

Environmental Requirements on Energy Producers

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Notwithstanding current political uncertainties affecting the Kyoto Protocol process, greenhouse gas emissions and climate change are poised to become the dominant energy-environment problem facing Hawai'i and the developed world. While direct trade-offs between local environmental issues (e.g., energy facility siting) and global effects are difficult to make, even at today's depressed valuations in the global carbon market the economic (shadow) value of greenhouse gas reductions is already 5-10 times higher than other air emissions reductions in the Hawaiian airshed.

It is unlikely that voluntary measures (such as the voluntary Renewables Portfolio Standard instituted in Hawai'i) will have significant impact on environmental emissions, especially greenhouse gas emissions which are invisible and not subject to easy public scrutiny. There is certainly a place for voluntary action, however. This could most effectively be pursued through corporate adoption of internal greenhouse gas emissions reduction targets, and the simultaneous institution of internal carbon trading mechanisms under which corporate units engage in inter-unit trading.

In any case, the Renewables Portfolio Standard may not represent the best renewable energy policy option for the Hawai'i utility industry. RPS creates competitive pressures when there are actually multiple utilities operating in a service territory. In Hawai'i, only pseudo-competition with little or no internal trading of renewable energy certificates/credits would result. Hawai'i would be well advised to look into instituting a System Benefit Charge (a small levy on electricity consumption) that could fund competitively awarded subsidies for private sector development of grid-connected renewables à la the U.K. and California.

Hawaii's emphasis on tax credit incentives to promote renewables is also somewhat misplaced. These are well suited to stimulate introduction of small-scale and distributed clean energy sources like solar water heaters. However, they do not inspire market entry and competition for the larger scale grid-connected renewables (e.g. wind) that will be a necessary component of any longer-run energy-environment strategy in Hawai'i

Hawai'i cannot afford to put all its energy-environment eggs in the renewables basket. For reasons of geography and local opposition, renewables are unlikely to play a dominant role in the islands' utility system. The emphasis on renewably produced hydrogen fuels is similarly misplaced. Hydrogen will be the basis of the long term sustainable energy future, but for the next 20-30 years the transition is more relevant and that will be significantly based on fuel cells (and micro-turbines) fed by hydrogen-rich gas streams derived from reformed hydrocarbons. Such as natural gas or coal-derived 'syngas'.

Hawai'i would be well advised to study the experience of Puerto Rico (one LNG terminal in operation) and the Dominican Republic (one LNG terminal in operation and one under construction). Both are tourism-dependent island economies with utility system demands in the range of 1,500-2,000 MW - about the size of Hawaii's electrical demand. Shipboard-based LNG re-gasification is now being deployed commercially and could emerge as an attractive option for alleviating Hawaii's safety and siting concerns. Greenhouse gas savings of natural gas in utility applications are typically 50-75 percent compared to conventional alternatives. Coal gasification offers the promise of high-efficiency electricity generation and supply of syngas for distributed energy applications. Integrated Gasification Combined Cycle (IGCC) electricity generation technology can be readily adapted to the separation of hydrogen and CO₂ from the gas stream. Long-run viability under future greenhouse constraints will be dependent on finding an environmentally acceptable, low-cost means of CO₂ storage or disposal.