

Description of the Project

Electrical Generation Plant

Mr. Alvin P. Anderson and Mr. Gregory Davis have applied for a special use permit to allow for the construction of an electrical generation facility on approximately 53 acres located at the southern most end of Blow Flats Road. "Electrical generation facilities," public or private, are specially permitted uses on property zoned M-2, General Industrial.

The company interested in developing the site is James City Energy Park, LLC ("JCEP"). JCEP is a Virginia-based company established for the sole purpose of developing this project. The two lead developers in JCEP are Standish Energy, Inc., and the Landcraft Corporation. Standish Energy is a Massachusetts-based corporation formed in January 2000 to develop power projects in the United States. Standish Energy currently has seven projects under development and its principals have over 60 years of power plant experience. Landcraft Corporation is also a Massachusetts-based company and was formed in 1985 by an individual with over 20 years of development experience. Landcraft is a participant in four of the Standish Energy projects. JCEP's equity funding partner is El Paso Power. The El Paso Corporation is the fourth largest U.S. energy company with an enterprise value of \$50 billion.

Specifically proposed is a nominal 540 mega-watt ("MW") power plant. The fuel source will be Natural Gas with low sulfur oil as a backup fuel. The power will be produced using "Combined-Cycle" advanced technology. The process is shown on the enclosed graphic. Plants using this type of technology are 40 percent more fuel efficient than traditional power plants. The plant will use two "F" class gas turbines, two heat recovery steam generators, one steam turbine, and cooling will come from a wet mechanical draft cooling tower.

Effective January 1, 2002, electrical power in the Commonwealth of Virginia will become deregulated. According to a recent article by the Washington Post, 15 U.S. power companies want to take advantage of this deregulation and have applied to build 21 power plants across the State. The four closest to James City County are proposed "peaking" plants in Charles City County and Louisa County, and combined-cycle plants also in Louisa County and in Brunswick County. Combined-cycle plants generate electricity for regular daily needs, while peaking plants generate electricity only for use on high-demand days.

The site is located within the Greenmount Industrial Park and adjacent to the Wal-Mart Distribution Center. The site is ideally located for the applicant for a number of reasons: the presence of existing high-power distribution lines, existing Virginia Natural Gas (VNG) and Columbia Natural Gas (CNG) pipelines, the presence of the Colonial pipeline, existing potable water and sanitary sewer lines, and close proximity to the Hampton Roads Sanitation District (HRSD) plant (to be discussed in further detail below). The site is also located within the James City County Enterprise Zone.

The applicant proposes constructing the facility on approximately 53 acres, which would be subdivided out from a larger parcel. However, only about 23 acres would be used for the plant and for the accessory uses and structures. The remaining 30 acres would be used for buffer areas (including a minimum of 200-foot buffer around the perimeter of the site).

Developing an electrical generation plant requires many studies and approvals. In addition to the SUP and height limitation waiver requested from the County, JCEP must also file for an interconnection study with Dominion Virginia Power (for using their existing lines and grid network), complete interconnect studies with the two competing Natural Gas companies, complete wetlands delineation and archaeological studies, initiate air quality and stormwater permitting activities with the Virginia Department of Environmental Quality (DEQ), and request a "Certificate of Public Convenience and Necessity" from the State Corporation Commission (SCC). Also, on a

Federal level, the air quality permit must meet Environmental Protection Agency (EPA) standards (the EPA standards are delegated to DEQ for inclusion into their permitting process).

Should the special use permit be approved, the applicant anticipates being through the permitting process and through the construction phase (approximately 18-24 months) in time to begin commercial operation in March 2005.

The facility, if approved, is expected to have 25-30 operating staff over two to three shifts.

Petroleum Storage Facility

As mentioned, the proposed plant would be fueled primarily with Natural Gas. This raw material would be delivered to the site via underground pipeline connections from either Virginia Natural Gas (VNG) or Columbia Natural Gas (CNG). Both companies have existing pipeline networks in close proximity to the site. However, there may be brief periods when the natural gas is unavailable. In these times, a secondary fuel source is needed. For this particular plant, the backup fuel proposed is low sulfur oil.

One particular advantage of the Greenmount site is that this backup fuel can be delivered via underground pipeline and not by truck. A connection would be made to the Colonial Pipeline which would deliver the oil to petroleum storage tanks on-site.

The two proposed petroleum storage tanks would be generally located at the rear of the site. Each tank would be approximately 78 feet in diameter, approximately 58 feet tall, and would have a combined storage capacity of approximately 7.0 million gallons. The tanks would be located inside an earthen berm, designed to contain spills in the event of a leak. The design of the safety berm is subject to local approval and is based on local, State, and Federal safety standards. In staff's opinion, the size of these tanks are much larger than what would normally be used as an accessory use to an industry. Therefore, the application is also a special use permit request for a petroleum storage facility. "Petroleum storage facilities" are specially permitted uses on M-2 zoned property.

The applicant anticipates having to switch to oil backup no more than 30 days a year. Oil use would not be continuous for the 30 days however, but would be used on an intermittent, disbursed schedule, and based on the contract with the gas company.

Air Emissions

In analyzing the proposed Greenmount site and the specific JCEP proposal, the applicant's environmental consultant found the following:

1. James City County is in an area that meets all ambient air quality standards. The addition of the JCEP project will not change the attainment of these air quality standards.
2. The proposed project will install Best Available Control Technology (BACT) to limit air emissions from the facility.
3. The air quality impacts of the JCEP facility will comply with all U.S. Environmental Protection Agency (EPA) and Virginia Department of Environmental Quality (DEQ) regulations. A detailed dispersion modeling analysis will be submitted with the air permit application, which will demonstrate the project complies with ambient air quality standards.

The project will employ Best Available Control Technology (BACT) to control air emissions. BACT controls for the project will include the following:

1. Dry-low NO_x (nitrogen oxides) combustors to reduce NO_x emissions from the combustion turbines.

2. Selective catalytic reduction (SCR) to further reduce NO_x emissions from the combustion turbines and the supplementary fired heat recovery steam generators (HRSG).
3. Utilizing natural gas as the primary fuel to limit emissions of NO_x, SO₂ (sulfur dioxide) and PM/PM₁₀ (particulate matter).
4. Good combustion practices to limit emissions of CO (carbon monoxide) and VOCs (volatile organic compounds) will also be used.

Staff sent the applicant's air quality information to a consultant for review. With the data submitted, the consultant found no reason to dispute the applicants findings. Air emissions are subject to strict scrutiny and review and approval from the Virginia Department of Environmental Quality and the EPA. This includes a permitting process and, once the plant is operating, monitoring and enforcement from the State to continually insure State and Federal standards are met.

Based on the information presented, the proposed SUP conditions, and the additional State permits that must be obtained, staff finds that air quality and emissions impacts will be adequately mitigated.

Odor

The applicant has stated that this facility will not have any odor emissions. Staff has confirmed this statement with field visits to two other existing plants. At both plants, no odor was present. Staff finds that odor will not be an impact.

Noise

The applicant had a consultant model the anticipated noise level that would be generated from this plant at its location on the Greenmount tract.

The Commonwealth of Virginia does not have specific regulations on noise limits, but rather, delegates that authority to the locality. In the absence of such State standards, the applicant's consultant looked at noise limit regulations from surrounding states. In Kentucky and Tennessee, there is no noise control legislation. In West Virginia, the allowable limit is 80 decibels (dBA) at the property line. In the District of Columbia, the limit is 65 dBA at the property line. In North Carolina, the limit is 60 dBA at the property line and in Maryland, the limit is 55 dBA.

JCEP has elected to adopt this lower standard (55 dBA) as the noise limit for the proposed facility. Therefore, the facility would be designed such that no noise level exceeding 55 dBA would be heard at the property line of any nearby residence on Blow Flats Road. As mentioned, all homes on Blow Flats Road are on property zoned M-2.

The attached graphic shows the anticipated sound levels.

A "decibel" is a measure of sound level. The higher the decibel, the louder the sound. Also, the decibel scale is based on an exponential logarithm, not a linear one. Therefore, sounds with larger decibels are, generally, exponentially louder, and sounds with smaller decibel levels are exponentially quieter, rather than "twice as loud" or "half as quiet." The following chart equates sound levels to commonly heard noises.

dBA	Noise Source	Noise Effect
150	Jet takeoff (25 M)	Eardrum rupture
140	Aircraft Carrier Deck	
130	Earphones at high level, Jet takeoff (100 M)	Human Pain Threshold
120	Thunderclap, Live Rock Music, Chain Saw	

112	Rock Band (average)	
110	Steel Mill, Riveting, auto horn at 1 M	
100	Jet takeoff (305 M), Outboard motor, power lawn mower, motorcycle, farm tractor, jackhammer, garbage truck	Serious hearing damage (8 hrs)
90	Busy urban street, diesel truck, food blender	Hearing damage (8 hrs)
84	Diesel truck at 50 feet	
80	Garbage disposal, dishwasher, average factory, freight train (15 M) 80	Possible hearing damage
70	Freeway Traffic at 15 M, vacuum cleaner, living room TV	Annoying
60	Normal conversation in restaurant, office, background music	
55	Air conditioner condenser at three feet	
50	Quiet suburb, conversation at home	Quiet
40	Library	
30	Quiet rural area	
20	Whisper, rustling leaves	Very Quiet
10	Breathing	
0		Threshold of hearing

The closest residence to the JCEP property line is approximately 230 feet, and the facility itself will be setback from the property line almost 500 feet. Therefore, based on the information presented, and with the proposed SUP conditions, staff finds that noise impacts will be sufficiently mitigated and will not negatively impact any existing residential structure.

Indeed, with the proposed use, staff finds that noise levels would be substantially lower than with many other by-right uses allowed on M-2 property (notice the noise level for diesel truck). For comparison, a list of permitted M-2 uses is attached to this staff report. Staff believes that passing truck traffic (associated with other uses off Blow Flats Road) and truck traffic from other existing adjacent uses would create significantly more noise than the proposed power plant.

Traffic

As stated above, the plant is expected to generate 25-30 operating staff. Staff finds that the daily operating traffic generated from the proposed plant (approximately 120 vehicle trips per day) will not negatively impact Blow Flats Road.

The significant traffic will come from construction activity. The applicant has stated that the construction period may last 18-24 months.

The first three to five months involves site preparation, including the erection of temporary facilities, establishing lay-down space and parking, and laying the underground utilities. The second phase ranges from six to eight months and includes finalizing the site grading and construction of the building and equipment foundations. The next phase (approximately six months) involves the erection of structural steel. Finally, installation of the balance of the equipment, piping, wiring, and ducts is done. The remaining time involves the final check out, testing, and commissioning of the plant.

According to the applicant, peak construction traffic could consist of 400-600 workers. Access to Route 60 would come from Blow Flats Road. Blow Flats Road is a substandard State Road that does not meet current VDOT construction standards. The road handles truck traffic from the Branscome Borrow Pits, traffic from the Shouse

Construction Company, traffic from several uses within the Skiffe's Creek Industrial Park, and traffic from several residences along the road.

Blow Flats Road intersects with Route 60 at a sharp angle and the right-hand turn leading from Blow Flats Road, shown on the Master Plan, has never been constructed. Again, staff does not believe the operational traffic will have a negative impact on Blow Flats Road or on Route 60. Staff does believe, however, that construction traffic will negatively impact the road.

Given that this proposal is only a special use permit, and not a rezoning, staff is limited in drafting conditions which address off-site impacts on Blow Flats Road and Route 60. The attached proposed SUP conditions attempt to mitigate impacts to Blow Flats Road.

Water Usage

JCEP anticipates its potable water needs based on 12 persons per shift working three, eight hour shifts a day. Based on a standard domestic water demand calculation, 300 gallons of water per day will be required.

Domestic water supply is proposed through an existing 8-inch Newport News Water Works (NNWW) supply main already located within the right-of-way for Blow Flats Road. NNWW has preliminarily reviewed this proposal and finds it acceptable and that adequate supply exists. Should this water line not be feasible from an engineering point of view, an existing 30-inch NNWW water line also exists in close proximity to the site. Sanitary sewer service will come from an existing HRSD line, also located within the right-of-way for Blow Flats Road. Preliminary studies indicate that adequate service is available.

The proposed energy plant will require a large amount of process water for cooling purposes. Preliminary studies indicate that as much as 5.0 million gallons of water per day (MGD) will be required. To mitigate any impact to the JCSA or NNWW system, JCEP has proposed entering into an agreement with the Hampton Roads Sanitation District (HRSD) to use grey water for cooling purposes. A pipeline will be constructed from the HRSD plant located at the terminus of Ron Springs Road to the JCEP project. Up to 5.0 MGD of water will be used for the cooling process and to supply a storage tank which will be used on-site for a fire suppression system, while less than 1.0 MGD will be returned to the HRSD plant via a return pipeline. The loss of water occurs primarily from evaporation during the cooling process.

Visible Emissions

According to the applicant's consultant, the only visible emissions coming from the proposed plant will be water vapor plumes, not smoke. Plumes occur due to the condensation of water vapor. The ability of air to hold water in a vapor form is dependant on a number of factors including the relative humidity and the temperature of the air. As the temperature of the air decreases, the ability of the air to hold water vapor decreases. A familiar occurrence of this phenomenon is when an individual exhales during a cold morning and the individual's breath becomes visible. This is due to the warm breath being cooled by the surrounding air, resulting in the condensation of the water vapor in the breath and thereby making it visible.

Water vapor is contained in the exhaust from the combustion process and in the exhaust from the evaporative cooling towers. In the cooling towers, warm water is cooled by evaporation of a portion of the water. The exhaust from the fan stacks of the cooling towers contains warm air saturated with moisture due to this evaporation.

The water vapor plume will be visible in cold weather or cool and moist weather.

As with noise, staff verified these claims with visits to two other working plants. Staff finds that visible emissions will have no negative impact on surrounding properties.

Other Environmental Concerns

The stormwater runoff from the proposed facility will be managed by an on-site stormwater management facility. This facility, whose general location is shown on the master plan, will utilize either infiltration or wet detention techniques, consistent with the County's 10-point stormwater management design program.

The applicant has also worked with the State to determine whether or not any natural heritage resource areas or any threatened or endangered plant or insect species exist on the site, and they do not. The Department of Game and Inland Fisheries has noted the presence of great egret, Northern harrier, and the "least tern" in the project areas. These species are listed on the State's list of "Special Concern Species." Staff has proposed a special use permit condition to mitigate impacts to these species.

The applicant has also performed a Phase I archaeological survey of the entire 53 acres. The findings consisted of 34 isolated finds and two archaeological sites that were either decomposed, of recent date, or were otherwise felt to be insignificant. No further investigations were recommended by the archaeologist. Staff has reviewed the study and concurs with its findings.

Height Limitation Waiver

The applicant has also requested a Height Limitation Waiver from the Board of Supervisors. On property zoned M-2, structures may be constructed up to 60 feet as a matter of right; however, structures in excess of 60 feet may be constructed only if specifically approved by the Board.

The applicant has requested the following be approved:

1. An exhaust stack: 250 feet
2. Electrical transmission tower(s): 135 feet
3. Heat Recovery Steam Generator(s) (HRSG): 105 feet
4. The noise control equipment for the HRSG: 135 feet
5. Turbine building(s): 105 feet
6. Cooling tower(s): 80 feet
7. Cooling tower(s) inlet filter(s): 80 feet
8. Electrical switch yard and its accessory structures: 80 feet

The applicant has stated these heights are the maximum heights the structures may be, but it may be possible to use plant components that are not as tall (for example, the exhaust stack may be much less than 250 feet tall). The applicant will not have this specific information until the plant design is completed. Staff therefore has analyzed this application as if the tallest components possible would be constructed.

To simulate the proposed height, staff conducted a balloon test with the applicant. A 4.5 foot diameter balloon was raised to a height of 250 feet. Staff then drove on nearby streets, into nearby subdivisions and onto nearby historic properties to gauge visual impacts.

Balloon Test Results

The balloon was only visible on Route 60 in the vicinity of the Wal-Mart Distribution Center. The balloon was somewhat visible in some spots on Blow Flats Road and not visible from subdivisions on the north side of Route 60 or in the closest Newport News subdivision of Carlton Farms. The existing tree cover on Blow Flats Road (off-site from the proposed power plant property) provided the necessary screening for homes and for vehicles on Blow Flats Road.

Staff also toured the Carter's Grove Plantation site. At no point on the property was the balloon visible.

Section 24-444 of the James City County Zoning Ordinance states that structures may be erected up to 60 feet in height from grade to the top of the structure. Structures in excess of 60 feet in height may be erected only upon the granting of a height limitation waiver by the Board of Supervisors upon finding that:

1. Additional setbacks have been provided; however, the Board may waive additional setbacks for structures in excess of 60 feet;

Staff comment: With the proposed buffers, the plant would be a minimum of 200 feet from the closest property line and at least 500 feet from the front property line. From the front of the property, the Zoning Ordinance requires a 147-foot setback for a structure that is 250 feet in height. From the side and rear property lines, the Zoning Ordinance requires a 92-foot setback for a structure that is 250 feet in height. Therefore, with the proposed 200-foot wide property line buffers, the setbacks are well in excess of those required by the Zoning Ordinance.

2. Such structure will not obstruct light from adjacent property;

Staff comment: Given the distance to the property line, staff believes the plant will not obstruct light from adjacent properties.

3. Such structure will not impair the enjoyment of historic attractions and areas of significant historic interest and surrounding developments;

Staff comment: Carter's Grove Plantation is over one mile away from this site and, as mentioned above, the balloon test revealed that the tallest portions of the facility will not be visible. Staff believes surrounding historic attractions and developments will not be impaired.

4. Such structure will not impair property values in the area;

Staff comment: According to Real Estate Assessments, there is no indication that the construction of the power plant will have a detrimental effect on surrounding residential properties beyond any effect already experienced by existing industrial uses throughout the area.

5. Such structure is adequately designed and served from the standpoint of safety and that the County Fire Chief finds the fire safety equipment installed is adequately designed and that the structure is reasonably well located in relation to fire stations and equipment, so as to offer adequate protection to life and property;

Staff comment: The project, if approved, will be subject to full County review processes, as well as State review and approval of certain permits. Staff feels confident this review process will ensure the structure is adequately designed from a safety standpoint. Basic fire and rescue services will be provided from the Grove Fire Station with backup from the other JCC fire stations and the Williamsburg Fire Department. Additionally, JCC has standing mutual aid agreements with York County, the City of Newport News, Fort Eustis, the Yorktown Naval Weapons Station, and Camp Peary, if needed. The proposed power plant will be designed to provide on-site fire suppression capabilities through on-site water storage and an on-site fire pump.

6. Such structure will not be contrary to the public health, safety, and general welfare.

Staff comment: Based on the analysis contained within this staff report, staff believes the proposed power plant will not adversely effect the public health, safety, or general welfare.

Federal Aviation Administration (FAA) Requirements

Per Federal requirements, all structures greater than 200 feet above ground level (AGL) should be marked and/or lighted. Owners/developers of all structures greater than 200 feet AGL are required to provide notice to the FAA, which will then conduct an aeronautical study for the specific project. Structure marking may consist of alternating bands of orange and white paint (for daytime visibility) and red obstruction lights (for night visibility). As an alternative to this combination, the FAA may allow a dual lighting system featuring red lighting at night and medium intensity white strobe lighting during the day. Ultimately, the FAA has approval over the visibility scheme, however, to best mitigate visual impacts, staff's recommended system is outlined in the proposed SUP conditions.

Surrounding Development and Zoning

The site is completely surrounded by other property zoned M-2, General Industrial. To the south, across the creek, is the idled BASF property. To the east is other zoned land within the Greenmount Industrial Park and the Branscome and Sanifill borrow pits. To the north is the Wal-Mart Distribution Center and 17-20 scattered homes (both stick-built and manufactured) along Blow Flats Road. Also accessed via Blow Flats Road is the Skiffe's Creek Industrial Park. The Shouse Construction Company is on property located to the west of this site.

As mentioned, the closest home on Blow Flats Road is approximately 230 feet from the proposed JCEP property and the plant itself is located approximately 500 feet back from the front property line. Again, all these homes are located on M-2 zoned property. The visual impacts of the proposed plant will be mitigated with a proposed 200 foot wide tree buffer along all property lines. Where existing mature vegetation does not exist within the buffer, staff has proposed a SUP condition to reforest the buffer with Loblolly Pine tree seedlings.

With the proposed SUP conditions, staff believes the potential negative impacts to surrounding property and homes have been mitigated to the greatest extent possible. Staff believes the impacts to these properties will be negligible when the plant is operating and significantly less than impacts that might be generated by an otherwise by-right M-2 development.

Comprehensive Plan

This property is designated for General Industry on the 1997 Comprehensive Plan Land Use Map.

General Industry describes areas within the PSA that are suitable for industrial uses which, because of their potential for creating dust, noise, odor, and other adverse environmental effects, require buffering from adjoining uses. General industrial uses usually require access to interstate and arterial highways, public water and sewer, adequate supply of electric power and other energy sources, access to a sufficient labor supply, and moderate to large sized sites with natural features such as soils, topography, and buffering suitable for intense development. Timing and intensity of development is controlled by the maintenance of an acceptable level of service of roads, the availability and capacity of public utilities, and the availability of skilled labor.

Again, with the proposed SUP conditions, staff finds the proposed use consistent with the Comprehensive Plan recommendations and land use designation. Staff believes impacts have been mitigated to the greatest extent possible, the level of service on the adjacent roads will not be impacted, once the plant is in operation, and the availability and capacity of public utilities is acceptable.

Economic Development Potential

The James City County Office of Economic Development (OED) has provided the following project highlights with respect to economic development:

- S The site is located within the James River Enterprise Zone (JREZ), and this project would qualify for the County's codified local enterprise zone grants and fee waivers.
- S Based on information provided by the applicant and the State Corporation Commission, the projected initial capital investment of this project is between \$250 million and \$300 million; staff has chosen to use the high end of this range for its local annual tax revenue (LATR) and JREZ grant estimates:

LATR Estimates*:	Year 1	-	\$ 2,184,600
	Year 2	-	2,160,300
	Year 3	-	2,136,000
	Year 4	-	2,111,800
	Year 5	-	<u>2,087,500</u>
	TOTAL		<u>\$10,680,200</u>

- S The Office of Economic Development conservatively assumes all taxable capital investment is taxed as real property; this would make JCEP the second largest property taxpayer in James City County, second only to Anheuser-Busch brewery.
- S 28-32 new jobs, 90+ percent of which would be highly skilled positions that will earn \$40,000-\$70,000 annually, plus fringe benefits.
- S Standish Energy, Inc., believes all employees could be hired locally.
- S Projected JREZ Local Grant Estimates:

	Year 1	-	\$1,130,000
	Year 2	-	893,900
	Year 3	-	662,900
	Year 4	-	436,900
	Year 5	-	<u>215,900</u>
	TOTAL		<u>\$3,339,600</u>

- S State incentives are to be negotiated directly between JCEP and the Commonwealth of Virginia due to the size of the project.

Recommendation

With the attached SUP conditions, staff finds that possible negative impacts from the proposed facility will be mitigated to the greatest extent possible. With the proposed conditions, staff also finds the proposal will not negatively impact adjacent property or surrounding uses. Staff also finds the application consistent with the Comprehensive Plan and that the application meets the Zoning Ordinance criteria for the granting of a height limitation waiver. Staff therefore recommends approval, subject to the attached conditions. On November 5, 2001, the Planning Commission recommended approval of the application by a vote of 6-0.

Paul D. Holt, III

CONCUR:

O. Marvin Sowers, Jr.

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Attachments:

1. Minutes from the November 5, 2001, Planning Commission meeting
2. General vicinity map
3. Location map
4. Master Plan (separate)
5. Sheet showing the building elevation/cross section (separate)
6. Graphic showing electrical generation process
7. Graphic showing anticipated noise levels
8. List of permitted uses on M-2 zoned property
9. Graphic showing pollution levels of Natural Gas fired electrical plants
10. A Community Impact Statement prepared by the applicant
11. Resolution of Approval for the Special Use Permit
12. Resolution of Approval for the Height Limitation Waiver