

Comments on the Cricket Valley Energy DEIS

Thank you for the opportunity to participate in the DEIS process focusing on the Advanced Power Cricket Valley Energy combined cycle electrical generation plant.

My name is Michael Purcell residing at 19 Sans Souci Drive ,Pawling NY for the last 23 years . My background is in residential construction, energy conservation in buildings and conservation of regional natural resources. My service to the community includes participation with the Pawling Conservation Advisory Board in reviewing conservation as it pertains to site plans, the Environmental Leaders Learning Alliance focusing on regional strategies to conserve the Hudson Hills and Highlands, a volunteer with Dutchess Watershed Awareness Month which focuses on providing educational material and free public events pertaining to Dutchess County Watersheds, a past board member of Friends of the Great Swamp ,and a founding member of the Great Swamp Watershed Alliance.

The comments submitted today are based on personal observations from the field, research on combined cycle gas turbine plants using HRSG technology, research on Nitrogen pollution in the Northeastern United States, data on mean annual precipitation rates for the Harlem Valley , a report from the American Lung Association and review of Cricket Valley Energy documents.

The proposed Cricket Valley Energy plant (the CVE site) is situated in the valley formed between West Mountain range and East Mountain range in the Town of Dover. The summits and ridgelines of East and West mountain ranges form the watershed boundaries of the Swamp River Watershed, a sub watershed of the Ten Mile River watershed and the Housatonic Basin . Data taken from the USGS Topographical map series 41073F5 , Dover Plains , NY quadrangle depict elevation contours at 10 foot intervals, elevations of summits , wetlands, water bodies, residential areas ,community buildings and natural features.

The valley bottom receives surface water runoff from streams and groundwater discharges originating in the higher elevations of the West and East Mountain ranges. The low gradient Swamp River drains the valley bottom and the Great Swamp Critical Environmental area in a northward flow terminating north of the County Rt 6 bridge at the Ten Mile River.

CVE site plan documents depict the construction of three chimney stacks at 282.5 feet above finished grade .The stacks emit combustion gasses for the combined cycle gas turbines
The benchmark elevation in building construction projects is expressed as 0 feet and is used as the starting reference point for the actual construction of the buildings. Review of the CVE documents and review of the Dover USGS topographical map shows that the construction benchmark for the CVE site will be approximately 450 feet above mean sea level. Mean sea level is expressed as msl when referencing the topographical maps. The sum of the USGS topo map 450 foot msl elevation and the CVE above benchmark elevation of 282.5 feet would place the point source for CVE emissions at an elevation of 732.5 feet above mean sea level.

Given the geography of the Harlem Valley and the height of the proposed emission stacks there seems to be a potential for NO_x emissions to be trapped by water vapor and the forested slopes adding to further degradation of the Swamp River watershed . Some elevations in close proximity of the CVE site are listed for reference .

USGS Topo Map MSL elevations adjacent to the CVE Site are noted here:

West of the CVE site in the West Mountain range

West Mt. el. 1289' msl

Bald Mt. el. 1266' msl

Dennis Hill el. 1366" msl

Chestnut Ridge el. 1227' msl

Dobar Mt. el. 1085' msl

Lossing Hill el. 971' msl

Pell Lake el. 1118' msl

High Plains Trailer Park el. 987 'msl

Lakeside Grove Mobile Home Park el. 1151' msl

Saw Mill Hill el. 803' msl

USGS Topo Map MSL elevations east of the CVE site:

Preston Hill el. 1450' msl

Shaghticoke Mt el. 1325' msl

East Mt summit el. 1335' msl

Chapel Pond el. 1105' msl

Depression Pond el. 1072' msl

Crane Pond' el. 971' msl

Tamarack Swamp el. 925' msl

Shaghticoke Reservation el. 928' msl

Ellis Pond el. 393' msl

Duck Pond el. 813' msl

CVE's proposed use of GE 7FA.05 combined cycle gas turbines and HRSG heat recovery systems is commendable, however the potential emission thresholds listed for NO_x in CVE's documents are over EPA thresholds. The ambient temperatures of the flue gasses emitted from the stacks may easily condense with water vapor in the ridges surrounding valley.

Nitrogen emissions react photochemically with water vapor and sunlight to form smog.

Water vapor in the form of fog is an almost daily occurrence in the Great Swamp and adjacent wet meadows. Fog routinely forms in the valley bottom of the Great Swamp Watershed just before sunrise and a bit after sunrise.

Further studies should be conducted by CVE to assess the amount of NO_x emissions that will adhere to water vapor and naturally occurring fog in the Swamp River Watershed.

Monitoring the prevailing winds in the airshed at higher elevations should be a CVE priority to protect air and water quality within the Swamp River watershed. CVE documents have used data from the Cary Institutes weather station located on Millbrook Plateau northwest of the CVE site and data from Dutchess County airport due west of the CVE site near Freedom Plains as means to measure wind and precipitation for the CVE site. In a report prepared by Chazen Companies in April 2006 titled "Dutchess County Aquifer Recharge Rates and Sustainable Septic System Density Recommendations" USGS mean annual precipitation data shows an average 46-48" inches of precipitation along the East Mountain range. This is more than the precipitation at either of the CVE document sites and warrants a closer look at the geography of the Harlem Valley to prevent cumulative impacts to air and water resources due to NO_x emissions.

Nitrogen pollution from point sources in the northeastern United States is documented as the leading cause of nitrogen loading in Long Island Sound and a major contributor to smog. Emissions from gas fired power plants accounts for 25-50% of nitrogen point source pollution. Emissions of NO_x can convert quickly to other forms of Nitrogen once sunlight is introduced. Nitrogen does not readily adsorb into the landscape but is documented as readily adsorbing into aquatic environments and Long Island Sound. The American Lung Association report from summer 2010 rated Dutchess County air quality with an "F" for Dutchess County .

In closing CVE can certainly take a closer hard look at the surrounding hills and valleys and provide more resources to address in becoming the monitoring of air quality, water quality and most importantly human health. Prevention of potential environmental impacts is far easier with good planning and research before the infrastructure is built

Thanks again for the opportunity to submit comments,

Sincerely

Michael Purcell

19 sans Souci Drive

Pawling NY, 12564

References:

(The reference work “Nitrogen Pollution in the Northeastern United States , Sources , Effects and Management Options” published in Bio Science, April 2003,vol 53 no 4 by Charles T Driscoll, Peter Groffman et al depicts the Long Island Sound Air Shed and sources of nitrogen pollution.)

<http://ny.water.usgs.gov/pubs/jrn/ny0242/i0006-3568-053-04-0357.pdf>

Evidence of acid deposition was found in two macroinvertebrate communities sampled in July 2010 on two reaches of the Swamp River. The study followed parameters and criteria of NYSDEC Stream Biomonitoring Unit to assess biological communities and water quality. The full report is available at Friends of the Great Swamp web page [www,frogs-ny.org](http://www.frogs-ny.org) Science page.

2010 Connecticut DEP report on airborne pollutants

<http://www.epa.gov/ttnamti1/files/networkplans/CTAssess2010.pdf>

Locations of Monitoring Stations

What is Nitrogen Oxide and why is it controlled? United States Environmental Protection Agency Air, EPA 456/F-99-006R Planning and Standards November 1999

American Lung Association report on air quality

<http://readme.readmedia.com/udson-valley-receives-mixed-grades-in-lung-associations-annual-air-quality-report/1241070>

