions from fossil fuels. The site will supply the needs for customers in-county (proposed operation Duke Energy supplies energy to Gainesville Regional Utilities, Clay Electric and Florida Power as well as being the sole provider of electricity for local municipalities such the City of Newberry.

g. Availability and adequacy of public infrastructure to serve the particular use

Level of service standards found in the Plan will not be adversely impacted by this request. The nature of the facility does not impact recreation or schools, generates very small amounts of solid waste and represents little impact to local roads (approximately the same amount as a single-family residence. Public infrastructure will not be compromised by this request.

h. Preservation and strengthening of community and neighborhood character through design

A 50-foot wide medium density vegetative buffer is required as part of the conditions associated with the approval of this special exception. While such a buffer will use existing vegetation to the greatest extent possible, the Development Review Committee may, upon review, require any additional planting necessary in order to ensure consistency with the opacity requirement s of such a buffer as found in the Unified Land Development Code.

i. Consistency with the goals, objectives, and policies of the Conservation and Open Space Element

The proposed solar array is consistent with the Goals, Policies and Objectives of the COSE. Comments provided by the Environmental Protection Department (EPD) indicate that *the project area contains none of the following natural resources afforded special protection in the comprehensive plan and land development code: surface waters, wetlands, 100-year floodplains, strategic ecosystems, significant plant*

and wildlife habitat, listed species habitat, conservation/preservation/recreation lands, wellfield protection areas, or mineral resource areas. Site resources identified via a professionally conducted Cultural Resources Assessment are being avoided per the development plan.

A number of state-regulated gopher tortoises have been observed within the project area, though not within high quality natural vegetative communities and not in population densities that would suggest designation of the pine plantation as "listed species habitat." There may be other species of state-regulated wildlife (e.g., gopher tortoise commensals, eastern indigo snakes, Florida pine snakes, southeastern fox squirrels, etc.) that have not yet been documented on the property. Potential impacts to all state-regulated wildlife species are subject to a permitting process administered by the Florida Fish and Wildlife Conservation Commission (FWC). Should the Special Exception be approved by the BoCC, staff will ensure appropriate coordination with the FWC during the development plan review process.

The project lies within a county-designated "high aquifer recharge area." Should the Special Exception be approved, all relevant protective provisions of the Comprehensive Plan, land development regulations and environmental codes will be applied during the development plan review process.

Policy 7.1.2 of the Future Land Use Element states that: *Proposed changes in the zoning map shall consider:*

a. consistency with the goals, objectives, policies and adopted maps of the Comprehensive Plan

The proposed solar array is consistent with the Goals, Policies and Objectives of the Plan and ULDC. The Energy Element has as its stated goal the promotion of alternatives forms of energy within the County as well as the reduction of greenhouse gases. Both goals are achieved by the placement of a solar facility on this site, which is a renewable energy sources the emits no greenhouse gases. Further, this public utility, as an institutional use identified in the Future Land Use Element of the Plan (Objective 5.5), is permitted in all land use categories per Policy 5.5.1(a) of the Plan. The proposed special exception associated with this request will not cause levels of service found in the Capital Improvements Element of the Plan to fall below adopted levels nor will public infrastructure such as schools and transportation corridors be adversely impacted by this request.

b. the availability and capacity of public facilities required to serve the development. When considering a rezoning, this includes availability and capacity of existing public facilities and timing of future facilities based on capital plans. Specific determinations for any exceptions to the requirement to connect to a centralized potable water and sanitary sewer system will be made at the stage of development plan review, as detailed in Policy 2.1 of the Potable Water and Sanitary Sewer Element.

Level of service standards found in the Plan will not be adversely impacted by this request. The nature of the facility does not impact recreation or schools, generates very small amounts of solid waste and represents little impact to local roads (approximately the same amount as a single-family residence. Public infrastructure will not be compromised by this request.

c. the relationship of the proposed development to existing development in the vicinity and considerations relating to environmental justice and redevelopment opportunities.

The proposed facility is the fourth proposed for placement in Alachua County. These facilities are spread across the county and are placed in proximity to the infrastructure that will enable the efficient distribution of the generated power. As such, they are typically placed anywhere where distribution lines already exist. In the case of the First Solar facility, a transmission line bisects the proposed array site and an existing Duke Energy substation is located close to the property.

The surrounding parcels have a similar land (Rural/Agriculture) and zoning district (Agriculture). Most lots are occupied by single family residences. The parcel where the arrays are proposed is undeveloped save for an existing cemetery (located on a separate but adjacent parcel). A similar facility was approved for eastern Alachua County in 2016 (same land use and zoning). That facility has been in operation for three years with no known impacts to surrounding development.

Solar energy is an alternate, renewable energy source that can be placed almost anywhere that meets the above criteria. As shown on the map below, previous solar facilities approved by the BoCC are not situated in any one area of the county. Rather, they have been placed in areas whose location meets the previously mentioned thresholds. Beyond these factors, availability of land and a willing seller play a part in deciding final siting of such arrays within the County. As such, larger arrays, such as the one being proposed with this application, are not normally located within urbanized areas where scarcity of large tracts of land needed for such a project would render the project infeasible. Siting of the arrays is thus predicated on a set of factors that will optimize operation of the facility and not on surrounding population demographics.

d. those factors identified by law, including that as a general matter an applicant is not entitled to a particular density or intensity within the range of densities and intensities permitted by the Comprehensive Plan, given due consideration of legitimate public purposes relating to health, safety, and welfare.

The applicant is requesting a special exception for a public utility. No residential density is applicable. The special exception, if approved, will permit a solar array, consistent with the provisions of the Comprehensive Plan and ULDC relating to Institutional uses.

Unified Land Development Code (ULDC) Consistency

Sec. 402.113 of the ULDC states that *the Board of County Commissioners shall, as part of a decision to approve an application for special exception, make a finding that an application complies with both the general criteria and the review factors listed below.*

(a)The proposed use is consistent with the Comprehensive Plan and ULDC;

The proposed solar array is consistent with the Goals, Policies and Objectives of the Plan and ULDC. The Energy Element has as its stated goal the promotion of alternatives forms of energy within the County as well as the reduction of greenhouse gases. Both goals are achieved by the placement of a solar facility on this site, which is a renewable energy sources the emits no greenhouse gases. Further, this public utility, as an institutional use identified in the Future Land Use Element of the Plan (Objective 5.5), is permitted

in all land use categories per Policy 5.5.1(a) of the Plan. The proposed special exception associated with this request will not cause levels of service found in the Capital Improvements Element of the Plan to fall below adopted levels nor will public infrastructure such as schools and transportation corridors be adversely impacted by this request.

(b)The proposed use is compatible with the existing land use pattern and future uses designated by the comprehensive plan;

Compatibility is defined as *a state in which two things are able to exist together without problems or conflict.* The provisions as outlined can result in a project that, while ***different*** than the uses surrounding it, is also compatible with those uses.

The proposed facility is a solar array. The land use for the site as well as all surrounding properties is Rural/Agriculture. The Comprehensive Plan recognizes that certain uses or development may include uses with intensities or characteristics that differ with surrounding development. These are evaluated on a case-by-case basis to ensure that the size, extent and character of that use is compatible with surrounding uses. (Policy 7.1.17/FLUE). In cases such as these, this policy states that the ULDC shall provide for a process to evaluate these uses (special exception, special use permit or temporary use permit). A special exception can provide conditions or other mitigation in order to achieve compatibility with surrounding uses. In this case, a buffer and setback are being proposed to aid in mitigating visual impacts. The array will not generate odors nor cause traffic impacts to surrounding road facilities. Noise impacts as discussed can be mitigated through placement of inverters away from parcel boundaries and the provision of a vegetative buffer. In the case of the proposed request, staff is recommending a minimum 50-foot wide medium density vegetative buffer. This will consist, wherever possible, of existing vegetation on the site that can then be supplemented by additional planting as determined by the Development Review Committee to provide screening for surrounding properties and to help mitigate others impacts that may occur onsite.

(c)The proposed use shall not adversely affect the health, safety, and welfare of the public; and

The proposed array is the second large scale array proposed for Alachua County. A previously approved array for Florida Power and Light (FPL) has the same output capacity as the proposed Archer facility. Using this facility as a guidepost, it can be concluded that the approval of these arrays will not impact the health, safety or welfare of the citizens of Alachua County. In addition, studies referenced as part of the background materials for this application show conclusively that solar arrays do not pose a health or safety, either for surrounding property owners or the public in general. The applicant has provided buffers to help mitigate visual impacts that may be perceived from the installation of the arrays on this site.

(d)Satisfactory provisions and arrangements have been made concerning the following matters, where applicable:

(1) Ingress and egress to the property and proposed structures thereon with particular reference to automotive, bicycle, and pedestrian safety and convenience, traffic flow and control and access in case of fire or catastrophe;

The applicant has shown that 2 ingress/egress points will be provided for this facility on their site plan. These will be used by maintenance workers to access the property on a regular basis. No public ingress/egress will be permitted to the property.

(2) Off-street parking and loading areas where required, with particular attention to item (1) above;

Limited off-street parking will be provided for workers per the Alachua County ULDC

(3) The noise, glare or odor effects of the special exception on surrounding properties;

The proposed array will have no odors. Planning staff has visited a similar site north of Alachua County and can confirm that no odors are emitted by such a proposed facility. The panels are glass-encased and by design any glare would be counter-productive to energy production. However, some reflection is present. A surrounding buffer of trees and 150-foot setback from property lines mitigates glare. In addition, the proposed panels are tracking. In other words, they move very slowly to maximize exposure to the sun. This can aid in mitigating the effects of glare are the panels optimize their exposure to ensure maximum efficiency.

Any noise emanating from a solar array is caused by the presence of inverters. These units are placed internal to the arrays and served to convert DC power produced by the panels to AC current. At full capacity there is noise that can be equated to an outdoor air conditioner functioning. However, placement of these units amongst the arrays serves two purposes. The arrays help abate noise by acting as a physical barrier. Also, this adds distance to the property boundary and the mitigating effects of the buffer. Staff visits to an existing facility in Ft. White could not detect noise at the property boundary from that facility.

(4) Refuse and service areas, with particular reference to location, screening and items (1) and (2);

Refuse areas will be screened on site per the ULDC

(5) Utilities, with reference to location and availability;

The proposed facility is a solar facility generating electricity for public consumption.

(6) Screening and buffering with reference to type, dimensions and character;

A 50-foot wide medium density vegetative buffer consisting of existing vegetation will be provided per the site plan. Supplemental plantings will be provided as required by the Development Review Committee in order to ensure that buffering and screening requirements can be met or are in place.

(7) Signs, if any, and proposed exterior lighting with reference to glare, traffic safety and compatibility with surrounding properties;

Any signage present at the site will be required to adhere to the sign code for rural agriculture land use/zoning as found in the ULDC.

(8) Required yards and other open space;

There is Conservation Open Space proposed to buffer a significant geologic feature. Non-conservation open space is not a requirement of non-residential development. Proposed buffers, setbacks and tree canopy protection areas will provide additional undeveloped greenspace.

(9) General compatibility with surrounding properties; and

The proposed facility is a solar array. The land use for the site as well as all surrounding properties is Rural/Agriculture. The Comprehensive Plan recognizes that certain uses or development may include uses with intensities or characteristics that differ with surrounding development. These are evaluated on a case-by-case basis to ensure that the size, extent and character of that use is compatible with surrounding uses. (Policy 7.1.17/FLUE). In cases such as these, this policy states that the ULDC shall provide for a process to evaluate these uses (special exception, special use permit or temporary use permit). A special exception can provide conditions or other mitigation in order to achieve compatibility with surrounding uses. In this case, a buffer and setback are being proposed to aid in mitigating visual impacts. The array will not generate odors nor cause traffic impacts to surrounding road facilities. Noise impacts as discussed are mitigated through placement of inverters away from parcel boundaries and the provision of a vegetative buffer.

Compatibility is defined as *a state in which two things are able to exist together without problems or conflict.* The provisions as outlined can result in a project that, while ***different*** than the uses surrounding it, is also compatible with those uses.

(10) Any special requirements set forth in this ULDC for the particular use involved.

The ULDC has been amended to address tree canopy retention requirements as related to solar arrays. Specifically, **Sec. 406.11(c)** exempts utility-scale solar facilities (> 5 megawatts) from the requirement that 30% of the site be under mature tree canopy within 20 years.

Staff Recommendation

Staff recommends that the requested special exception be **approved** with the following conditions and bases.

Conditions

1) This special exception is granted to permit a solar photovoltaic facility on approximately 650 acres on parcel numbers 04588-000-000, 04588-001-000, 04588-001-001 and portions of parcels 04595-000-000 and 04631-000-000.

2) The applicant shall be required to maintain SW 170th Street from SW 95th Avenue north to SW 79th Place and SW 95th Avenue from SW 170th Street east to SW 154th Street during construction. The applicant shall notify the Public Works Department a minimum of five business days prior to the commencement of construction so that the Department can evaluate the condition of the roadway. The limits of maintenance may be amended if the County is provided with a specific haul route for delivery of materials necessary for construction. Prior to the final release of the site, the applicant shall restore this roadway to pre-existing conditions as determined by the Public Works Department.

3) A decommissioning plan for the site shall be submitted by the applicant and approved by the Development Review Committee (DRC) as part of Final Development Plan review.

4) A minimum 50-foot wide medium density buffer shall be provided around the entire site consisting of existing vegetation with additional planting as required by the DRC to meet buffer opacity requirements. Any fencing shall be erected interior to the buffer. Ongoing removal of invasive species shall take place within all buffer areas.

5) Inverters shall be set back a minimum of 350 feet from the parcel boundary.

6) Application of herbicides on the site shall follow best management practices. A plan for herbicide use shall be submitted for review and approval by Environmental Protection Department staff as part of the Development Plan Review process.

Bases

1. The stated goal of the energy element is to *reduce greenhouse gas emissions and fossil fuel consumption; mitigate the effects of rising energy costs and promote the long-term economic security of Alachua County through energy conservation, energy efficiency* ***and renewable energy production.*** Further, the strategy section to achieve these goals has three priorities, the third of which is to ***promote and invest in renewable energy production***. The present application will fulfill this goal by permitting the placement of renewable energy production facilities within the County, consistent with the policies found elsewhere in the Element

2. OBJECTIVE 6.1 of the Energy Element states that Alachua County shall ***Encourage renewable energy production and a countywide system of distributed residential and commercial power generation.*** The present application for a solar array fulfills this objective by location a commercial solar energy generation facility within the County. Such a facility will feed into the commercial grid and provide clean, renewable power while reducing dependency on non-renewable energy sources such as coal and oil. The proposed plant can provide power generation to users both within the County as well as surrounding areas. Duke Energy supplies the following local distributors and municipalities (Vanessa Goff email: 6/30/2020):

- Cities of Archer, High Springs, LaCrosse, Micanopy
- University of Florida
- Seminole Electric Co-op, Central Florida Electric Co-op, Clay Electric Co-op

3. Policy 5.1.1 of the Future Land Use Element (Institutional Uses) states that *Potential locations for major future institutional uses are identified on the Future Land Use Maps.* ***Institutional uses may be allowed in other land use categories designated on the Future Land Use Map, and implemented in accordance with the guidance and policies within this Section 5.0., and within the Comprehensive Plan as a whole.*** The proposed use as a solar array is identified in this section of the Future Land Use Element as an institutional use (Policy 5.1.2(c) – Public Utility, Communications or Infrastructure Services). The location of this utility (in an area designated Rural/Agriculture on the Future Land Use Map) is appropriate in that the parcel in question meets the characteristics necessary for a major photovoltaic array. The site is adjacent to distribution facilities (there is an existing electrical substation nearby and transmission lines bisect the proposed array site); has ready access to roads needed to provide access to the site and has an orientation necessary to provide maximum exposure.

4. Policy 5.1.2 of the Future Land Use Element (Institutional Uses) identifies institutional and governmental uses in Alachua County. Specifically, **Policy 5.1.2(c)** states that public utilities and infrastructure services are considered institutional uses. The specific policy language for public utilities and infrastructure services is found in **Policy 5.5.1** of the Future Land Use Element. This language states that *Public utilities distribution facilities (electrical, gas, telephone, and cable) shall be located in common corridors where practical from an engineering and economic standpoint to reduce land costs and to minimize the impacts of exposing new land to such uses. The land development regulations shall specify the factors that would be applicable to the location of such utilities distribution facilities in common corridors to the extent such locational decisions are within the County's legal authority. Factors that shall be addressed in determining practicality include things such as compliance with federal, state and local codes, safety and maintenance requirements relating to horizontal and vertical separation of facilities, soil and subsurface conditions and structures, efficiency and sustainable delivery to the end user, and ability of different utility providers to secure necessary coordination with other providers in a timely manner.* The proposed utility is located near a common corridor (SW 170th Street and SW 95th Avenue). First Solar will be constructing a substation on property leased near the site for distribution of the generated electricity to a power grid that

will feed into its larger network. It is therefore suited to feed into the existing power grid with minimal intrusion on the landscape.

5. Objective 5.5 of the FLUE states that *Infrastructure and utility structures, such as communication towers, personal wireless service facilities, radio and television antennas, water and sewer, and energy generation and distribution facilities shall be designed and located to eliminate or minimize adverse visual impacts on the landscape.*

The site plan proposed for this site indicates that a 50-foot wide vegetative buffer will be provided around the entire facility. The nature of the existing vegetation on the site is a mixture of native species and planted pines. In certain areas of the site, the planted pines will provide partial screening from visual impacts on the surrounding properties. If necessary, this buffer can be supplemented with additional planting needed to provide a more complete buffer if so condition by the special exception. In addition, there is a 100-foot wide setback beyond the buffer to the placement of the arrays. This will also serve to partially mitigate the visual impact of these arrays on surrounding properties.

6. Policy 5.2.1 provides location criteria for institutional uses. *The following criteria shall determine the appropriateness of potential institutional locations and uses requiring special use permits shall be demonstrated prior to establishing the institutional use:*

a. Optimum service area.

The proposed solar array is considered an institutional use as defined in the Plan. The service area as such is regional in nature. In feeding into the electrical grid, the proposed Archer facility can provide power for an area within Alachua County as well as extending beyond Alachua County's borders.

b. Optimum operating size.

The proposed facility will produce 74.9 megawatts at full capacity. This is the output generated by a typical facility of this size. Due to the nature of surrounding development, a larger facility at this site is not possible. This size, however, is the nominal operating capacity for facilities of this nature and is typical of other solar arrays found elsewhere in north central Florida.

c. Access to clientele.

An existing substation facility and distribution lines are located in the area with the main power transmission line bisecting the project site. These will be used for distribution of generated electricity to the grid and then onto the customer base of the utility.

d. Compatibility of the scale and intensity of the use in relationship to surrounding uses, taking into account impacts such as, noise, lighting, visual effect, traffic generation, odors.

The nature of the facility is such that adverse impacts as listed will be minimal. Noise generation at the site is primarily centered on the units known as inverters that are located throughout the site. This equipment is responsible from converting the DC current produced by the panels into AC current suitable for consumption. As the panels power up with the sun, these inverters switch on and, at full production, produce what can be described as a humming noise similar to an air conditioning unit operating. When evening arrives and the sun goes down, these units switch off and cease operation with darkness. There are no noise levels overnight. The placement of these inverters within the arrays themselves will help mitigate any noise. More importantly, distance and the provision for buffering at the property line will do much to offset any noise produced by these units.

Lighting at the site will be limited to security lighting at the substation facility. There will be no lighting of the arrays themselves. In addition, it is possible that a security light may be employed at the entrance(s) to the facilities.

The facility will produce no odors. Traffic generation will be from 3-5 cars a day (6-10 trips). As a means of comparison, a typical single-family residence will generate approximately 10 trips per day (I.T.E. Generation Manual, 8th Edition). Therefore, the traffic generated by this use will be no more than that of a single-family household in the area.

A buffer of 50 feet is being proposed for the entire site to mitigate visual impacts to surrounding residential uses.

e. Nature of service provision.

The proposed facility is being built to provide electrical power. The trend toward renewable energy sources and away from fossil fuels means that older plants that rely on coal or oil for their power source can gradually be decommissioned as more clean energy plants come online. The proposed plant is one in a series being built in North Central Florida to achieve this purpose. The placement of these facilities can be correlated to cell towers, where the infrastructure is being disbursed closer to the population that it serves.

f. Needs of the clientele.

The proposed facility is one of a series in North Central Florida being brought online to reduce emissions from fossil fuels. The site will supply the needs for customers in-county (proposed operation Duke Energy supplies energy to Gainesville Regional Utilities, Clay Electric and Florida Power as well as being the sole provider of electricity for local municipalities such the City of Newberry.

g. Availability and adequacy of public infrastructure to serve the particular use

Level of service standards found in the Plan will not be adversely impacted by this request. The nature of the facility does not impact recreation or schools, generates very small amounts of solid waste and represents little impact to local roads

(approximately the same amount as a single-family residence. Public infrastructure will not be compromised by this request.

h. Preservation and strengthening of community and neighborhood character through design

A 50-foot wide medium density vegetative buffer is required as part of the conditions associated with the approval of this special exception. While such a buffer will use existing vegetation to the greatest extent possible, the Development Review Committee may, upon review, require any additional planting necessary in order to ensure consistency with the opacity requirement s of such a buffer as found in the Unified Land Development Code.

i. Consistency with the goals, objectives, and policies of the Conservation and Open Space Element

The proposed solar array is consistent with the Goals, Policies and Objectives of the COSE. Comments provided by the Environmental Protection Department (EPD) indicate that *the project area contains none of the following natural resources afforded special protection in the comprehensive plan and land development code: surface waters, wetlands, 100-year floodplains, strategic ecosystems, significant plant and wildlife habitat, listed species habitat, conservation/preservation/recreation lands, wellfield protection areas, or mineral resource areas.* Site resources identified via a professionally conducted Cultural Resources Assessment are being avoided per the development plan.

A number of state-regulated gopher tortoises have been observed within the project area, though not within high quality natural vegetative communities and not in population densities that would suggest designation of the pine plantation as "listed species habitat." There may be other species of state-regulated wildlife (e.g., gopher tortoise commensals, eastern indigo snakes, Florida pine snakes, southeastern fox squirrels, etc.) that have not yet been documented on the property. Potential impacts to all state-regulated wildlife species are subject to a permitting process administered by the Florida Fish and Wildlife Conservation Commission (FWC). Should the Special Exception be approved by the BoCC, staff will ensure appropriate coordination with the FWC during the development plan review process.

The project lies within a county-designated "high aquifer recharge area." Should the Special Exception be approved, all relevant protective provisions of the Comprehensive Plan, land development regulations and environmental codes will be applied during the development plan review process.

7. Policy 7.1.2 of the Future Land Use Element states that: *Proposed changes in the zoning map shall consider:*

a. consistency with the goals, objectives, policies and adopted maps of the Comprehensive Plan

The proposed solar array is consistent with the Goals, Policies and Objectives of the Plan and ULDC. The Energy Element has as its stated goal the promotion of alternatives forms of energy

within the County as well as the reduction of greenhouse gases. Both goals are achieved by the placement of a solar facility on this site, which is a renewable energy sources the emits no greenhouse gases. Further, this public utility, as an institutional use identified in the Future Land Use Element of the Plan (Objective 5.5), is permitted in all land use categories per Policy 5.5.1(a) of the Plan. The proposed special exception associated with this request will not cause levels of service found in the Capital Improvements Element of the Plan to fall below adopted levels nor will public infrastructure such as schools and transportation corridors be adversely impacted by this request.

b. the availability and capacity of public facilities required to serve the development. When considering a rezoning, this includes availability and capacity of existing public facilities and timing of future facilities based on capital plans. Specific determinations for any exceptions to the requirement to connect to a centralized potable water and sanitary sewer system will be made at the stage of development plan review, as detailed in Policy 2.1 of the Potable Water and Sanitary Sewer Element.

Level of service standards found in the Plan will not be adversely impacted by this request. The nature of the facility does not impact recreation or schools, generates very small amounts of solid waste and represents little impact to local roads (approximately the same amount as a single-family residence. Public infrastructure will not be compromised by this request.

c. the relationship of the proposed development to existing development in the vicinity and considerations relating to environmental justice and redevelopment opportunities.

The proposed facility is the fourth proposed for placement in Alachua County. These facilities are spread across the county and are placed in proximity to the infrastructure that will enable the efficient distribution of the generated power. As such, they are typically placed anywhere where distribution lines already exist. In the case of the First Solar facility, a transmission line bisects the proposed array site and an existing Duke Energy substation is located close to the property.

The surrounding parcels have a similar land (Rural/Agriculture) and zoning district (Agriculture). Most lots are occupied by single family residences. The parcel where the arrays are proposed is undeveloped save for an existing cemetery (located on a separate but adjacent parcel). A similar facility was approved for eastern Alachua County in 2016 (same land use and zoning). That facility has been in operation for three years with no known impacts to surrounding development.

Solar energy is an alternate, renewable energy source that can be placed almost anywhere that meets the above criteria. As shown on the map below, previous solar facilities approved by the BoCC are not situated in any one area of the county. Rather, they have been placed in areas whose location meets the previously mentioned thresholds. Beyond these factors, availability of land and a willing seller play a part in deciding final siting of such arrays within the County. As such, larger arrays, such as the one being proposed with this application, are not normally located within urbanized areas where scarcity of large tracts of land needed for such a project would render the project infeasible. Siting of the arrays is thus predicated on a set of factors that will optimize operation of the facility and not on surrounding population demographics.

d. those factors identified by law, including that as a general matter an applicant is not entitled to a particular density or intensity within the range of densities and intensities permitted by the Comprehensive Plan, given due consideration of legitimate public purposes relating to health, safety, and welfare.

The applicant is requesting a special exception for a public utility. No residential density is applicable. The special exception, if approved, will permit a solar array, consistent with the provisions of the Comprehensive Plan and ULDC relating to Institutional uses.

8. Sec. 402.113 of the ULDC states that *the Board of County Commissioners shall, as part of a decision to approve an application for special exception, make a finding that an application complies with both the general criteria and the review factors listed below.*

(a)The proposed use is consistent with the Comprehensive Plan and ULDC;

The proposed solar array is consistent with the Goals, Policies and Objectives of the Plan and ULDC. The Energy Element has as its stated goal the promotion of alternatives forms of energy within the County as well as the reduction of greenhouse gases. Both goals are achieved by the placement of a solar facility on this site, which is a renewable energy sources the emits no greenhouse gases. Further, this public utility, as an institutional use identified in the Future Land Use Element of the Plan (Objective 5.5), is permitted in all land use categories per Policy 5.5.1(a) of the Plan. The proposed special exception associated with this request will not cause levels of service found in the Capital Improvements Element of the Plan to fall below adopted levels nor will public infrastructure such as schools and transportation corridors be adversely impacted by this request.

(b)The proposed use is compatible with the existing land use pattern and future uses designated by the comprehensive plan;

Compatibility is defined as *a state in which two things are able to exist together without problems or conflict.* The provisions as outlined can result in a project that, while ***different*** than the uses surrounding it, is also compatible with those uses.

The proposed facility is a solar array. The land use for the site as well as all surrounding properties is Rural/Agriculture. The Comprehensive Plan recognizes that certain uses or development may include uses with intensities or characteristics that differ with surrounding development. These are evaluated on a case-by-case basis to ensure that the size, extent and character of that use is compatible with surrounding uses. (Policy 7.1.17/FLUE). In cases such as these, this policy states that the ULDC shall provide for a process to evaluate these uses (special exception, special use permit or temporary use permit). A special exception can provide conditions or other mitigation in order to achieve compatibility with surrounding uses. In this case, a buffer and setback are being proposed to aid in mitigating visual impacts. The array will not generate odors nor cause traffic impacts to surrounding road facilities. Noise impacts as discussed can be mitigated through placement of inverters away from parcel boundaries and the provision of a vegetative buffer. In the case of the proposed request, staff is recommending a minimum 50-foot wide medium density vegetative buffer. This will consist, wherever possible, of existing vegetation on the site that can then be supplemented by additional planting as determined by the Development Review Committee to provide screening for surrounding properties and to help mitigate others impacts that may occur onsite.

(c)The proposed use shall not adversely affect the health, safety, and welfare of the public; and

The proposed array is the second large scale array proposed for Alachua County. A previously approved array for Florida Power and Light (FPL) has the same output capacity as the proposed Archer facility. Using this facility as a guidepost, it can be concluded that the approval of these arrays will not impact the health, safety or welfare of the citizens of Alachua County. In addition, studies referenced as part of the background materials for this application show conclusively that solar arrays do not pose a health or safety, either for surrounding property owners or the public in general. The applicant has provided buffers to help mitigate visual impacts that may be perceived from the installation of the arrays on this site.

(d)Satisfactory provisions and arrangements have been made concerning the following matters, where applicable:

(1) Ingress and egress to the property and proposed structures thereon with particular reference to automotive, bicycle, and pedestrian safety and convenience, traffic flow and control and access in case of fire or catastrophe;

The applicant has shown that 2 ingress/egress points will be provided for this facility on their site plan. These will be used by maintenance workers to access the property on a regular basis. No public ingress/egress will be permitted to the property.

(2) Off-street parking and loading areas where required, with particular attention to item (1) above;

Limited off-street parking will be provided for workers per the Alachua County ULDC

(3) The noise, glare or odor effects of the special exception on surrounding properties;

The proposed array will have no odors. Planning staff has visited a similar site north of Alachua County and can confirm that no odors are emitted by such a proposed facility. The panels are glass-encased and by design any glare would be counter-productive to energy production. However, some reflection is present. A surrounding buffer of trees and 150-foot setback from property lines mitigates glare. In addition, the proposed panels are tracking. In other words, they move very slowly to maximize exposure to the sun. This can aid in mitigating the effects of glare are the panels optimize their exposure to ensure maximum efficiency.

Any noise emanating from a solar array is caused by the presence of inverters. These units are placed internal to the arrays and served to convert DC power produced by the panels to AC current. At full capacity there is noise that can be equated to an outdoor air conditioner functioning. However, placement of these units amongst the arrays serves two purposes. The arrays help abate noise by acting as a physical barrier. Also, this adds distance to the property boundary and the mitigating effects of the buffer. Staff visits to an existing facility in Ft. White could not detect noise at the property boundary from that facility.

(4) Refuse and service areas, with particular reference to location, screening and items (1) and (2);

Refuse areas will be screened on site per the ULDC

(5) Utilities, with reference to location and availability;

The proposed facility is a solar facility generating electricity for public consumption.

(6) Screening and buffering with reference to type, dimensions and character;

A 50-foot wide medium density vegetative buffer consisting of existing vegetation will be provided per the site plan. Supplemental plantings will be provided as required by the Development Review Committee in order to ensure that buffering and screening requirements can be met or are in place.

(7) Signs, if any, and proposed exterior lighting with reference to glare, traffic safety and compatibility with surrounding properties;

Any signage present at the site will be required to adhere to the sign code for rural agriculture land use/zoning as found in the ULDC.

(8) Required yards and other open space;

There is Conservation Open Space proposed to buffer a significant geologic feature. Non-conservation open space is not a requirement of non-residential development. Proposed buffers, setbacks and tree canopy protection areas will provide additional undeveloped greenspace.

(9) General compatibility with surrounding properties; and

The proposed facility is a solar array. The land use for the site as well as all surrounding properties is Rural/Agriculture. The Comprehensive Plan recognizes that certain uses or development may include uses with intensities or characteristics that differ with surrounding development. These are evaluated on a case-by-case basis to ensure that the size, extent and character of that use is compatible with surrounding uses. (Policy 7.1.17/FLUE). In cases such as these, this policy states that the ULDC shall provide for a process to evaluate these uses (special exception, special use permit or temporary use permit). A special exception can provide conditions or other mitigation in order to achieve compatibility with surrounding uses. In this case, a buffer and setback are being proposed to aid in mitigating visual impacts. The array will not generate odors nor cause traffic impacts to surrounding road facilities. Noise impacts as discussed are mitigated through placement of inverters away from parcel boundaries and the provision of a vegetative buffer.

Compatibility is defined as *a state in which two things are able to exist together without problems or conflict.* The provisions as outlined can result in a project that, while ***different*** than the uses surrounding it, is also compatible with those uses.

(10) Any special requirements set forth in this ULDC for the particular use involved.

The ULDC has been amended to address tree canopy retention requirements as related to solar arrays. Specifically, **Sec. 406.11(c)** exempts utility-scale solar facilities (> 5 megawatts) from the requirement that 30% of the site be under mature tree canopy within 20 years.

Staff and Agency Comments

Department of Public Works: There are no flood zones located on the property. The driveway connection to SW 170th Street (paved public street) will be evaluated at DRC. Any utility crossings impacting SW 95th Avenue and SW 103rd Avenue (graded public streets) would be evaluated at DRC and will require a utility permit.

Department of Environmental Protection: The total project area is approximately 643 acres, 628 acres of which is proposed for the actual solar facility (Solar Site) with another 15 acres proposed to be under easement (Gen-Tie Easement) in order to tie into the existing power grid. The majority of the project area consists of relatively young industrial pine plantation (approximately 389 acres) or dense, young, second- or third-growth hardwoods dominated by upland laurel oak (approximately 220 acres). Approximately six acres of the Gen-Tie Easement consists of mature, high quality hardwoods (largely Live Oak). The remainder of the project area consists of previously cleared electrical transmission lines (approximately 19 acres) and improved pasture (approximately nine acres).

The project area contains none of the following natural resources afforded special protection in the comprehensive plan and land development code: surface waters, wetlands, 100-year floodplains, strategic ecosystems, significant plant and wildlife habitat, listed species habitat (more on this in the listed species discussion below), conservation/preservation/recreation lands, wellfield protection areas, or mineral resource areas.

A number of state-regulated gopher tortoises have been observed within the project area, though not within high quality natural vegetative communities and not in population densities that would suggest designation of the pine plantation as "listed species habitat." There may be other species of state-regulated wildlife (e.g., gopher tortoise commensals, eastern indigo snakes, Florida pine snakes, southeastern fox squirrels, etc.) that have not yet been documented on the property. Potential impacts to all state-regulated wildlife species are subject to a permitting process administered by the Florida Fish and Wildlife Conservation Commission (FWC). Should the Special Exception be approved by the BoCC, staff will ensure appropriate coordination with the FWC during the development plan review process.

The project lies within a county-designated "high aquifer recharge area." Should the Special Exception be approved, all relevant protective provisions of the Comprehensive Plan, land development regulations and environmental codes will be applied during the development plan review process.

One potentially significant geologic feature, a sinkhole, was discovered near the eastern boundary of the Solar Site. Currently, the applicant proposes to protect and buffer it as part of a larger area set aside to avoid disturbance of a potentially significant historic resource area.

The applicant contracted a professional Phase I Cultural Resource Assessment Survey (CRAS) of the project area. As a result of this effort, three new archaeological sites were identified. Two of the three do not appear to be consistent with accepted criteria for designation as "significant." The third was identified as a site that may have potential to meet significance criteria, pending further study. This third site included the sinkhole feature mentioned above. Rather than conduct a Phase II survey, the applicant has chosen to identify this entire area as a site constraint and to avoid any disturbance of the resource.