Geothermal Public Health Assessment Joint Fact Finding Group

Third Briefing Paper

A Brief Profile of Puna’s Demographics, Health Conditions and Geothermal Complaints

Keala Carter

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Introduction

The purpose of this briefing paper is to help create further foundation for the Study group by understanding some of the health issues. Taking into consideration both facts and figures as well as anecdotal evidence, my effort involved a gathering of health data from a variety of sources. This paper, by no means exhaustive, offers a snapshot. It touches lightly on the history of the area, then the demographics of the population we will try to understand, and lastly a look at geothermal energy health matters through the lens of 5 different perspectives.

I. Demographics

Roughly the size of Kauai, the district of Puna is unique in its physical and cultural environments. Puna has never been densely populated and in ancient times was mostly used as a thoroughfare between the more established areas of Ka’u and Hilo. Although 52,500 subdivided lots were divvied up between 1958 and 1973 in Hawaii’s development boom, only about ¼ of the lots have been developed over the years and little forethought was given to the possibility that the population would thrive in an area with high risk of volcanic and seismic activity, no infrastructure, and little economy. Industry in Puna, since Western arrival, has gone from sandalwood export, to coffee and cattle, then from diversified agriculture in the mid-1800s to a vast sugar plantation in 1899, and then back again to coffee and diversified agriculture in the late 1980’s.1 Today, although the aesthetic is still rural and agricultural in nature, less than 10% of the population is engaged in Fishing/Farming/Forestry and nearly 70% commute to work in the professional and service industries, or work from home.

The following statistics help complete the picture:

- Nearly 40% of Puna is composed of 1st generation Hawaii residents2
- There is a higher proportion of Caucasians (37%) and Hawaiians (11%) and considerably fewer Asians (16%) in Puna than the rest of the State.3
- The area has the 3rd highest unemployment rate, the 3rd lowest per capita income, and the highest percentage in the State of families who rely on food stamps (55%).4
- Puna contains nearly 45% of Hawaii County’s total subdivided lots5

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1 Hawaii Department of Agriculture – History of Agriculture in Hawaii.
3 Pahoa Community Profile, UH Center on the Family, 2003.
4 Ibid.
5 Puna Community Development Plan, 2007.
o Puna has a higher proportion of home-owners (68.2%) than both the County and State.\textsuperscript{6}

o In the decade from 2000-2010, Puna’s population increased by 66% which marked the fastest rate of growth in Hawaii County. If trends continue, the population is projected to grow to approximately 75,000 by 2030.\textsuperscript{7}

o More Pahoa adults of all ages are living with disabilities, including almost half of the population ages 65 and over.\textsuperscript{8}

o Approximately 85% of Hawaii Island's Section 8 low-income rental housing certificate holders are Puna residents.\textsuperscript{9}

o The per capita income in 2000 was 40% less than the State average.\textsuperscript{10}

The resourceful community that has emerged over the last half century has proved the early prospectors wrong and with its status as the last frontier of affordable real-estate in Hawaii, the population continues to flourish.

II. Perspectives on Health

From the PGV complaint log:

A random sampling of ~400 complaints recorded from the PGV hotline between 1992–2010 (complaint log for 2006 was missing) demonstrated an overwhelming majority of noise-related complaints. Noise complaints were registered 3 to 4 times the amount of any other complaint. Second to noise, complaints about bad smells emitted from the plant were the next most common issue people called in. The complaints would come in clusters of 1-3 day periods of time and often months would go by without any calls. There also seemed to be a higher propensity of smell-related complaints in the early 1990’s and then, as the smell-related complaints waned, noise and stress-related complaints increased over the last 6-8 years.

From Relocation Requests at the Planning Department:

Of the 12 relocation requests reviewed, only one contained a documented health history of visits to the doctor and hospital over the course of 2 ½ years. In addition to bronchitis

\textsuperscript{6} Pahoa Community Profile, UH Center on the Family, 2003.
\textsuperscript{7} Puna Community Development Plan, 2007.
\textsuperscript{8} Pahoa Community Profile. UH Center on the Family. 2003.
\textsuperscript{9} Puna Community Development Plan, 2007.
\textsuperscript{10} U.S. Census Bureau. 2000.
\textsuperscript{*} Informal economic activity (Marijuana cultivation, bartering, etc.) and the large number of retirees may keep the employment and income figures reflected in the Census artificially low.
and asthma, the individual reports suffering from a variety of maladies (back pain, dizziness, heart palpitations, etc.). The intake nurse recorded several environmental and behavior factors that may be contributing to the patient’s ill health including smoking, drum-playing, and other possible factors. There were 2 other relocation requests that referenced health issues but did not specify what issues the individual (or family) was suffering from. Primarily, the reasons given for relocation requests were about the noise and resulting stress as well as fear about the safety of living in close proximity to an industrial plant.

From Testimony received by the County Council:

A review of approximately 240 health-related testimonies demonstrated that when health issues were attributed to PGV they were made as 2nd hand accounts (i.e. “my friend has been ill” or “I know a lot of people with health issues in the vicinity”). There were few 1st hand accounts of illness attributed to the geothermal plant. More predominant were complaints about the constant noise coming from the plant and the resulting stress and sleep disturbance. There was also a fair amount of fear voiced about the potential for negative health effects and reaction to the talk of toxic surroundings. Of the submitted health-related testimony I found, at least half of the reviewed comments stated that living in close proximity to PGV had caused no ill effects and the individual was unaware of any causal relationship between neighbors with health issues and the geothermal activity. These same constituents often argued that a “vocal minority” was by and large responsible for the health complaints yet had not, thus far, provided compelling evidence. A recurring theme in the testimony was the desire for a public health study to determine, once and for all, if the environment is safe to live in or not.

From the Department Of Health:

The Healthy Start Program surveyed 135 (88.8%) out of 152 eligible households in Leilani Estates and found no vast dissimilarities in rates of acute and chronic health conditions. As compared in Leilani Estates vs. Hawaiian Beaches Estates, reported incidents of the “common cold” were notably higher in Leilani Estates in January 1984. Chronic respiratory conditions such as bronchitis/emphysema, asthma, hay fever, sinusitis and other respiratory system diseases were found in similar instances in Leilani Estates and Hawaiian Beaches Estates in 1983. The similar rates in the 2 communities is conspicuous because chronic respiratory conditions are symptoms most often associated with long-term exposure to air pollutants. Overall, the rates of acute and chronic health issues (including chronic respiratory conditions) were higher in both Leilani Estates and Hawaiian Beaches than the County and State numbers.* The study went on to say that the presence of natural volcanic vents in the vicinity makes it difficult to determine what

* Results of air monitoring from three monitoring stations in Leilani Estates during the period extending from January 1983 - January 1984 indicated hydrogen sulfide (H2S) levels ranged from below the reliable detection limit (5 ppb) to 11 ppb, based on one-hour averages. Average one-hour levels of H2S in Hawaiian Beaches never exceeded the detection limit.
contribution the presence of geothermal energy production has on the air quality and corresponding health issues and therefore concluded that “It could not be determined that H2S produced as a result of geothermal development in the area was responsible for any of the health conditions reported in Leilani Estates.”

From the KS8 Blow-Out:

A consultant group analyzed 3 sets of data gathered by the Big Island Rain Forest Action Group, the Kapoho Community Association and Colleen Mandala (member of the community) and found that:

- The odor of sulfur, eye irritations, and trouble breathing were experienced by all communities surveyed
- Individuals required medical care
- 70% heard the venting noise
- 79% smelled sulfur
- 60% experienced eye irritation
- 63% experienced throat irritation
- 15% experienced trouble breathing
- 20% experienced coughing and wheezing, and
- 20% experienced nose irritation.

From Women’s Health Group:

(Awaiting Information)

III. Final Thought

This information is a summary. It raises more questions than it answers. We look forward to seeing it supplemented.

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References


Hawaii Department of Agriculture – History of Agriculture in Hawai‘i. http://Hawaii.gov/hdoa/ag-resources/history


