



## The Importance of Open-Space Value for Land Use Policy in Hawaii

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### Open space and land use

We estimated that the open-space value of 15,000 acres of former sugarcane land on Oahu would be worth more than \$21 million to residents of the island, based on a 1995 survey. Only 6 percent of the Oahu residents surveyed preferred a development use over an open-space use. Urban uses of land on Oahu increased by 11 percent from 1984 to 1994, while the amount of land in agricultural production decreased by 7 percent in the same period. Urban pressure affects land use policy, and the value of open space needs to be considered by policy makers.

The Hawaii Land Use law of 1961 classifies land as agriculture, conservation, urban, or rural. Reclassification among the four types of land is done by the Land Use Commission appointed by the governor. The counties can only control land classified as urban. Many acres of Hawaii's agricultural land are not being used, and sugarcane lands on Oahu and other islands are often the agricultural lands most suited for urban development. David L. Callies, author and land-use lawyer, has said that the Land Use Commission has no justification for keeping land in an agricultural use unless it can be put to some "economic use" (Callies 1992).

"Economic use" usually refers to the value of products and services that can be sold for money. The market price of land normally reflects the value of its economic use. However, economists feel that the open-space value of agricultural land is not adequately reflected in the land's market price. Accounting for open-space value will result in greater values for land used for agriculture. The conversion of land from agricultural to urban

use cannot easily be reversed. "Economic use" needs to reflect open-space value, or some irreversible land use decisions may be made that are contrary to residents' preferences. The results from our survey of Oahu residents are used here to show how to account for open-space value.

### Open-space value as indicated by Oahu residents

A survey of 280 Oahu residents was conducted in 1995 at six locations around Oahu (Vieth et al. 1995). Information from the survey was used to estimate the open-space value and determine the factors that affect this value.

Oahu residents were willing to pay (on average per household per year) 0.23 cents for the open space provided by one additional acre of agricultural land. This value can be converted to a per-acre value of open space for all Oahu residents today if we assume that each household would continue to pay 0.23 cents a year and that we know the cost of waiting for the households' payment each year. If we use a 3 percent cost of waiting, then the open-space value for Oahu residents of one more acre is \$20,340<sup>a</sup>. If the number of households on Oahu increases, then this value will go up, because each new household is expected to be willing to pay 0.23 cents every year for one more acre of agricultural open space. The relationship between the number of households and the value of open space is shown in Figure 1.

<sup>a</sup>The present value was calculated using a 3 percent real interest rate and 265,304 estimated resident households on Oahu.

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Our analysis indicates that the open-space value will also increase as household income increases and the amount of agricultural land decreases. The open-space value is expected to go up by about 0.32 percent for every 1 percent increase in household income. This relationship is shown in Figure 2. For every 1 percent decrease in agricultural land use, the open-space value is predicted to increase by 0.34 percent, and this relationship is shown in Figure 3.

We cannot say if population, income, and acres of agricultural land will change in the future. However, economists often look at what happened in the past to predict the future. The number of households increased by about 15 percent, the acres of agricultural land decreased by about 5 percent, and the median income for a four-person family, adjusted for inflation, increased by about 18 percent on Oahu from 1980 to 1990. The open-space value of one more agricultural acre to Oahu households will increase from \$20,340 to \$25,136, not including inflation, if the changes of the 1980s are repeated. Although it is unlikely that the large population and income growth in the last decade will be repeated, future changes are not predicted to be negative. The open-space value to other residents of the state, as well as to visitors, also needs to be considered. Accounting for all these factors is expected to bring about an increase in the open-space value of agricultural land.

### Future land use policy

The Land Use Commission appears to have considered the open-space value of land in the past, because many acres of Hawaii's agricultural lands that currently are not being used remain zoned for agriculture. Urban pressures, especially on Oahu, may lead to legal challenges of agricultural zoning if this land continues to have no economic use. A formal method of accounting for open-space value needs to be developed, or more land may be zoned urban than is socially desirable. A fifth land classification, "development-free" or "open space" zoning, has been considered. Alternatively, the Land Use Commission could formally include open-space value—such as we have calculated here—in determining economic use. Whatever method is used, open-space value needs to be considered when zoning decisions are made.

### References

- Callies, David L. 1992. Dealing with scarcity: land use and planning. In: Zachary A. Smith and Richard C. Pratt (eds), *Politics and public policy in Hawaii*. State University of New York, Albany, NY.
- Vieth, Gary, Linda J. Cox, and Carol Ferguson. 1995. What is Oahu's open space worth? Univ. of Hawaii, College of Tropical Agriculture and Human Resources, Dept. of Agricultural and Resource Economics, Economic Fact Sheet no. 21. 2 p.

Figure 1. Households and open-space value.

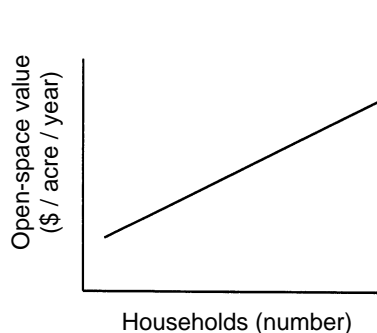


Figure 2. Income and open-space value.



Figure 3. Acres and open-space value.

