

# Accelerating Progress Toward a Sustainable Hawai`i Island

—February 2007—



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# Section One: Executive Summary

While Hawai`i Island is not the only magnificent place in this country whose natural beauty supports a substantial tourist economy, it may be the only one where beauty and human warmth are central to residents' lives—so much that they express these extraordinary attributes in words of reverence, such as *obana*, *`aina*, and *aloha*.

While Hawai`i is unique, the serious challenges it faces are strikingly similar to those faced by other attractive places. Chief among them is the rapid loss of affordable housing and agricultural resources. Driven by rapid expansion, the environmental and social fabric of the community is under great stress, which threatens *obana*, *`aina*, and the *aloha* spirit—the very attributes that make the place unique. Ironically, in its beauty and warmth is the potential for its own destruction.

Fortunately, there are substantial signs of positive change. To name just a few: the North Hawai`i Outcomes Project, the Chamber's *Kuleana* Program, the Kohala Center, U.S. Park Service efforts to eradicate invasive species, and Hawai`i County's goals.

The chart below lists Hawai`i County's goals in the left column. On the right, it summarizes actions recommended by Rocky Mountain Institute to accelerate progress toward those goals. Though most of these recommendations are directed at County government, many require the support, active participation, and even leadership of local philanthropic, nonprofit, business, and faith-based organizations.

These recommendations are developed further in the fifth section of this report, with the exception of the first recommendation, which is given its own detailed section, number six.

*Note that several actions are listed for more than one goal. This points to one characteristic of solutions derived through whole-system thinking: they generate multiple benefits.*

Hawai`i County Goals	RMI Recommendations to the County and the Community
All	<ul style="list-style-type: none"> <li>• Develop indicators of progress regarding County goals.</li> <li>• Adopt economic-development strategies that build on local assets and increase the economic multiplier rather than relying on continuous physical expansion into agricultural and natural lands.</li> <li>• Expand and reframe philanthropic and non-profit efforts to address the island's most pervasive issues.</li> <li>• Expand leadership development programs.</li> </ul>

Affordable Housing	<ul style="list-style-type: none"> <li>• Create land trusts, community corporations, and co-ops to build affordable housing and protect long-term affordability of existing moderately priced housing.</li> <li>• Impose deed restrictions to limit appreciation of all affordable housing projects.</li> <li>• Require affordable housing developments to adopt green development standards in order to lower residents' utility costs.</li> <li>• Aggressively seek additional affordable housing projects.</li> <li>• Develop new affordable housing projects by mobilizing local businesses' and other organizations' skills.</li> <li>• Accelerate permitting for affordable housing development.</li> <li>• Consider allowing incarcerated citizens to help build housing.</li> <li>• Conduct a survey, in part on buses, to better understand local housing needs—for example, if and where residents would be willing to relocate.</li> </ul>
Mobility Choices	<ul style="list-style-type: none"> <li>• Conduct a bus survey to better understand how to improve the system.</li> <li>• Increase the frequency of vehicles in the mass transit system through public-private collaboration.</li> </ul>
Health Threats	<ul style="list-style-type: none"> <li>• Expand funding and focus on invasive species through public-private collaboration.</li> </ul>

Environmental Stewardship	<ul style="list-style-type: none"> <li>• Implement a rezoning moratorium for lands currently in agriculture or conservation or prevent development on agricultural and conservation lands.</li> <li>• Require ocean and mountain access easements in all subdivisions.</li> <li>• Allow a few residential lots on agricultural and conservation parcels in return for permanent preservation of the vast majority of the parcels.</li> <li>• Consider Maui County’s approach to: <ul style="list-style-type: none"> <li>— Flexible coastal-development set-back boundaries to prevent coastal development in hazardous, flood plain, and erosive areas.</li> <li>— Least-cost planning process for water.</li> <li>— Flexible coastal-development set-backs.</li> </ul> </li> </ul>
Disaster Resilience	<ul style="list-style-type: none"> <li>• Provide distributed power to radios and communications centers in order to ensure communication capability during emergencies.</li> </ul>
Safe Community	<ul style="list-style-type: none"> <li>• Strengthen neighborhood associations and the County’s relationship to them in order to encourage communities to share responsibility for County-driven solutions.</li> </ul>
Energy Self-Sufficiency	<ul style="list-style-type: none"> <li>• Pursue energy-efficiency measures, especially in ways consistent with the State’s soon-to-be-completed energy plan.</li> <li>• Adopt energy sections of the building code that are similar to Honolulu’s.</li> <li>• Develop a County biofuels development plan.</li> </ul>
Fair and Trusted Governance	<ul style="list-style-type: none"> <li>• Strengthen neighborhood associations.</li> <li>• Require equitably applied concurrency in new expansion to ensure that existing taxpayers are not forced to pay public-service costs generated by new subdivisions.</li> </ul>

<p>Managing Growth</p>	<ul style="list-style-type: none"> <li>• Implement a rezoning moratorium for lands currently in agricultural production or conservation or prevent development on agriculture and conservation lands.</li> <li>• Accelerate permits for green buildings and green developments as required by Act 96 Session Laws of Hawai'i (SLH) 2006.</li> <li>• Require equitably applied concurrency in new expansion.</li> <li>• Allow a few residential lots on agricultural and conservation parcels in return for permanent preservation of the vast majority of the parcels.</li> <li>• Consider actions that support the Hamakua agricultural plan.</li> <li>• Review economic-development policies to ensure they emphasize actions that will increase the local economic multiplier instead of only increasing economic throughput.</li> </ul>
<p><i>Ohana</i></p>	<ul style="list-style-type: none"> <li>• Many of the recommendations above will have profound effects on this goal (for example those related to housing, growth, and fair government).</li> </ul>

## Report Summary

Rocky Mountain Institute was commissioned by Hawai'i County Mayor Harry Kim to review the County's goals, develop a whole-system conceptual framework to evaluate the goals, make recommendations that would help Hawai'i County lead by example, and suggest ways of measuring progress toward those goals. The end product is this report, which provides an overview of County goals and whole-system thinking, offers recommendations on how to accelerate progress toward those goals, and suggests ways to measure progress toward those goals.

Listed in the third section of this report, the goals Mayor Kim offered his constituents encompass a wide range of local issues, from housing to *obana*. Local perceptions of these goals and the extent to which Hawai'i County is achieving them is addressed in the fourth section. While the perceptions listed are not an exhaustive or necessarily representative exploration of community opinion, they are a compilation of the opinions of twenty-one influential local people who were convened (and called) by the authors, entirely independent of local government.

The fifth section is the authors' recommendations, primarily to the County, but also to the community, especially its business and nonprofit leaders. One of the fundamental findings by the authors is that loss of control of the island's land is the greatest risk to the community, and that allowing this asset to be bought up by outsiders threatens the foundations of the local economy, the community, and its culture. It urges a more rapid and substantial response to the housing crisis, in addition to the excellent efforts already underway, and the development of nonprofit mechanisms to preserve land for local housing and agricultural production.

This section also suggests a holistic way to consider the local economy that includes: building local assets rather than relying so heavily on investments from outside that can sap the local economy; maximizing the local economic multiplier; and producing locally such basic necessities as energy and food. It encourages more widespread and targeted efforts to develop local leadership, strengthen community and neighborhood associations, and encourage local non-governmental organizations to accept wider responsibilities. It suggests that more attention be given to ensuring that new development pays its own way and that traditional access to shorelines and mountains be preserved.

Because measuring progress toward the County's goals will make those goals durable, transparent, and cost-effective, the most intensively researched and developed section of this report is section six. It explores the value of measuring progress towards goals, and then offers several possible indicators for each of the County's goals, including some recommended indicators. Also, where data are available, this section describes progress that is being made toward the goals. The authors urge readers to review at least the first two pages of section six, if one's time for this report is extremely limited.

Just a generation ago, community leaders dealt with relatively straightforward problems that arose slowly enough to give residents and leaders a chance to address them. Today,

leaders face, in rapid succession, a multitude of complex issues that demand a sophisticated approach. The seventh and last section of this report explores “system thinking,” a way to consider community issues that includes the web of inter-connections among local problems, their root causes, and the long-term effects. This final section delves into “vicious cycles” that cause local problems to reinforce themselves. It exposes root causes and demonstrates how some local problems tend to accelerate out of control. Finally, so that resources, programs, and policies can be focused where they will do the most good, it offers a discussion of solutions that target measurable objectives.



## Section 2: Introduction

Hawai'i Island is an extraordinary place of natural beauty and human warmth. To the newcomer, it seems a paradise. But a closer look at the lives of locals reveals a more complex, daunting, and sometimes dark picture. Rapid change is making everyday life increasingly difficult and stressful for residents.

Despite significant challenges, there is substantial reason for hope. The people of the island are deeply committed to preserving and enhancing the island's beauty and cultural integrity, and to building an economy based on local human and natural assets. Various nonprofit and volunteer organizations are tackling important issues. And, in recent years, local government has committed itself to confronting and finding solutions to the island's problems. This commitment is particularly evident in the County's ten goals, outlined in this report's third section.

These goals were the starting point of our report. The authors interviewed County officials and well-informed local citizens. We also convened two gatherings of local citizens, in Kona and Hilo, to discuss the County and its goals. In none of these conversations did we find anyone who disagreed with the goals.

Based on these conversations, observations of the situation on the island, and years of experience working with small and rural communities in forty states, the authors developed several recommendations for accelerating progress toward the ten goals (see discussion in section five of this report). We also developed recommendations for ways to measure progress toward these goals. Section six offers prospective indicators of progress.

Measuring progress on goals may at first seem to be a minor clerical function that has little to do with the debates taking place all over the island regarding important local issues. But, in fact, indicators of progress are vitally important for many reasons, including the following:

1. They provide a compelling basis for determining if local government programs are effective and, therefore, if public money is being spent appropriately;
2. Indicators inform the exchange of ideas among citizens by offering objective information regarding the actual conditions on the island. Without this kind of information, public perceptions, which drive the actions of local government and other organizations, can be based on isolated incidents, rumors, and misinformation; and
3. By informing the public about the condition of important local issues, indicators increase public support for effective programs and, in turn, decrease the chances that future County governments will casually discard those programs.

### Using this Report

This report can be used in several ways. Citizens who wish to develop a broader understanding of the issues confronting the county will find the report useful in their future thinking and actions, whether they are seeking elected or appointed roles in government,

working with nonprofit organizations, or looking for ways to develop a business that is compatible with community goals.

County government may use it as the starting point for the development of indicators of progress, which can make the current administration's goals more durable and cost-effective. The County may also implement many of its additional recommendations.

Some of the ideas in this report may seem obvious to County officials and other citizens who have been dealing with these issues for years. These same ideas, however, will prove valuable to other citizens who are seeking a better understanding of county issues.

## Moving Forward

Though there are significant signs of positive change, the Island of Hawai'i's problems are unlikely to be solved quickly and easily. For example, one problem that the county faces today is the increasing influx of newcomers with far greater resources than locals, which is dividing the community when it could instead be a source of opportunity. This influx can push life-long residents into homelessness or less desirable neighborhoods far from their jobs, or it can become a source of needed resources. It can create gated fortresses of wealth, furthering the divide between the newcomer and the local, or it can increase cultural diversity and support local nonprofit organizations.

The community will experience the negative side of this dichotomy if many organizations on the island continue with business as usual. In contrast, a positive scenario requires that all sides of the various controversies expand their individual *kuleana* by:

1. Actively committing to collaborate for a long-term positive outcome for all residents, which includes fully hearing and understanding the ideas of those who seem to be one's adversaries; and
2. Exploring, understanding, and acting on the root causes of the island's problems and the relationships among those problems to derive solutions with multiple benefits—instead of each faction pushing its narrow agenda and ignoring the issues of others. Often called whole-system thinking, this approach is described in section seven of this report.

This overarching recommendation does not imply that positive steps are not already being taken on the island. On the contrary, there is much reason for hope. A few examples include the North Hawai'i Outcomes Project, the Chamber's *Kuleana* Program, and the Kohala Center. However, it does mean that all local interests must commit to move forward aggressively.

In many communities with whom the authors have consulted, this recommendation might sound naïve. But on the Island of Hawai'i, the *aloha* spirit and the pervasive commitment to *ohana* and *ʻāina* make it plausible.

There is a widespread perception among many interviewees that certain previous County administrations based their priorities and decisions on supporting their cronies—and that

they spent little time or energy considering the serious, worsening local problems. Though the authors don't know if this perception is correct, present conditions point to prior years of neglect and a legacy of poor planning.

For example, due to decisions made by previous administrations, a significant amount of development was permitted without a requirement for the necessary concurrent infrastructure and affordable housing. The lack of transparent decision-making by County commissions has resulted in "land mines" of permitted development that are detonating all over the island, and which the County now has little authority to stop.

In contrast, the current County government has done much to restore the public's trust in government, create a sound planning process, and install competent leadership in many critical County agencies. The County has made significant gains toward important solutions, for example, in planning, housing, and mobility. In addition, it has taken an aggressive approach to public health issues, like Ice.

The authors cannot state too strongly that the problems now confronting Hawai'i County are grave. In fact, they are worsening far too rapidly for the community or County government to turn away from them, even for a moment. A sustainable future absolutely requires that local government not revert to past behavior. On the contrary, it must continue to confront the island's important problems while strengthening its efforts towards transparency.



## Section 3: Hawai`i County Goals 2005

1. Affordable housing—to avoid the polarization of the Big Island into the haves and have-nots; to enable the locals to stay and not to leave the island in order to own a home
  - a. Mixed income; not segregated
  - b. Reasonably close to work; not pushed to the outskirts
  - c. Community feeling, safe
  - d. Safety net—dignified homeless facilities with support services
  
2. Mobility choices—to reduce dependency on the automobile; to provide equitable mobility to non-drivers (elderly, children)
  - a. Transit—comfortable, predictable schedule, reasonably frequent
  - b. Para transit—to supplement transit
  - c. Connected network of roads to reduce load on arterials
  - d. Mixed uses and pedestrian facilities to encourage walking and biking
  - e. Mitigate congestion
  
3. To be vigilant and able to mobilize and respond to challenges that threaten health or community
  - a. Ice
  - b. Coqui frogs
  - c. West Nile virus
  
4. Environmental stewardship—to develop an attitude of care and respect of the *aina*
  - a. Identify and protect valued open spaces
  - b. Protect and restore to have clean drinking and coastal water quality
  - c. Promote recycling and develop efficient solid waste disposal system
  - d. Enhance and protect public access to shorelines and mountains
  
5. Disaster resilient—in recognition that the Big Island is one of the few places on the earth exposed to all major natural hazards (tsunami, earthquake, lava flow, hurricane, wildfires, drought), to have the best civil defense system and informed citizenry in the world characterized by calm and able response, mitigated damages due to structural and other preventive measures, and relatively quick recovery.
  - a. Prepared
  - b. Trained
  - c. Mitigation programs

6. Safe community—to not have to always worry about locking doors, to be able to enjoy evening walks
  - a. Trusted and visible police force
  - b. Skilled fire department able to respond to fires, hazardous waste, medical emergencies, rescues
  - c. Communities sharing responsibility
  
7. Energy self-sufficiency
  - a. Demand
    - i. Energy-efficient buildings
    - ii. Energy-efficient utilities
  - b. Supply—recognize Big Island resource potential and encourage renewable energy sources
  
8. Fair and trusted governance
  - a. Allocation of resources based on objective level of service standards
  - b. Open and responsive; respect divergent views
  - c. Fiscal prudence
  - d. Equitable taxes
  
9. Managed growth
  - a. Concurrency—infrastructure keeps pace with growth
  - b. Development pays its fair share
  - c. Compact—encourage infill, discourage sprawl
  - d. Agricultural lands protected for open space values and future potential for agricultural use
  - e. Community participates in planning and implementation—“living” community development plans
  
10. Taking care of family—*ohana*
  - a. Comprehensive support services for elderly
  - b. Reintegration of ex-offenders into community

## Section 4: Local Perceptions and Suggestions Regarding County Goals and Actions

In the fall of 2005, Rocky Mountain Institute convened two groups of influential Hawai'i County residents—one in Kona, the other in Hilo—to discuss the County's goals. Also, RMI conducted telephone interviews with several people who were unable to attend. No one from local government participated in the conversations, and to ensure frank conversations, RMI guaranteed participants that no statements would be attributed to individuals in this report.

Listed in this section are the primary points that RMI gleaned from these conversations, although many more valuable thoughts can be found in the full transcript, transcribed by Marni Herkes and located in Appendix A. These conversations, as well as conversations with County personnel, formed the basis of the causal-loop diagrams developed by RMI and included in section seven of this report.

The ideas listed in this section are summaries of points made by the people with whom RMI spoke. This section does not contain RMI's recommendations. Those are developed in other sections of this report and are the sole responsibility of Rocky Mountain Institute, not the county residents listed below.

### Participants included:

Charlene Hart	Keith Kato
Claudia Woodward-Rice	Ken Bouche
Eric Kapon	Leinaala Enos
Gay Mathews	Mark McGuffie
George Zweibel	Marni Herkes
Guido Giacometti	Paul Buklarewiz
Jack Kelly	Sally Rice
Jacqui Hoover	Sharon Vitousek
Jeffrey Melrose	Tane Datta
John Ray	

The conversation was led by Kyle Datta, then Senior Director at Rocky Mountain Institute (who is no longer with RMI) and Michael Kinsley, Principal at RMI. They asked participants three general questions regarding the Mayor's goals:

- What are the root causes of the problems that the goals are meant to address?
- To what extent is the county making progress toward the goals?
- What might the county do differently?

RMI's overall impression from these and other informal conversations is that many well-informed residents of Hawai'i County believe their county government should deliver a wide range of solutions and services—an even wider range than usually seen in Mainland

communities. Also, residents expect the County to address a more comprehensive range of issues than those included in the Mayor's list of goals. For example, several participants insisted that economic development and education be included among County goals. One suggested that the County intervene in the problem of rapidly deteriorating access to quality health care.

At the same time, there is skepticism that the County will accomplish its goals, which is based on decades of observation and experience. Many expressed frustration of having participated in similar conversations in the past that accomplished little. Yet most seemed enthusiastic about participating in these conversations and hoped for future collaboration.

Among the stated County goals, those chosen by participants as deserving highest priority were:

- Affordable housing;
- Concurrency;
- Mobility;
- Environment;
- Open space;
- Agricultural land preservation;
- Access to shorelines and mountains;
- Infrastructure concurrency;
- Developers paying their share of public costs; and
- Health and safety.

Housing affordability was the most-discussed issue. In addition to high prices, concern was expressed with overcrowding and the need for transient housing.

Perceptions:

- Increasing distances between home and work are causing breakdowns in family relationships, in *ohana*, and they are leading to drug use. Many land parcels classified as agricultural clearly have no agricultural value; resolution of these land classification contradictions could free up land for affordable housing. Also, the “two-tier” process required to use this land for affordable housing has become one of the many barriers to affordable housing.
- Some earlier affordable housing projects no longer offer affordable units; the County should ensure that housing built as affordable remains affordable permanently.
- In the last two years construction costs have increased 40 percent (from a person who builds affordable housing).
- The County is making significant headway during a difficult time.
- The community conversation about housing had been going on far too long and the private sector, which has offered solutions, has been ignored.
- State and County conflicts, especially regarding land holdings, are a barrier to creating affordable housing.
- The multi-layer approval process—especially state processing, which is redundant and therefore creates unnecessary expense—is a barrier to affordable housing.



**Suggestions:**

- Reconsider the elimination of *ohana* zoning.
- Develop tax incentives for developers who build permanently affordable housing.
- Offer some large landowners tax credits for assigning property to affordable housing and keeping it out of the free market.
- Do more Kawaihae-style transitional housing.

**Agriculture****Perceptions:**

- Availability of agricultural land is a significant factor affecting local agricultural production and income.
- A strong local agricultural economy leads to increases in home ownership, which supports better connections within extended families, which builds *ohana*.
- Farmers can't successfully compete with other businesses for employees.
- Subdividing land makes managing agriculture more difficult.

**Suggestions:**

- Resolve the confusion over the County's agricultural land categories, which will support more agricultural production and income.
- The County should integrate development of agriculture and housing in small communities, which would eliminate long commutes.
- County tax structure should better support small farms.
- Small farmers could use help expanding markets and cross marketing.
- Allow different infrastructure standards for agricultural lands.
- Increase support for value-added agricultural goods.

**Mobility****Perceptions:**

- The County is running an excellent bus system.
- Extremely long commute times are a very serious concern.

**Suggestions:**

- The County should consider supporting car-pooling and jitneys.
- Resorts could offer flex-time for workers.

**Open space****Perceptions:**

- The Legacy Lands Bill and acquisitions by the Nature Conservancy are substantial achievements.

**Health****Perceptions:**

- Local strategies regarding coqui frogs and Ice are effective. Drug Court is regarded as a success.

## **Water**

### **Perceptions:**

- Many flood maps are inaccurate and County enforcement of restrictions on building in floodways is weak. As a result, many houses are located in floodways and are in severe danger.
- There is not enough potable water for anticipated population growth.
- The effect of contaminated runoff on reefs and ocean water quality is very serious.
- Cruise ships may be polluting near-shore waters.
- The County is “ignoring” the pollution of the ocean and it is not enforcing many regulations, particularly those related to residential and park sewage, which will damage tourism. (This comes from one person who seemed very well informed about ocean water quality.)

## **Energy Self-Sufficiency**

### **Perceptions:**

- This island is a great place for geo-thermal and other renewable energy sources and systems because it has particularly high energy costs due to long transport distances, and costs are not going to decline.
- Biofuels for transportation and generating electric power are a critical component of energy self-sufficiency for which the Big Island is uniquely well-positioned.

## **Access to Shorelines and Mountains**

### **Suggestions:**

- Use of the Swiss model of modest camping facilities, including toilets, in Hawai'i County's mountains.

## **Concurrency**

### **Perceptions:**

- Leeward growth in residential housing has created a series of infrastructure problems that need creative public-private solutions.

## **Growth**

### **Perceptions:**

- County growth policies should follow the community's vision for the future. Not sure that the community has voiced what it wants.
- The Hawai'i Leeward Planning Conference offered a growth workshop and brought information to the County that fell on deaf ears.
- Present zoning does not permit mixed use.

## **Public Participation**

### **Perceptions:**

- The Mayor never gets really cohesive input.
- Residents don't go to public meetings and testify. Instead, they talk to friends and clients (from a participant who has spent much time working with grassroots people and organizations).
- Those who attend are the few who have time to go to meetings.

### **Suggestions:**

- Community meetings should be held at times convenient for working residents.
- County meetings should be better advertised—for example, with highly visible notices at such natural gathering points as schools and stores.
- We need leadership from the County and to know what the County is thinking. If they want community input, they need to be more aggressive.

## **Economic Development**

### **Perceptions:**

- *Ka'u* has no economic base, no large employer, some macadamia farms, and Pahala nut pickers.

## **Unions**

### **Perceptions:**

- Unions are having a negative effect upon the County's capacity to meet its responsibilities.

## **Signs**

### **Perceptions:**

- The Island is "undersigned" and area attractions are poorly explained. For example, Waipio County Park gets 200,000 visitors every year, yet there is no interpretive sign that introduces the valley. This means an opportunity to encourage intimacy with the land is lost.

## **Safety**

### **Perceptions:**

- Lifeguard and rescue capabilities are hampered by old equipment.



## Section 5: Recommendations to the County and the Community

Though most of these recommendations are offered to County government, they are all applicable to the entire island community for two reasons. First, local organizations that are variously nonprofit, philanthropic, business, and faith-based also have significant responsibility for addressing many of the issues described here. Second, many of the recommendations that would be carried out by the County are sufficiently challenging that they require active support from the community and continuing commitment by future County administrations.

### **Hawai`i Island's Most Critical Challenge—Who Will Control the Land?**

The primary issue now facing the Hawai`i County community is the control of land. This situation is not unique or even unusual. It is one that has occurred many places before and inevitably will occur again elsewhere. In fact, this issue is the fundamental challenge facing many small communities in a globalized economy. That is, how can a local economy and community become sustainable when its essential asset and source of local wealth—its land—is being rapidly bought up by outsiders at prices far beyond the reach of local residents. To date in the United States, the most beautiful or strategically located communities are those most affected (e.g., Hawai`i, Aspen, Palo Alto, Manhattan, etc.). But this crisis has already spread to less famous communities where leaders may seek guidance from such places such as Hawai`i Island.

A few years ago, Hawai`i was gripped by declining revenues from Japanese tourists. Now Hawai`i County is faced with a housing and land market that has been overheated by mainland retirees and second-home buyers. Conventional economic development says that more investment is always good. Conventional indicators of success (e.g., property values and real estate transactions) support this point of view. But the vast majority of local working people understand that rapid increases in property values are quickly pushing prices beyond their reach, even in neighborhoods that seemed immune to these forces only a short time ago. (Section six addresses the important need to develop alternative indicators of success and progress.)

### ***Growth, Development, and Expansion— Confusing Terms***

One source of confusion in the growth debate is that the word “growth” is used to describe two very different concepts. One of these concepts might be called “expansion,” or the things that make a community bigger (e.g., more people, infrastructure, buildings, subdivisions, malls, etc.). The second concept could be called “development,” and include the things that make a community better (e.g., jobs, income, savings, and quality of life).

#### **This distinction is important because:**

- (1) Many expansion proposals won't improve the community, its economy, or its environment, and
- (2) Many development options do not require expansion.

The challenge facing local leaders is this: how to best manage a limited resource, land, so that it can remain available for future sustenance and local wealth-building (e.g., affordable housing and agriculture). History has shown that when there is a wide disparity between the wealth of locals and that of outsiders, it's foolish to hope the market will solve the problem. In highly inflationary markets, increases in supply do not bring down prices. Outsiders can always outbid locals for land and housing no matter how much additional supply becomes available.

History also shows that an economic tsunami of this sort takes only a few years to do its damage—from the time the place is “discovered” by outsiders as a place to stay (not just visit) to when they own most of the land and housing. Therefore, the community must act rapidly and decisively, even beyond its excellent efforts to date. The gravity and immediacy of the problem require aggressive efforts to ensure permanent local ownership by residents. Land and housing that are not removed from the speculative market will be lost to residents forever.

For many individuals in the community, housing affordability is not the biggest concern. Their attention is focused on such crucial issues as mobility, loss of *ohana*, drugs, and domestic abuse. But those who have carefully considered the underlying causes of these important problems understand that the housing crisis is a primary driver of, or at least a major contributor to, the problems with which they are most concerned. These kinds of interconnections are portrayed in this report's section seven on whole-system thinking.

When tackling the housing challenge, the community must understand that outsiders are not the bad guys. After all, they are simply following the rules, most of which were created by locals. And many wealthy mainlanders become part of the community, contributing time, skills, and money. It's up to locals to establish the rules of the game and to protect fundamental local assets while respecting and welcoming newcomers in the tradition of *aloha*.

Some would suggest the only vehicles for implementing these efforts are local and state government. Certainly these two entities must play essential roles, especially in the development of zoning, but their capacity to act rapidly and decisively is constrained by limited resources and intervening political priorities.

Current affordable-housing efforts by local government and nonprofit organizations are a dramatic shift from the complacency of previous County administrations and they deserve enthusiastic community support. However, their scale is not large enough, nor are they proceeding fast enough, to make up the existing affordable-housing shortfall or to keep up with the rate of loss of affordable housing on the island. Further, many affordable housing units now being developed are affordable only for the higher end of the workforce. Therefore, each of the existing methods of affordable-housing development should be accelerated, additional means should be found, and more substantial subsidies (public and nonprofit) should be considered in order to reduce prices even further.

## New Organizations for Affordable Housing

One possible vehicle for the development of affordable housing is land trusts. One form of land trust, land conservancies (e.g., the Nature Conservancy, the Trust for Public Lands), has already begun excellent efforts to protect open areas from the speculative real estate market, thus permanently preserving these vital ecological assets. They offer a valuable model for other challenges because they are relatively insulated from petty squabbles and independent of political uncertainty and turnover. In addition, they have been established with clear missions for the public good, and their lands are held permanently for community purposes.

Now is the time for the community to consider land trusts to preserve both its residential and agricultural assets in order to ensure their permanent affordability for local working people. When we say “community” we mean all organizations: governmental, nonprofit, philanthropic, faith-based, and business. This list also should include organizations holding large parcels of land who, to date, have regarded their *kuleana* more narrowly.

However, land trusts are not the only way to protect local housing and agricultural assets. Others options should be considered, too. A “blue-ribbon” committee of community-minded residents (possibly convened by the County) with expertise in finance, development, real estate, housing, and agriculture could develop additional means to establish affordable housing. For example, in addition to land trusts, cooperatives and community corporations should be considered. An example of the latter was formed in Powell, Wyoming, where a newly formed community corporation bought and now operates a mercantile store that had been abandoned by a chain store (the profits from the former chain store now recirculate in the local economy). Such community entrepreneurship mobilizes private-sector expertise and offers tools to achieve community goals. Provided with the opportunity, local business people are often eager to put their skills to work for the good of a community.

One community leader suggested that the County and State explore the idea of allowing (not requiring) the incarcerated population to help build affordable housing or transitional housing. Though not without political problems, this idea could offer four benefits. It could: lower construction costs, increase the number of competent construction workers on the island, and teach the incarcerated a marketable skill, which could reduce recidivism.

But whatever additional means are chosen, Hawai'i Island leaders must understand that the severity of this problem will rapidly worsen. This is not a possibility; rather, it is a certainty. Public, business, faith-based, philanthropic and nonprofit leaders should quickly collaborate to create new institutions and mechanisms to acquire land and buildings in order to ensure permanent affordability of local agricultural and residential assets.

## Making Affordability Permanent

Faced with extraordinary challenges, affordable-housing advocates often miss three critically important factors. Though the current County administration has demonstrated its understanding of them, these issues are so important that they are presented here in the hope that they won't be overlooked by future governments and others working on housing issues.

First, affordable housing is not worth doing unless there is a durable mechanism in place to ensure the units remain affordable permanently—that is, they are removed from the speculative market. One such mechanism is a deed restriction that prohibits ownership-unit appreciation in excess of a certain pre-determined annual percentage, for example, 3 percent. A similar restriction can be placed on the owner of rental units and applied to rent increases. These mechanisms have withstood the test of time in other communities, where unit buyers, including the principal author of this report, are happy to purchase a home in an otherwise unaffordable market in return for agreeing to a constrained, but reasonable, valuation increase. The County-sponsored Waikoloa housing project is using such a mechanism.

An additional note regarding deed restrictions for affordability: many small-community governments have encouraged affordable housing through various creative zoning mechanisms. But some have later rejected those mechanisms when they were abused or exploited for development that is not genuinely affordable. Some local residents suggest this may have occurred with the County's *ohana* zoning initiative. One way other small-community governments have prevented such abuse is by requiring deed restrictions that ensure permanent affordability.

The second issue to remember is that though most locals understand that housing affordability is a serious problem, many assume that existing modest housing (for example, on the windward side of the island) will remain affordable because only local working people will want to live there. This is a dangerous assumption because middle-class mainlanders who can't afford high-end homes are already purchasing humble residences for their modest retirements. A few such purchases are not a problem, but millions of retiring "boomers" are looking for their dream retirement home. Many other communities experiencing similar pressures have seen humble housing quickly snapped up by second home-buyers and retirees. These pressures can be addressed through a combination of zoning and land trusts and community corporations or co-ops to protect long-term affordability.

The third issue often overlooked when discussing affordable housing is green design. Long regarded a luxury for residents, smart green design in fact *ensures* long-term affordability because the energy savings achieved lowers total monthly housing costs (mortgage plus operating expenses). In contrast, shoddy construction can doom residents to steady increases in utility bills. This issue is also being demonstrated in the Waikoloa housing project. Smart green design, often a counter-intuitive aspect of sustainable development, is described in section seven and a New Jersey housing group is cited as an example.



Benefits from green design could be accelerated by regulatory changes considered at recent Public Utility Commission hearings, where the Hawaiian Electric Industries (HEI) companies agreed that a third-party administrator should provide efficiency for hard-to-reach market segments, including rental units and affordable housing. This new entity may be created in 2007, and would receive funding from the demand-side-management surcharges already added to utility bills. This money could be used to create revolving funds that support efficiency and renewables, making mandated requirements even more cost-effective.

## **Agriculture, Energy, and Water**

A resilient local economy is one that produces basic necessities locally, principally energy and food, while ensuring other necessities—like housing, water, and health care—remain affordable.

By emphasizing energy efficiency and renewable sources, the State has recently begun moving toward more rational local energy production and energy savings, which will reduce energy costs and environmental impacts and increase the islands' energy security.

In seeking to ensure long-term local agricultural production, the County could give even greater attention to finding ways in which its actions and policies can support and not impede agriculture. If, for instance, the two-year-old Hamakua agricultural plan is at all accurate, local agriculture shows great promise. It also faces several challenges over which the County has significant influence. For example, the first listed challenge is “Escalating pressures for upscale residential developments on agricultural land.” Zoning and land-use requirements can permanently preserve agricultural land. The recent earthquake damage to the Hamakua ditch only heightens the need for greater community attention to this issue.

As mentioned above, strict zoning controls should complement efforts by land trusts to permanently protect high-quality agricultural land from being converted to other uses. An additional method to protect these valuable lands is to allow, even encourage, very limited, luxury, rural-residential development on very small portions of large agricultural tracts in return for permanent preservation of the balance of these tracts and corresponding farming opportunities for local farmers.

The appropriate development of a biofuels industry within Hawai'i County will provide both energy self-sufficiency and support agriculture, particularly livestock production. Byproducts of biodiesel production include meal for stock feed. However, biofuels compete for land and water with food crops on the same important agricultural lands. Therefore, the County should include biofuels development in the General Plan.

The County should adopt an energy building code modeled after the building code developed by the City and County of Honolulu under Mayor Harris. Building codes, especially those that are performance based, have proved to be the single most effective

action to drive electrical-energy efficiency. Outdated and prescriptive codes often create substantial barriers and disincentives to innovation in energy efficiency. One example is the institutional barriers that County residents face when attempting to install water-efficient composting toilets.

The County should engage in a least-cost planning process for water infrastructure and use before a water crisis occurs. Maui County is currently engaged in a least-cost water planning effort that shows that water-efficiency measures are the most cost-effective approach to managing increasing residential water demand while providing water for agriculture, the natural environment, and cultural activities.

## **Disaster Resilience**

Such renewable energy sources as solar electricity (photovoltaics) offer cost-effective, decentralized sources of electricity to support radios and communication centers that maintain disaster resilience.

## **Smart Growth in Hawai`i County: Development without Expansion**

For more than a quarter century, communities nationwide that are wrestling with growth problems have responded with four kinds of action: restrictions, fees, design standards, and affordable housing. Each community has implemented its own mix of these actions. And, while these four are vital, they are incomplete without the fifth: sustainable development—ways to generate savings, jobs, and income that do not necessarily require any community expansion. To provide context for many of the recommendations in this report and to suggest an overarching framework for many local government goals, the five actions are described below in general terms and with a few local examples.

1. Restrict expansion through such means as tough zoning, urban growth boundaries, subdivision allotment systems (that control growth rate), community land trusts, and consistently electing people who can actually say no to growth proposals that are incompatible with the community (for example, a rezoning moratorium for lands currently in conservation or agriculture, where the latter is genuinely productive land).
2. Ensure expansion pays its way through such means as impact fees, user fees, and bed taxes (in tourist areas). Most citizens are unaware that expansion into previously undeveloped areas virtually always generates insufficient tax revenue to pay for the new public services demanded. In effect, existing taxpayers subsidize the expansion that is depleting their open space or helping their own public services deteriorate. Example: Equitable “concurrency” applied to all new expansion proposals.
3. Design expansion right by clustering development, infilling not sprawling, mixing land-uses, and by using traditional community design, multiple transportation modes, and natural infrastructure (e.g., for drainage and sewage).

Examples: Accelerate permits for green buildings or green developments as required in Act 96 Session Laws of Hawai'i (SLH) 2006.

4. Build affordable housing through private, public, and nonprofit means and by requiring its inclusion as a large portion of every expansion proposal (e.g., 50 percent).
5. Foster sustainable development: Create jobs, income, savings, and community well-being by pursuing development that is compatible with community and environmental values. This kind of development takes place independent of increases in the size of the community. Examples are described below.

## **Taking Back the Future—Building a Sustainable Local Economy**

The Islands have a long and sad history of being treated like a colony or worse. And statehood did not break the bonds of control of local assets by powerful outside interests. But that's history. The important question is what choices are being made now?

A community whose economy relies entirely upon revenues from, and investments by outsiders is relegated to the back of an economic bus driven by the outsiders. In contrast, a community can carve out its place in the global marketplace when it patiently builds local assets, and when it welcomes outside investment while retaining control of its assets. Housing and agriculture were mentioned above, but this principle is more widely applicable.

Conventional economic development insists that a community should do whatever it takes to maximize the flow of dollars into the community. But one example is dollars from a big agricultural firm to plant a single crop over a large area of the community, employing locals at low wages, with most profits leaving the community—in short, a plantation. The plantation economy is perpetuated when local economic development focuses exclusively on investments by large outside firms for large economic activities.

This flow of dollars into and out of the community is called economic “throughput.” In a community, throughput is similar to gross revenues in a business. But, just like a business, a community needs *net*, not just gross revenues; it needs its dollars to be re-spent in the community.

## **Maximizing the Local Economic Multiplier**

Dollars that leak out of the community are part of throughput flow, and they don't do the community much good. For example, when locals pay for their electricity, most of those dollars leak out of the community to pay for the diesel that runs the generators and the tankers that shipped it to the power plant. In contrast, money spent for efficiency improvements that save electricity and for locally generated renewable energy tends to be re-spent in the community. This re-spending is called the economic “multiplier effect.” A community that optimizes its multiplier effect, instead of maximizing its throughput

builds local assets. It takes control of its future by reducing its dependence on outside economic interests. For example, local energy-efficiency programs reduce the leakage of dollars to pay for outside sources of energy. Such an effort in Sacramento, California (with a population about two and a half times that of Hawai`i County) created 880 jobs. It also reduced ratepayer utility bills.

Globalization dictates that a community focus all its economic-development attention on selling what it can sell best, and maximizing local throughput in ways that are beneficial for producers. But what happens to the community when the global market for that product or service shifts? The Hawai`i sugar industry comes to mind.

In contrast, a resilient local economy is one that can stand economic shocks from the world economy. Yes, it sells to the world what it can best produce, but it also focuses much of its economic-development effort on maximizing the local multiplier effect. In addition to energy efficiency, this is achieved through such efforts as:

- Supporting existing business and the formation of new local businesses
- Encouraging locally owned retail stores, whose local economic benefit is approximately triple that of chain stores
- Optimizing the local production of the food and energy that is consumed on the islands
- Putting waste products to work (as bagasse was once used)
- Assembling local contractors into flexible business networks to jointly bid on jobs that would otherwise be awarded to off-island contractors
- Using microcredit to start very small businesses
- Training locals in business skills
- Shifting business and government purchasing to local sources
- Revitalizing the commercial cores of traditional settlements while minimizing chain-dominant shopping malls, and
- Mentoring of local business startups by veteran business people.

Measures like these build on local assets and increase the economic multiplier effect, and are far more sustainable than old-school economic development. A community that chooses this path for its economic-development programs (public and private) not only strengthens its economy, it also no longer needs to sacrifice community values and its environment to the worn-out strategies of continuous expansion and increasing throughput—usually evident as sprawling subdivisions and malls that destroy open space, agricultural productivity, natural areas, and sense of community.

Therefore, while economic development is not explicitly included in the County's goals, the forms of economic development chosen by the community profoundly affect most of its goals: *ohana*, affordable housing, mobility, environmental stewardship, disaster resilience, safety, and managed growth.

## **What Gets Measured, Gets Attention: Indicators of Sustainable Progress**

Because development of indicators of progress toward County goals will make those goals durable, transparent, and cost-effective, this is one of the most important recommendations in this report. Section six of this report describes in detail indicators that the County can adopt and collect in order to measure progress.

This task is a large one and will compete with other more pressing matters for County staff time. Virtually every organization faces a similar dilemma: important long-term activities are often set aside in favor of immediate challenges. Therefore, the development of indicators could be phased. In any case, the authors recommend that the County begin this process immediately by selecting a few indicators that will measure progress on the most time-sensitive goals, and that the indicators be relatively straightforward to collect. Then, set out a realistic schedule for adopting and collecting the balance of the indicators over time.

## **Access to Shorelines and Mountains**

There is a perception among many local residents, as well as plenty of evidence on the ground, that new land developments are slowly but surely cutting off *mauka* and *makai* pathways to areas traditionally used by locals for recreation and subsistence. Therefore, the County should require that development applications include permanent traditional-access easements to these areas. There is substantial precedent for such requirements on the Mainland. Additionally, the County should consider flexible coastal-development setback boundaries based on Maui County's ordinances to prevent coastal development in hazardous, flood plain, and erosive areas.

Additional consideration should be given to ensuring that access after subdivision and building is comparable to the access conditions before subdivision and building—for example, adequate parking and twenty-four-hour access.

## **Bus Survey for Improved Mobility**

To get a more complete sense of the needs of transit passengers, to track progress in the development of the bus system, and to identify the most effective ways to improve its already rapidly improving bus system, the County should consider surveying its passengers.

The cost of undertaking and analyzing one such survey on the Mainland was approximately \$12,000 for one community that has less than half the population of Hawai'i County but a larger bus system. To keep the cost down, the survey was done in-house and relied on the assistance of drivers, who distributed the surveys and entered results into a database. Performed by a consultant, it would likely have cost at least twice that amount. Hawai'i County could adapt such a strategy for its own use.

An additional benefit of a driver-administered survey is sensitivity to language and literacy issues.

The survey could ask such valuable questions as:

- How did you get to the bus?
- What is the purpose of your trip?
- How close is the bus stop from your home, your job?
- How many days a week do you typically take the bus to work?
- What are the main reasons you take the bus?
- What would encourage you to use the bus more?
- How long does it take you to commute to your primary job from home?

It also could ask questions about the County's affordable-housing program. One example question might be: If affordable housing were built within a few miles of your job, would you move to that location or continue to commute? The answers might help the County locate future housing projects.

## **Improving Trust in Local Government: Community Associations**

On balance, having a single local governmental jurisdiction on the Big Island is a distinct advantage. This helps the community avoid the parochialism, inefficiency, and destructive intergovernmental competition that plagues most local governance on the Mainland.

That said, one disadvantage of this structure is that people in certain communities—neighborhoods and other population centers—may feel that they don't have a substantial a voice in their community's governance, especially regarding issues that may be different in different areas.

Fortunately, this single disadvantage can be solved relatively easily and inexpensively. The County could encourage and, to a very limited extent financially support, a formal system of neighborhood and community associations across the island. To some extent, this has already taken place, especially around particular issues (e.g., Big Island Good Beginnings Alliance). But there remains a need for coherent place-based associations.

Of course, the County could not, and should not, assign legal authority to these associations. It could, however, give the associations a formal voice by, for example, enabling them to develop master plans and referring land-use and other location-specific issues for their review and comment. Such referrals should include clear and short deadlines so they don't hold up decision-making. The County may delineate the boundaries for these associations or allow them to organize themselves within their chosen boundaries. The County could ensure that the associations offer genuinely representative voices by imposing certain membership, openness, and meeting-notice requirements.

## Philanthropic and Nonprofit Organizations

Though RMI has extensive experience working in rural and small communities in forty states, we have never seen such widespread expectations among citizens—who seem to think that local government is obliged to solve virtually all the community’s problems. Regardless of one’s political philosophy regarding the role of government, these expectations are unrealistic.

If the authors could address the philanthropic and nonprofit leaders on the island, we would urge them to do more to solve the most critical issues now facing the community—especially those related to affordable housing, agriculture, and economic development because they affect so many other issues.

To tackle these concerns, additional nonprofit organizations may be needed. But, at least as important, some prominent existing organizations should re-examine and expand their long-established organizational missions. A smart and resilient community is one that includes learning organizations that, in order to achieve their overarching visions and fully serve the community, change strategies and even missions in response to changing conditions. “Staying the course” may feel comfortable and may even sound heroic, but in changing times, it can ensure failure.

## Leadership Development

Nationally, there is a widespread perception that certain individuals are born to be leaders—that leadership consists of innate skills that some people have, and that others do not. And even where this perception does not seem to exist, society often operates as if it is true. That is, we do little or nothing to prepare individuals to become leaders. This seems to be the case on Hawai`i Island.

Though the island is fortunate to have some excellent leaders, much more needs to be done to nurture leadership among its young people and to strengthen skills among veteran leaders—such skills as collaborative problem solving, active listening, whole-system thinking, team building, and understanding one’s place in leadership.

At this crucial point in its history, the island community must develop capable leaders who understand the value of community service—the kind of leaders that are more influential and effective than old-school, manipulative, or power-driver leaders. Therefore, Hawai`i County and influential nonprofit and for-profit organizations should more aggressively pursue community leadership development—that is, offer training and seminars to support individuals in developing skills that will support a positive future for the island community—for both *ohana* and *‘aina*. Though this should not be the responsibility of local government, the County can help lead such a large-scale effort.





## Section 6: Measuring Progress: How Do We Know If Our Efforts Are Working?

Feedback is critical to decision-makers and citizens in determining if community policies and programs are achieving their intended goals, and in identifying if additional policies and programs are needed. If feedback is nonexistent or incomplete, public decisions may be based on anecdotal information, public misperceptions, favoritism, and political bias. As a result, effective programs may be eliminated; weak ones may be continued; and needed ones may not be seriously considered.

**Feedback is often called indicators, measures, or benchmarks.**

Many indicators of community progress are familiar (for example, property values, sales-tax revenues, and tourist days). Because we tend to pay attention to the things that we measure, these conventional indicators tend to dominate conversations about how the community is doing. Accordingly, local policies and programs also tend to address the issues addressed by conventional indicators. It's a vicious cycle: we regard the things that we measure as important and measure the things we regard as important. The effect of this myopic thinking is that we actually measure the things we once regarded as important, allowing no resources for things we have come to regard as important.

Conventional indicators don't give us the whole picture; they don't portray the whole system—the community, the environment and the economy. Because many important community values are not measured, they often are misunderstood and misrepresented during community decision-making. For example, housing-price increases and housing starts are a common metric for community success, but don't reflect the problems created when local working people are priced out of the market.

Without such indicators as housing affordability, water quality, and household transportation costs, a community does not have a picture of the road ahead. It's not clearly identifying current and possible future problems, or tracking whether a problem is getting better or worse. Even if it is aggressively pursuing many private and public programs meant to improve economic, social, and environmental conditions, it will not know if its programs are effective unless it measures their effects over time.

To drive to its destination, the community needs a dashboard—a cluster of indicators deemed important to the long-term success of the community.

Fortunately, many communities are developing more comprehensive lists of local economic, social, and environmental indicators. Each community's indicators are unique to it. They can generate productive problem-solving among people with different viewpoints when previously they had simply argued in circles. Also, indicators can help spot negative trends that can be examined, understood, and dealt with before they become serious problems. The result can be a shared vision of the community's future that is specific and can be acted upon.

To be thoroughly effective, indicators must be developed and pursued by all three community sectors: private, public, and nonprofit. Or, at least, they must be based on values and goals articulated by all sectors. Each sector can lead using indicators of its own progress. For example, the North Hawai'i Outcomes Project has done that very thing for one set of issues and one portion of the island with its excellent report, "Health...It Takes a Community: North Hawai'i's Community Health Profile." This report can be a model for indicators regarding other issues for the whole island.

Indicators of progress toward local goals will be valuable to many different groups of people:

**Citizens:** Transparency in local government is the path to public trust. A government that uses indicators becomes more transparent—accountable for its goals and objectives in specific terms.

**Current Administration:** Can assess progress and make mid-course corrections.

**County Council:** Indicators demonstrate practical effects of budgetary allocations, the tangible relationship between specific expenditures and particular outcomes.

**County Employees:** Indicators demonstrate substantial reasons to be proud of one's work, which improves morale and increases productivity.

**Future Administrations:** Political differences can be transcended by demonstrating the practical effect of specific programs and projects. As a result, the continuity of demonstrably useful programs can be maintained despite turnover in elected officials. In turn, continuity increases the effectiveness of programs, giving taxpayers more bang for their buck. In contrast, many programs that would otherwise be effective are rendered ineffective when they stop and start with changing administrations.

Indicators should be understandable to the public and policy makers, and are most practical if based on data that are already being collected, or can be collected relatively inexpensively. Many communities spend money collecting a lot of information that was once useful, but is no longer. The savings achieved by discontinuing the collection of unneeded data can be used to collect useful information.

One important proviso: not every important community value is easily measured. For example, community safety can be measured in part by crime statistics, but the feeling of security may be as important. The challenge is that measuring feelings and other indicators of progress can require public-opinion surveys, which are expensive.

The balance of this section of the report is a compilation of indicators for each of the county's goals and sub-goals. They are based on research of common leading indicators in these categories, as well as research into the existing problem areas on Hawai'i Island that need to be tracked for progress. Where possible, indicators based on data that are already being collected are used. Certain goals are more subjective or are not being monitored and require surveys and new data collection.

In addition to recommended indicators, the authors also provide additional indicators for consideration. Italics specify recommended indicators. Information in parentheses is the source for each indicator. Each goal section begins with a statement of the goal or a list of sub-goals, developed by the County.

## **1. Affordable Housing Goals**

- a. Establishment of more affordable housing (AH)
- b. Mixed income; not segregated
- c. Reasonably close to work; not pushed to the outskirts
- d. Community feeling, safe; and
- e. Safety net—dignified homeless facilities with support services

Though Hawai'i Island residents are faced with many challenges, there is no issue on the island that is as alarming to this report's authors as affordable housing. Minimum-wage workers statewide spend 81.6 percent of their income on rent. This issue goes to the very heart of *ohana* and the viability of the Hawai'i Island community. And even someone who cares nothing for *ohana* must soon discover that a local economy cannot be sustained where working people cannot live.

A positive future for all island residents, regardless of income, absolutely requires aggressive action on the part of all island interests to build and secure permanently affordable housing on a significant scale. Fortunately, progress is being made. In 2005, Hawai'i County Council passed a measure to require developments to build a much higher percentage of affordable housing (from 10 percent to now 30 percent), and a much higher in-lieu fee (from \$5,000 per unit to now \$49,000 per unit). It should be noted, however, that in other local jurisdictions experiencing similar housing pressures, these numbers are considerably higher.

Because the affordable-housing problem is so serious and widespread, virtually any movement forward will result in relatively obvious progress. Therefore, affordable housing is an example of an issue with which the community can make excellent short-term progress without designating indicators of success. However, indicators are essential to better target longer-term affordable-housing efforts, and to keep the issue in the minds of those who don't experience it daily and on the agenda of local leaders in all sectors.

Furthermore, it does not appear that affordable housing was documented clearly in Hawai'i County's data book. It is also unclear how many units of affordable housing are needed, and what "affordable" really means given people's incomes. One good measure is that of "self-sufficiency" (see Diana Pearce, "The Self-Sufficiency Standard for Hawai'i" 2003).

### **a. Indicators for Affordable Housing**

Though measures of *output* tend to indicate goals only indirectly, the need to produce housing units is so acute on the island that such gross measures will prove very useful. Therefore an excellent and straightforward housing indicator is:

- Number of permanently affordable units produced on the island by all sectors—nonprofit, public, and for-profit

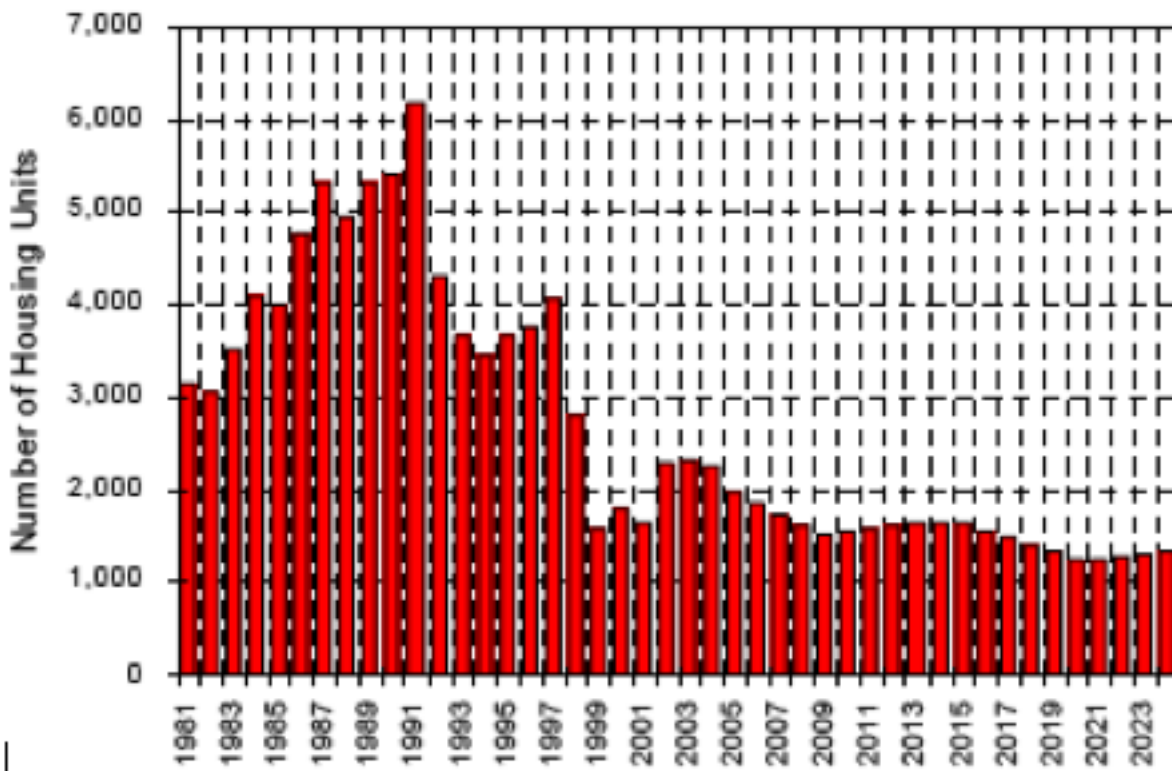
*Source: The county housing office. Someone would need to collect the information. Such a task would be straightforward and inexpensive, though an island-specific definition of “affordable” would be required. Units that are not permanently affordable should not be counted.*

Indicators of progress toward certain outcomes tend to be the best measures because they address goals more directly. Two suggested indicators of outcome:

- Number of housing units needed to fill the affordability gap

**Graph 1: Resident Housing Unit Deficit, Hawai`i County, 1981–2023**

The Housing Policy Study in 2003 developed a predictive housing demand model based on the Hawai`i Housing Inventory Report, Hawai`i Housing Demand Surveys, and other sources. It uses historical data to provide the foundations of projected trends in various housing variables. The following graph on residential housing unit deficit indicates the total unsatisfied housing demand (in units) that results from overcrowding and “pent-up demand.” It was calculated by subtracting the number of resident housing units from the number of resident households.



*Source: SMS Study, page Sec LA-B-24*

In addition, the SMS study provides a table showing the demand for housing by price range and income level (SMS Study, page Sec IA-B-27). This source is particularly useful because the numbers are disaggregated per HUD income categories, from which the county can derive targets for maximum sale or rental prices that new affordable units must achieve in order to serve residents in need of housing. Using this chart, the County could develop a single indicator for public consumption that aggregates the number of units needed for all income categories, say, below 120 percent of median income. Alternatively, it could develop a separate indicator for each category. As this table is disaggregated by HUD income categories, it offers more useful information than Graph 1 above. The County's program targets might be refined further by using "Potential Buyers and Renters" tables (SMS Study, page Sec IVF-1).

Note regarding the SMS Study: The County is fortunate to have these apparently comprehensive and exhaustive data. However, the study suffers from minimal interpretation or explanation of charts and graphs. Also, important data points are lost amongst the vast volume of information. These two shortcomings could be easily remedied. A few explanatory notes on the charts could largely solve the first problem. The second could be mitigated by an index.

## **Additional Affordable-Housing Indicators**

Though a few key indicators, such as those above, should be chosen to highlight the issue for the public, the County may also wish to track a wider range of indicators to monitor progress in more detail, better target affordable-housing efforts, and provide more complete data for the few members of the public who wish to understand the issue more completely.

### **Regarding Homeowners**

- Percent of households that are burdened with housing costs in excess of 30 percent of their income. (U.S. Census 2000 and Hawai'i County Housing Consolidated Plan 2005-09). According to the Consolidated Plan, 32 percent of Hawai'i County's households are cost-burdened by housing expenses that exceed 30 percent of their income.
- Annual single family house mortgage payment as percent of median family income (Hawai'i Data Book)
- Home ownership rate (U.S. Census 2000)
- Percent of households able to afford buying average single family house; and
- Number of single-family homes sold per year (Hawai'i Data Book)

### **Regarding Renters**

- Percent of income that median-income renters pay on rent for two-bedroom apartment;
- Percent of income that low-income renters pay on rent (Children's Defense Fund/Hawai'i United Way/U.S. Census 2000/Hawai'i Data Book).
- Number of people on the HUD Section 8 wait list (Building and Housing,

Section 8). According to the Hawai'i County Housing Consolidated Plan 2005-09, there are currently 1,919 people on the wait list. Building and Housing notes that the list has grown, in part due to funding cuts, and that the current list will take at least two years to clear; and

- Average wait time for applicants of HUD Section 8 housing (Building and Housing, Section 8).

### **General**

- Number people who intend to leave the island due to housing problems (SMS Study, page Sec IVC-9, table IV-B-8). In 2003, of Hawai'i County residents surveyed who did not own a house, 47 percent said they didn't want to buy because it was too expensive. Twenty percent of people intending to move out of state cited housing as one reason for their move. However, as the question naire counted the number of people who "mention" housing as the reason for moving out of state, it is unclear if housing is the main cause of moving. Asking this question directly in future studies would generate valuable information:
- Ratio of percent change in new/rehabilitated affordable-housing units versus percent of low/ moderate income households who apply for affordable-housing units (Hawai'i County of Building Permits, HUD tables, US Census)
- Average annual vacancy rate (by District & CDP, Hawai'i Data Book, US Census)
- Percent owning vs. percent renting vs. percent homeless (Hawai'i Data Book, US Census)
- Percent of new homes that are energy-efficient; and
- Number of rehabilitated affordable housing units.

### **b. Indicators for Mixed Income & Distribution of Affordable-Housing**

- Number of affordable housing units vs. number of "normal" housing in each district/CDP/development (Hawai'i County Building Permits, SMS Study)

### **c. Indicators for Proximity to Work**

- Average travel time to work (U.S. Census 2000)
- Average commuting distance to work (Though a source for this data is not obvious, a partial picture might be developed from data collected as part of a county-generated survey of bus passengers. See Mobility section of this report.)
- Percent of people taking each mode of transport to work; and
- Percent of people with commute times of 25 minutes or less (U.S. Census)

*Other Sources: U.S. Census, Hawai'i County Office of Planning (e.g., Chris Yuen's article West Hawai'i Traffic Problems, Hawai'i County's Revised General Plan for Transportation)*

### **d. Indicators for Community Sense of Safety**

- Number of Part I Class (violent) offenses committed per year (juvenile and adult) (Police Department); and
- Number of Part II Class offenses committed per year (juvenile and adult) (Police Department).

### **e. Indicators for Homelessness and Facilities**

An extensive study of homelessness in Hawai'i (SMS Homeless Point-in-Time Count Report, 2003) shows that the vast majority of homeless people do not stay in shelters, mostly due to insufficient space. This is especially the case in Hawai'i County. Furthermore, as the low-end housing market continues to decline in numbers, more people may be forced into homelessness.

- Ratio of homeless people to the availability of space in homeless shelters (SMS Study for number of homeless people, in addition to calling shelters in the county for space availability numbers);
- Trend in rate of homelessness; and
- Percent vacancy in homeless shelters.

## **2. Mobility Goals**

- a. Reduce dependence on the automobile and provide equitable mobility to non-drivers (elderly and children);
- b. Transit—comfortable, predictable schedule, reasonably frequent;
- c. Para transit—to supplement transit;
- d. Connected network of roads to reduce load on arterials;
- e. Mixed uses and pedestrian facilities to encourage walking and biking; and
- f. Mitigate congestion.

A number of the indicators below would help measure the current state of public transit. However, some of the most important indicators would require passenger-opinion surveys. The cost of undertaking and analyzing one survey on the Mainland was approximately \$12,000 for a community with less than half the population of Hawai'i County but with a larger bus system. The survey was done in-house and relied on the assistance of drivers, who distributed the surveys and entered results into a database. Done by a consultant, it would likely have cost at least twice that amount. Hawai'i County can adapt that strategy for its survey. Such a survey could include questions regarding housing and other local issues at negligible additional cost.

According to the 2000 U.S. Census, 0.7 percent of people in Hawai'i County use public transit to commute.

### **a) Reduce Auto Dependence. Mobility for Non-drivers.**

- Ridership on major commuting routes (Mass Transit Agency);
- Percent of residents who use public transit to commute (U.S. Census 2000);
- Amount of affordable housing within walking distance of work or bus route. (The Housing or Planning Department could collect the information and define “walking distance” as the distance regarded as a reasonable by residents.)

*Note: Much housing on the island that is currently affordable will become unaffordable over time because (a) its location is attractive to Mainlanders and (b) it is outside the control of the County housing program. Therefore, if this indicator is used, its data will need to include information of the change in affordability of each neighborhood over time.*

- Mode Split: percent of people who use transit buses, drive, bike, walk, carpool (U.S. Census 2000);
- Residents' perception of the transport system: survey of opinions on safety, convenience, timeliness, expense, cleanliness;
- Percent of household budget spent on transit in affordable housing areas; and
- Percent of household budgets devoted to transportation by income-class.

**Table 1: Average Monthly Ridership (Oct–Dec) on Major Routes**

As this table shows, ridership increased most dramatically when island-wide free public transport was implemented in October 2005. Thus, people who previously did not ride due to cost issues now ride; however, improvements to service convenience, timeliness, or even image will continue to boost ridership numbers.

Route	2003	2004	2005
South Kohala Resorts Service (Hilo–Ka'u–N. Kohala–S. Kohala)	7,149	8,557	15,513
Kona–Hilo Service	2,445	2,647	3,551
Kau–Hilo Service	1,191	1,244	2,272
Pahoa–Hilo Service	1,227	1,756	4,142

*Source: Mass Transit Agency*

**b) Public Transit – Comfortable, Predictable Schedule, Reasonably Frequent**

- Opinion of bus riders regarding comfort, frequency, and predictability (Opinion survey mentioned above);
- Extent of transit routes (Mass Transit Agency);
- Frequency of bus service at certain key locations (Mass Transit Agency);
- Number of transit-rider trips per capita per time (Mass Transit Agency); and
- Transit operating costs (or revenues) per transit-rider trip, inflation adjusted (Mass Transit Agency).

**c) Para Transit – To Supplement Transit**

- Percent change in carpool, vanpool membership (van-pool operator)

**d) Connected Network of Roads to Reduce Load on Arterials**

- Number of vehicles per hour during commute times (FHWA/Tripnet.org);
- Average wait time at intersections with traffic signals; and
- Number of arterial roadways in need of congestion relief.

**e) Mixed Uses and Pedestrian Facilities to Encourage Walking and Biking**

- Percent of residents who regularly walk or bike (U.S. Census 2000);
- Percent of children walking or biking to school (Waikoloa Elementary School participated in U.S. Walk to School events);
- Bike- or pedestrian-related traffic accidents and fatalities per 1000 people (Police Department);



- Quality and extent of non-automobile modes: miles of fixed-route bus service, frequency of buses, miles of bike routes, carpooling membership, friendliness of streets to pedestrians.

**f) Mitigate Congestion**

- People with commute times of 25 minutes or less (U.S. Census 2000);
- Percent of people who live and work in the same community ;
- Vehicles entering central area per mode;
- Average commuting distance to work;
- Per capita congestion delay.

**Sources for all Subgoals:**

- i. Hawai`i Department of Business, Economic Development and Tourism – Data Book;
- ii. Federal Highway Administration;
- iii. Hawai`i County Mass Transit Agency;
- iv. Hawai`i State Department of Transportation, Highways Division; and
- v. TRIP (Transportation Research Group) Study on Hawai`i—biased group, but with good bibliography and sources for calculating congestion costs.

## Alternative Transportation Indicators:

The Victoria Transportation Policy Institute is a notable source of information and assistance on transportation-related issues. In 2005, Todd Litman, the founder and executive director of the institute, wrote a white paper on indicators for sustainable transport planning. Below is a modified table from that report, categorizing indicators by economic, social and environmental categories.

### Ranked Sustainable Transportation Indicators<sup>1</sup>

	<b>Economic</b>	<b>+/-</b>	<b>Data</b>	<b>Social</b>	<b>+/-</b>	<b>Data</b>	<b>Environmental</b>	<b>+/-</b>	<b>Data</b>
<b>Most Important (should usually be used)</b>	Percent of population that uses mass transit	-	1	Quality of accessibility for disadvantaged people.	+	2	Per capita energy consumption.	-	1
	Mode split.	+	2-3	Per capita traffic accidents and fatalities.	-	1	Smart growth.	+	3
	Average commute travel time or distance.	-	2-3	Percent of low-income household budgets devoted to transport.	-	2			
	Per capita congestion delay.	-	3						
	Public/external costs of transport per capita.	-	2-3						
<b>Helpful (should be used if possible)</b>	Degree to which transport planning decisions reflect market principles.	+	3	Percent of residents who regularly walk or bike.	+	3	Impacts on special habitats and environmental resources.	-	3
	Quality and extent of walking, biking, carpooling, public transit, etc.	+	3	Percent of children walking or cycling to school.	+	3	Habitat fragmentation.	-	3
	Jobs and services within 30-min commute of residents.	+	3	Residents' overall satisfaction with transport system.	+	3	Renewable resource consumption in production and use of vehicles/transport facilities.	+	2-3
<b>Specialized (use for particular objectives)</b>	Change in property values.	+	3	Transit affordability.	+	2			
				Housing affordability in accessible locations.	+	2			
<b>Planning Process</b>	Comprehensive (takes into account all significant impacts, using best current evaluation practices).							+	3
	Unbiased (applies objective, least-cost planning and investment practices).							+	3
	Inclusive (special efforts to achieve substantial involvement of affected, disadvantaged and vulnerable people).							+	3
	Application of smart growth land use policies.							+	3
<b>Market Efficiency</b>	Portion of total roadway and parking costs borne directly by road users.							+	2
	Transport operating costs per transit-rider trip or per mile driven.							-	2
	Implementation of pricing reforms such as congestion pricing, distance-based vehicle insurance and registration fees.							+	2

*Direction of movement: + = more is better; - = less is better.*

*Data availability: 1 = usually available in standardized form; 2 = often available but not standardized; 3 = limited, requires special data collection.*

### 3. Community Health Goals

To be vigilant and able to mobilize and respond to challenges that threaten health or community.

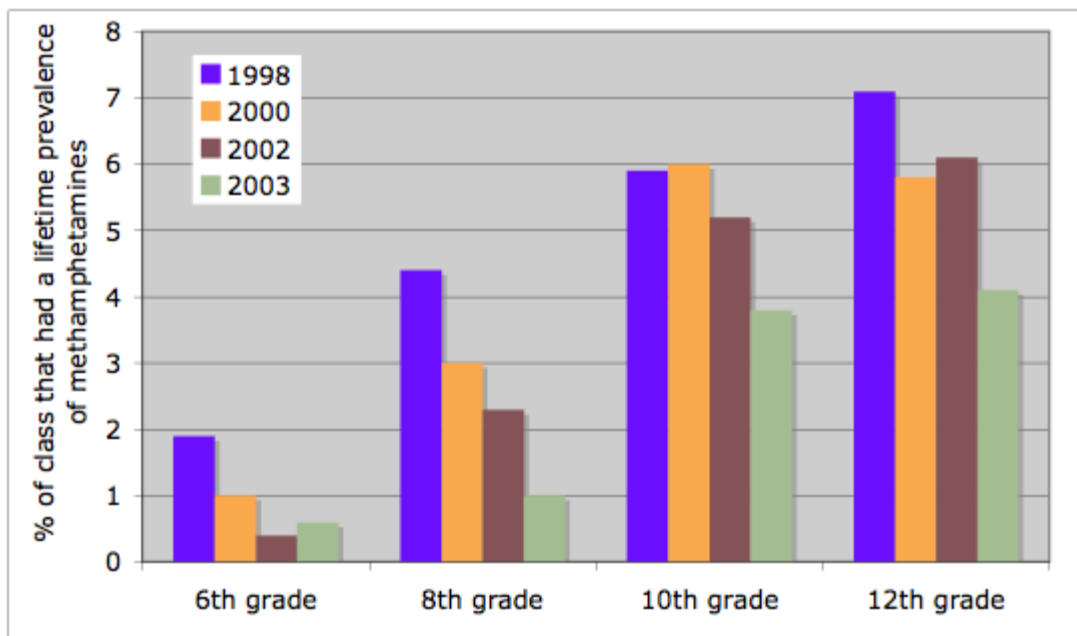
- a. Ice
- b. Coqui frogs
- c. West Nile virus

#### a. Ice

- Percent of students by grade who have ever used crystal methamphetamine (lifetime prevalence) (DOH);
- Percent of students by grade who have used crystal methamphetamines in the last 30 days (monthly prevalence) (DOH); and
- Number of adults who have used crystal methamphetamine in the last 18 months (DOH).

#### Graph 2: Student Use of Methamphetamines on Hawai`i (1998–2003)

The Department of Health conducts a drug and alcohol abuse study every two years among middle and high school students throughout Hawai`i. Data are available by county, ethnicity, gender, school district, and public and private schools. The following graph shows the percentage of students from both public and private schools that have used methamphetamine at some point in their lives.



Source: Department of Health, *Alcohol and Other Drug Use in Hawai`i – Surveys*

#### b. Coqui Frogs

- Population health of species displaced by coqui frogs; and
- Number of coqui infestations.

Sources: University of Hawai'i at Manoa—College of Tropical Agriculture and Human Resources, *Control of Coqui Frogs in Hawai'i*, Hawai'i Department of Agriculture Coqui Campaign

### c. West Nile Virus

The Department of Health has worked hard to prevent potential carriers of the virus from entering Hawai'i. At present, there have been no known cases of human contractions of the virus in Hawai'i.

- Number of people infected by West Nile virus annually; and
- Number of birds found to have West Nile virus annually.

Source: Hawai'i Department of Health

## 4. Environmental Stewardship Goals

To develop an attitude of care and respect of the *aina*:

- a. Identify and protect valued open spaces;
- b. Protect and restore to have clean drinking water;
- c. Preserve and enhance coastal water quality;
- d. Promote recycling and develop efficient solid waste disposal system; and
- e. Enhance and protect public access to shorelines and mountains.

### a. Identify and Protect Valued Open Spaces

As noted in Hawai'i County's "Revised General Plan" (RGP, 2001), protecting and enlarging open space on Hawai'i Island is an important part of maintaining the island's uniqueness, tradition, and ecological and human health. Currently, there are about fourteen acres of zoned open space per resident on the island; however, this calculation includes golf courses, recreational facilities, and public and utility-type facilities. The RGP calls for a county zoning district that designates open space as land in a largely natural state. Hawai'i County recently passed Bill 78, which creates a continuous fund that helps purchase and preserve open space for public access and traditional hunting and gathering. The 2005–06 budget allocated at least one million dollars to this effort.

However, the County only owns 1 percent of the island; the State owns 40 percent of the island, and the federal government owns about 9 percent. The RGP calls for the "use of publicly owned lands ... to be more judiciously administered" but does not specify how this will be done. Working with the State and federal administration of public lands, as well as private landowners, will be crucial to protecting valued open space.

The indicators listed below address the quality, quantity, and public usability of open space as identified by the Mayor's goals and the RGP.

### Ecological Quality of Open Space

- Fragmentation of open space—ratio of area vs. boundary (larger numbers are better) (GIS);
- Number of species at risk on the island (endangered, threatened, etc.) (Bishop Museum); and

- Organic agriculture by number of acres, number of farms, value of sales, percent of total agriculture (U.S. Census of Agriculture began tabulating in 2002).

### Quantity of Protected Open Space

- Acres permanently set aside for open space (e.g., land trusts), especially primary forests (DLNR, Division of Forestry and Wildlife, The Nature Conservancy, Trust for Public Land);
- Percent (or total acreage) of open land lost to development each year;
- Acres of forest and watershed designated by appropriate state agencies as conservation districts;
- Acreage of beaches and wetlands restored versus lost to erosion each year;
- Acres of wetlands and beaches restored or protected each year;
- Open space (parks, playgrounds, greenways) as percentage of urban area; and
- Establishment of incentives that encourage private landowners to protect the ecological resources on their property.

**Table 3: Hawai'i County Land Use Districts (in Acres)**

This table shows that the amount of land in each kind of land use designation is relatively stable over time.

	Urban	Rural	Agricultural	Conservation*
1992	66,848	696	1,175,629	1,290,228
1999	53,339	716	1,213,639	1,305,706

\*Comprised primarily of lands in the existing forest and water reserve zones  
Source: Hawai'i County Data Book

**Table 4: Forest Reserves and Natural Area Acreage** (data constant from 1996–2004)

This table, or a modified version of it, is especially useful in monitoring the amount of land preserved in the state, especially by private landowners.

	Conservation district forest land		Natural areas*	
	Forest reserve land†	Private forest land‡	Number of areas	Acres
State	643,134	328,742	19	109,164
Hawai'i	438,416	106,745	8	82,535

\*Includes the Waimanu Research Reserve

†State-owned and privately owned lands under surrender agreement in forest reserve system.

‡Private forestland within conservation district. The majority of these lands were previously in the forest reserve system.

Source: Hawai'i State Department of Land and Natural Resources, Division of Forestry and Wildlife, records.

### Public Access and Recreational Facilities in Open Space

- Percent of scenic, historic, cultural, natural, or recreational areas with public access, pedestrian trails, and restroom facilities;

- Total recreational trail miles;
- Number of people using recreation facilities each month; and
- Acres of open space per resident.

*Sources:*

- i. Revised General Plan for the County of Hawai'i. See: "Natural Resources" and "Land Use – Open Space and Public Lands"*
- ii. Hawai'i Department of Land and Natural Resources*
- iii. Hawai'i Department of Agriculture*
- iv. Various County departments that grant approvals for development/ construction*

## **b. Protect and Restore to Have Clean Drinking Water**

The protection and restoration of clean drinking water entails maintaining high water quality and ensuring sustainability of use.

### **Quality**

1) Hawai'i's Groundwater Protection Program (GWPP) is a non-regulatory program that has conducted groundwater quality monitoring since 1989 and focuses on pollution prevention. The maps of groundwater contamination on the Island of Hawai'i for 2004 show five historic wells in Punaluu, Ninole, Pahala, Kahaluu, and Hualalai; the vast majority of wells and springs are on the northeastern coast of Hawai'i Island. The predominant pollutants in the wells are triazines (especially atrazine), a slightly-to-moderately-toxic herbicide used heavily on sugar plantations. Despite significant science on atrazine's affects on wildlife and lab animals, the EPA decreed in 2003 that atrazine will remain in U.S. markets; some 60 million pounds are still applied in the country each year.<sup>2</sup> Atrazine is highly persistent in soil and moderately soluble in water; some science has demonstrated that wetlands' anaerobic and reductive dechlorinating conditions can completely break down atrazine.<sup>3</sup> Improvement in water quality will require reduction or elimination or new sources of atrazine and removal of existing sources of contamination.

2) Hawai'i Department of Health (DOH) studies of Hilo Bay water quality demonstrate frequent presence (often above method standards) of bacteria from sewage. Given that bacteria levels persisted even after the Hilo wastewater treatment facility was enlarged, the source was likely cesspools, which discharge untreated waste into the ground. In 1999, the EPA promulgated legislation under the Safe Drinking Water Act to ban large-capacity cesspool (LCC) construction by 2000, and to close existing facilities by April 5, 2005. Hawai'i, with 4,000 LCCs, has more than any other state, and did not comply with the order. On April 19, 2005, the EPA announced the closure of 401 large cesspools in Hawai'i, including cesspools at Hawai'i Volcanoes National Park, Kilauea Military Camp, Pohakuloa Training Area, State public housing projects, and State parks and boating facilities. The EPA reached an agreement with various agencies to comply with the EPA ban on cesspools. By the end of 2005, the EPA had also signed consent agreements with the County Department of Environmental Management and County Public Works Department to close LCCs according to a schedule from 2005 to 2010.<sup>4</sup>

- Trends of contamination in each of the monitored wells (GWPP)

<sup>2</sup>Natural Resources Defense Council. "EPA Won't Restrict Toxic Herbicide Atrazine, Despite Health Threat." Jan. 23, 2004. [www.nrdc.org/health/pesticides/natrazine.asp](http://www.nrdc.org/health/pesticides/natrazine.asp).

<sup>3</sup>Kao, CM, JY Wang, and MJ Wu. "Evaluation of atrazine removal processes in a wetland" in *Water Science Technology* 2001; 44(11-12): 539-44.

<sup>4</sup>EPA, Region 9. "Underground Injection Control: Cesspools in Hawai'i." November 16, 2005. [www.epa.gov/region09/water/ground-water/uic-hicesspools.html](http://www.epa.gov/region09/water/ground-water/uic-hicesspools.html).



to mitigate drought, use native vegetation that does not need irrigation, and construct efficient buildings.

- Water resource (groundwater, aquifer) depletion rates versus rate of replenishment (State Water Commission—see conductivity and water level data on the Kahaluu Deep Monitoring Well, USGS)
- Annual water consumption versus total annual precipitation (DOH, County Department of Water Supply, Kona Soil and Water Conservation District)
- Trend in water use per square foot in new buildings (County Building Permits)
- Percent of businesses that are members of the Hawai'i Green Business Program (DBEDT Hawai'i Green Building Program, County Building Permits)

### **Comparison of Water Levels in High-Level Wells and Deviation from Median Monthly Rainfall at the Lanihau Gage.**

Groundwater levels are monitored only in West Hawai'i, where the limited precipitation and high levels of development growth give cause for concern. Apparently, for the past decade there has been a trend of abnormally low precipitation at the Lanihau Gage (above Keahou). The high-level aquifers whose water levels have been declining seem to correlate closely with rainfall levels. Additional calculations demonstrated that levels dropping were not due to pumpage. Nevertheless, should this climatic phenomenon continue, extra care should be taken in pumpage volumes and siting of additional wells.

### **c. Preserve and Enhance Coastal Water Quality**

The State of Hawai'i has two principal programs to manage nonpoint source pollution: DOH's Polluted Runoff Control Program, which implements Section 319 of the Clean Water Act, and the Office of Planning's Coastal Zone Management Program (CZMP) within the Department of Business, Economic Development and Tourism (DBEDT), which implements Section 6217 of the Coastal Zone Act Reauthorization Amendments. To comply with Section 6217, CZMP established "Hawai'i's Coastal Nonpoint Pollution Control Program Management Plan," which proposes actions in six categories, including agriculture, forestry, urban areas, marinas and recreational boating, hydro-modification, and wetlands and riparian areas. These two departments, along with the County government, have already undertaken a host of activities to assess, restore, and monitor both inland and coastal water quality. "Hawai'i's Implementation Plan for Polluted Runoff Control" integrates these two programs for the next 15 years. Attaining the Mayor's goals of preserving and restoring coastal water quality may simply require continuation of existing programs and collecting indicator data to ensure progress.

Studies from the 1970s have shown that coastal water quality is not necessarily impacted by adjacent land, due to strong ocean currents that can quickly disperse pollutants. Only in estuaries and bays did pollution on land closely correlate with water pollution. Thus, in Hawai'i, the Water Quality Limited Segments (WQLS) are comprised of 14–16 estuaries and bays that are ecologically impaired and are receiving public attention to generate some improvements. According to the CZMP, Hawai'i County's only WQLS is Hilo Bay, which receives the Wailoa River, Wailuku River, Pukihae Stream, Pohakaunanaka (intermittent stream), and Maili Stream waterways, which drain forests, pasture and range land, agricultural fields, and urban areas. Hilo Bay frequently violates water quality standards for



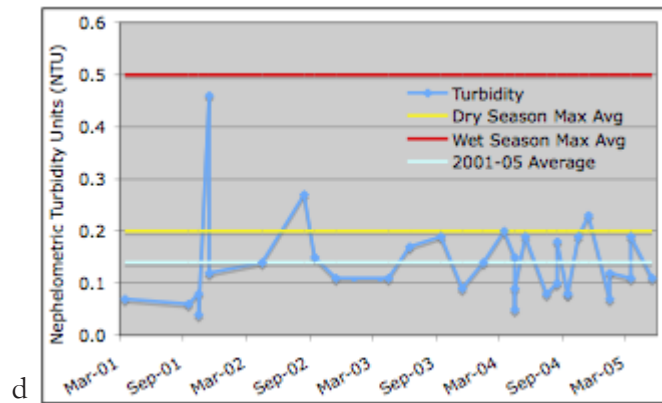
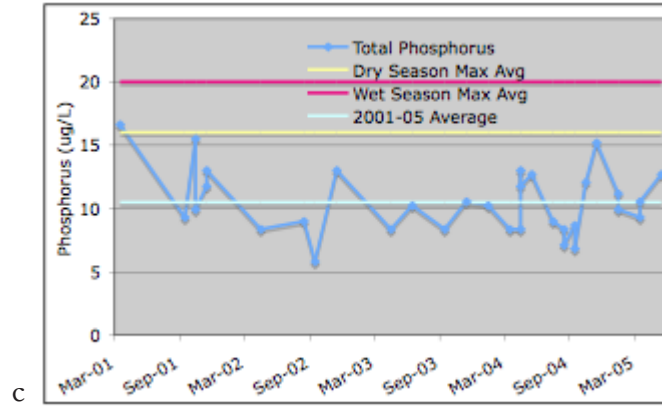
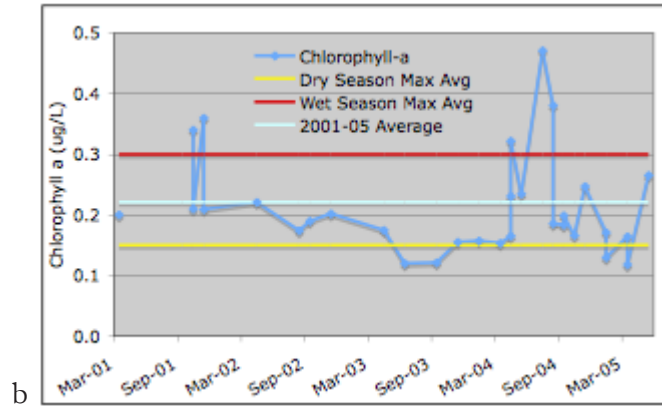
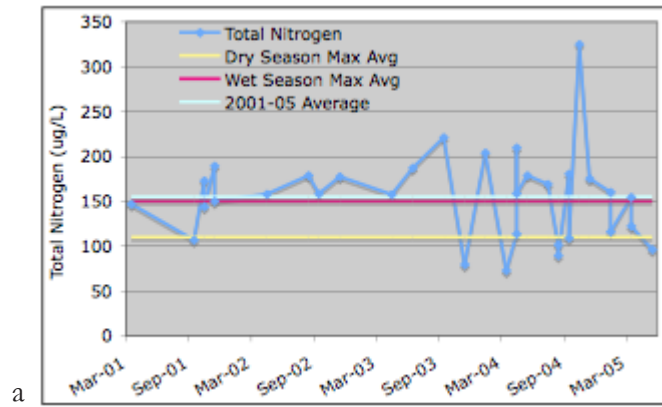
nitrogen, phosphorus, and turbidity. In 1978, studies detected “exceptionally high levels of arsenic” in sediments, as well as lead, zinc, chromium, chlordane, and PCBs. There has been also chronic nonpoint source sewage that results from commercial and residential cesspools seeping into freshwater runoff. At the same time, the bay is important for wildlife, fish habitat, recreation, and tourism. These findings point to the kind of indicators that would be useful to track progress on water quality issues.

### **Water Quality**

- Coastal and inland water quality compliance with the State Water Quality Standards, Title 11, Chapter 54 of the DOH Administrative Rules. Trends for criteria that are in and out of compliance. (The standards set forth numerical criteria for total nitrogen, ammonia nitrogen, nitrate and nitrite nitrogen, total phosphorus, chlorophyll a, turbidity, and 104 toxic pollutants, including metals and organic chemicals. There are also narrative criteria for pH, dissolved oxygen, temperature, salinity, and marine bottom types. The “Basic Freedom” criteria of the NTAC (e.g., floatables, settleables, oil, grease, etc.) are used in the standards, which include erosion of soil particles resulting from construction activities on land. Numerical criteria in the standards also account for variability of water quality influenced by natural conditions. Water column criteria are therefore expressed as the geometric mean of all measurements not to be exceeded by a given value.) (CZMP, DOH)
  - Improved water quality in areas monitored for nonpoint source pollutants (CZMP);
  - Water quality improvements in Water Quality Limited Segments (CZMP);
  - Percent of assessed waterways and waterbodies that attain water quality standards for designated use (CZMP, DOH, EPA);
  - Acres or percent of island covered by impervious surfaces;
  - Percent of private properties or developments using grading, soil erosion and stormwater best practices;
  - Number of days per year that the beach is closed due to nonpoint source pollutants (CZMP);
  - Improved water quality in water bodies threatened by nonpoint source pollutants but not yet on the State’s 303 (d) (TMDL) list (CZMP);
  - Number of projects implemented as identified in watershed restoration action strategies (CZMP); and
  - Amount of soil erosion per year (CZMP, NRCS).

### **Graphs 5a-d: Water Quality Measures of Runoff Reaching a Kona Monitoring Station**

According to the Hawai‘i Department of Health, the quality of water in Hawai‘i County is largely excellent, though recent development is increasing concerns for runoff nutrients and turbidity in waterways, especially in West Hawai‘i. The following charts use data from a water quality monitoring station (Hokulia Station 1) along the coast of Kona, near a recent controversial development site. These track the total nitrogen (a), total phosphorus (b), chlorophyll a (c), and turbidity levels (d) in the coastal waters from 2001 to 2005. The yellow line demarcates the maximum level acceptable for dry season averages; the red line



Source: Department of Health, Clean Water Branch

demarcates the maximum average level acceptable during wet seasons. The teal line demonstrates the actual average (taken during 2001–05). Phosphorus and turbidity levels are fine. The average nitrogen levels exceed the wet season maximum average, and almost all data points of chlorophyll a exceed the dry season maximum average. These may be indications of nutrient runoff causing greater photosynthetic activity in coastal waters.

### **Aquatic Habitat Health**

- Fish species that are consumption-restricted (DOH); and
- Measurable improvements in coral reef ecosystem health in areas with increased nonpoint source pollution controls (CZMP).

### **Management**

- Knowledge of polluted runoff sources among targeted groups (CZMP);
- Number of participants in watershed projects (CZMP); and
- Watershed education programs in priority watershed regions (CZMP).

#### *Sources:*

- Department of Business, Economic Development and Tourism's Coastal Zone Management website; especially the chapters from "Hawai'i Coastal Nonpoint Pollution Control Program Management Plan" on Critical Coastal Areas and Additional Management Areas and Monitoring and Tracking Techniques.*
- Department of Health's Water Quality website, especially "Hawai'i's Implementation Plan for Polluted Runoff Control" (July, 2000).*
- Biennial 305(b) reports by the State of Hawai'i in compliance with the Clean Water Act.*
- Department of Health Core Network Stations measure chemistry parameters, physical properties, and water quality data reported under NPDES and Zone of Mixing discharge permits. In Hawai'i County, these are located in Hilo Bay, Keahole Point, and Kealahou Bay.*
- Department of Health Recreational Bathing Waters Monitoring Program monitor bacteria in water, chiefly Enterococci and Clostridium perfringens. There are 161 monitoring stations in Hawai'i, including 38 in Hawai'i County.*
- Department of Health Toxic Contaminants Screening Monitoring Program, focusing on toxic contaminant accumulation in fish, targeting species like mullet (*Mugil cephalus*) and the white crab (*Portunus sanguinolentus*) in Hilo.*
- Department of Aquatic Resources and the Hawai'i Coral Reef Initiative Research Program both study the quality of coral reefs around Hawai'i.*

### **d. Promote Recycling and Develop Efficient Solid-waste Disposal System**

While solid-waste disposal is increasingly an issue throughout the world, Hawai'i geography highlights the finitude of space and unsustainable waste flows. Currently, most solid-waste in Hawai'i is disposed of in landfills. Furthermore, based on 2002 projections, while the population on the island is increasing 1 to 2 percent a year, waste generation is increasing by 2.2–2.5 percent a year.<sup>6</sup> In 2001, the waste stream entering South Hilo Landfill was estimated to be composed of 30.4 percent organics, 23.5 percent paper, 18.1 percent construction and demolition debris, 8.8 percent metals, 8.5 percent plastic, 6.2 percent special, and 3 percent glass. Almost all of these materials can be reused, recycled, or composted. Yet, transporting recyclables to the mainland costs too much to be feasible, and there is little local demand for recycled and composted items.

The imminent closure of the South Hilo Landfill caused the county to update its "Integrated Solid Waste Management Plan" in 2002. The plan suggested waste reduction and reuse, including sorting and recycling construction and demolition debris, yard waste,

<sup>6</sup>Harding ESE. "Update to the Integrated Solid Waste Management Plan for the County of Hawai'i." December 31, 2002.

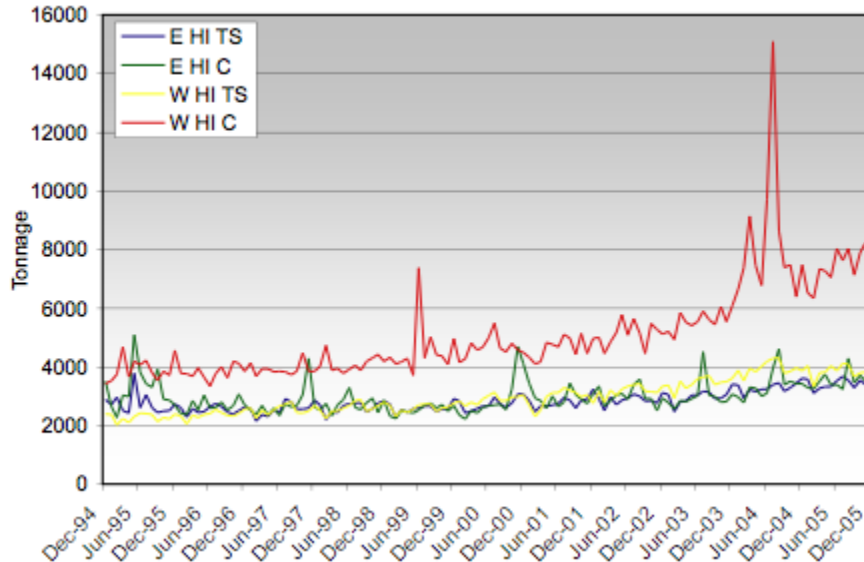
containers, and paper; waste reduction technologies, such as incineration, composting, and thermal gasification; and disposal sites, as in the creation of a new bioreactor landfill. In the end, the Solid Waste Advisory Committee chose to construct no new landfill in east Hawai'i, to emphasize recovery of recyclables at the planned sorting station, to create a waste reduction facility in east Hawai'i instead using either waste-to-energy combustion, thermal gasification, or anaerobic digestion technology, and to establish a county recycling program. Once the South Hilo Landfill actually closes, these plans will go into effect. The Solid Waste Division aims to divert 30 percent of wastes from landfills by 2004, 50 percent by 2008, and 80 percent by 2012. These are exciting goals that can be aided by indicator data showing progress and areas that need improvement.

- Percent of solid waste that is diverted from landfills (Solid Waste Division);
- Total tonnage or volume of waste that reaches landfills, incinerators, composters and recyclers (Solid Waste Division);
- Percent of construction waste recycled (Solid Waste Division does not currently examine waste composition);
- Percent of green waste recycled versus percent disposed of in landfill;
- Percent of organic waste composted;
- Percent of transfer sites with recycling collection bins and signs (Solid Waste Division);
- Per capita solid waste generation;
- Revenue from recycling versus cost of recycling for each material per ton (Solid Waste Division); and
- Number of people or percent of population involved in recycling initiative, or knowledgeable about recycling programs and locations.

*Sources: County Department of Environmental Management, Division of Solid Waste, DOH Solid and Hazardous Waste Branch*

**Graph 6: Hawai`i County Municipal Solid Waste Generation Sources 1994-2005**

This graph shows the waste streams from East Hawai`i Transfer Stations (E HI TS), East Hawai`i Commercial (E HI C), West Hawai`i Transfer Stations (W HI TS), and West Hawai`i Commercial (W HI C). A rising trend prevails over all four categories, but is particularly notable in the West Hawai`i Commercial category. This provides some indication of how to achieve the greatest gains in waste diversion.



Source: Solid Waste Division

**Table 5: Landfill and Recycling Tonnages from East and West Hawai`i 2000–05**

This summary of data by fiscal years shows the rising volumes of both landfilled and recycled waste. It also demonstrates that as the percentage of waste recycled and number of recycling programs increased, the total cost per ton of recycling also increased.

Total Landfilled in County	163,825	166,625	173,260	201,806	225,267
Total Recycled in County	24,416	24,139	30,991	37,375	56,419
County Diversion Rate	13.89%	12.65%	15.17%	15.60%	20%
Recycling Cost per Ton	\$38.03	\$50.46	\$50.07	\$66.50	\$60.43

Source: Solid Waste Division

**e. Enhance and Protect Public Access to Shorelines and Mountains**

All shorelines are publicly owned in Hawai`i and, while private property may ring the beaches, public access is widely available. According to the Surfrider Foundation’s State of the Beach 2005 report, the State of Hawai`i has about 319 public-access sites for 360

miles of coastline, or about one access point every 1.1 miles. Beach parks, which provide dependable and high quality access, comprise 36 percent of the access points. Public access to the mountains is much more limited and problematic. In particular, areas of high ecological quality are difficult to find. In several cases public access to natural areas is prohibited, for reasons that may be ecologically sound.

- Frequency of public access (access points per mile) of shoreline; and
- Availability of basic infrastructure at access points.

(Tons unless otherwise noted)	FY 00-01	FY 01-02	FY 02-03	FY 03-04	FY 04-05
<b>EAST Hawai'i</b>					
<b>Landfill (total)</b>	<b>71,323</b>	<b>70,311</b>	<b>70,006</b>	<b>75,351</b>	<b>83,354</b>
1) Commercial	38,021	36,033	35,173	37,628	42,898
2) County Solid Waste Division	33,302	34,278	34,833	37,723	40,456
<b>Recycling (total)</b>	<b>17,268</b>	<b>15,969</b>	<b>18,115</b>	<b>21,671</b>	<b>25,228</b>
1) Greenwaste	4,864	5,794	7,778	6,961	11,369
2) Metal/Automobiles	6,931	5,551	6,166	10,348	6,965
3) Tires	509	145	313	—	65
4) Paper	3,946	3,500	2,979	2,905	4,623
5) Plastics (#1 & #2)	—	—	—	22	33
6) Cooking Oil	26	71	41	72	66
7) Glass	963	880	791	1,111	881
8) Mixed Recyclables	—	—	—	—	—
9) Special Diversion Programs	29	27	48	251	1,225

(Tons unless otherwise noted)	FY 00-01	FY 01-02	FY 02-03	FY 03-04	FY 04-05
<b>WEST Hawai'i</b>					
<b>Landfill (total)</b>	<b>92,502</b>	<b>96,314</b>	<b>103,253</b>	<b>126,456</b>	<b>141,913</b>
1) Commercial	56,745	58,593	63,582	81,759	95,007
2) County Solid Waste Division	35,757	37,721	39,671	44,697	46,905
<b>Recycling (total)</b>	<b>9,148</b>	<b>8,170</b>	<b>12,876</b>	<b>15,704</b>	<b>31,191</b>
1) Greenwaste	4,086	6,202	6,392	10,708	22,848
2) Metal/Automobiles	4,741	—	3,976	3,367	4,497
3) Tires	185	777	252	—	103
4) Paper	—	631	1,251	944	1,607
5) Plastics (#1 & #2)	—	—	—	—	0
6) Cooking Oil	114	144	163	175	181
7) Glass	—	386	794	462	519
8) Mixed Recyclables	—	—	—	—	370
9) Special Diversion Programs	22	19	48	48	1,066

Sources: Hawai'i County Department of Planning, Hawai'i Department of Land and Natural Resources

## 5. Disaster Resilience Goals

Hawai`i Island is one of the few places on the earth exposed to all major natural hazards (tsunami, earthquake, lava flow, hurricane, wildfires, drought). Thus, it needs to have the best civil defense system and informed citizenry in the world. This system and its people offer calm and able response, mitigate damages through the use of preventive measures, and effect relatively quick recovery.

- a. Prepared;
- b. Trained; and
- c. Mitigation programs.

### a. Prepared

- Frequency of drills or training for the various emergency responder teams (emergency operations team, community emergency responder teams, police department, fire and EMS stations, Dept. of Public Works, and the warning sirens);
- Shortfall of shelter space as a total and by district (in 2003, Hawai`i Island was deficient about 9,100 spaces); and
- Miles of roads and bridges in need of reinforcement or repair to satisfy emergency standards.

### b. Trained

- Number of volunteer community emergency responder teams per island community (Community Emergency Organization, Project Kumiai); and
- Number of trained responders per island community.

### c. Mitigation Programs

- Percent completion of actions as set out in the Hawai`i County Hazard Mitigation Plan (Hawai`i Hazard Mitigation Forum – Hawai`i County, Chapter 4);
- Ratio of the cost of mitigation efforts to the costs of damages; and
- Number and monetary value of lots within hazard zones.

Sources:

- i. Hawai`i Hazard Mitigation Forum – Hawai`i County;*
- ii. Hazard Mitigation Steering Committee – produces an annual report that evaluates progress on meeting hazard mitigation objectives; and*
- iii. Hawai`i County Civil Defense – among other things, Civil Defense produces an updated Hazard Mitigation Plan every other year, based on the annual reports.*

## 6. Safe Community Goals

To not have to always worry about locking doors, to be able to enjoy evening walks.

- a. Trusted and visible police force;
- b. Skilled fire department able to respond to fires, hazardous waste, medical emergencies, and rescues; and
- c. Communities sharing responsibility.

### a. Trusted and Visible Police Force

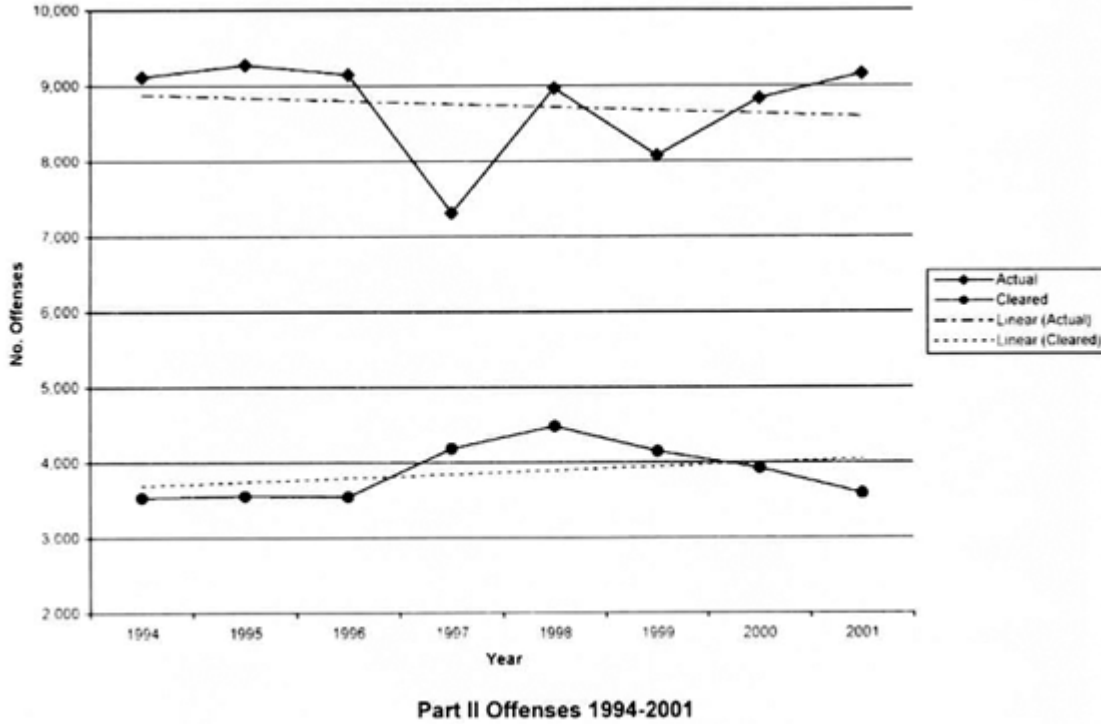
- Rate of Part I and Part II crimes (Police Department);
- People feeling safe walking alone at night;

- Number of sworn police officers per 1,000 people (Police Department); and
- Average rescue call response time (Police Department).

**Graph 7: Part I Offenses 1994–2001**

Part I offenses include murder, rape, robbery, aggravated assault, burglary, larceny, and auto theft. There has not been a significant reduction in Part I offenses since 1994.

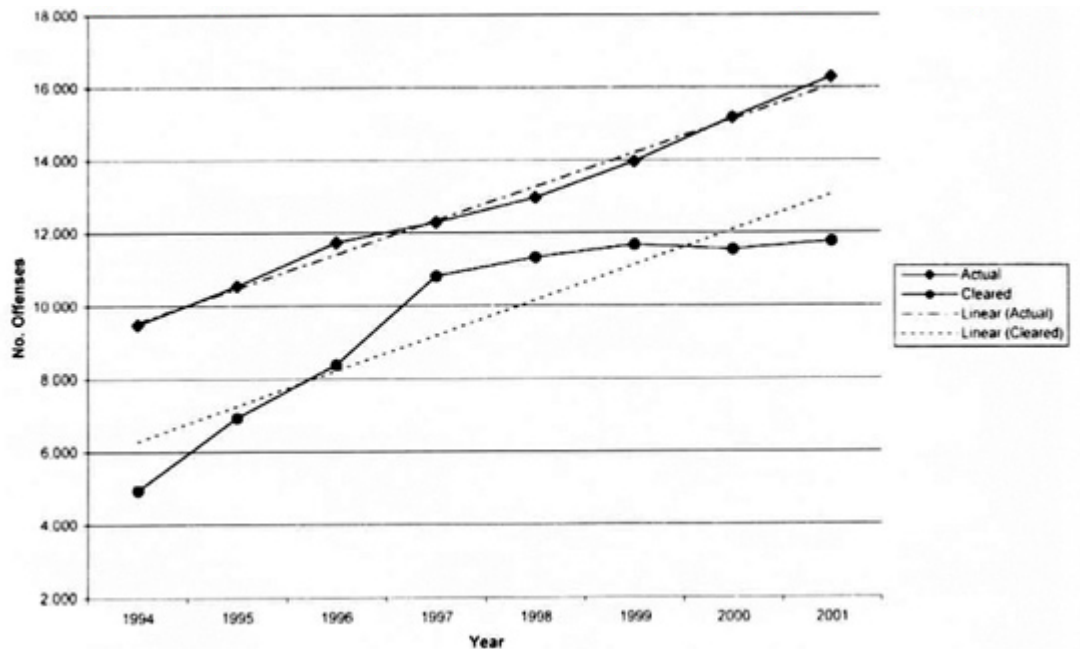
Source: *Hawai'i County Police Department. Annual Report Fiscal Year 2001–2002.*





### Graph 8: Part II Offenses 1994–2001

Part II offenses include arson, forgery, fraud, embezzlement, vandalism, prostitution, sex offenses, gambling, breakage of drug laws, drunkenness, driving under the influence, disorderly conduct, and other offenses. These offenses have risen by about 900 a year.



Source: Hawai'i County Police Department, *Annual Report Fiscal Year 2001–2002*.

#### b. Skilled Fire Department Able to Respond to Fires, Hazardous Waste, Medical Emergencies, Rescues

- Number of firemen per 1,000 people (Fire Department); and
- Average rescue call response time (Fire Department).

#### c. Communities Sharing Responsibility

- Number of neighborhood watch groups (Police Department);
- Percent of residents participating in a Neighborhood Watch group (Police Department); and
- Number of people trained by the Fire and Police Departments in self defense, CPR, etc. (Police and Fire Departments).

## 7. Energy Self-Sufficiency Goals

- a. Demand—energy-efficient buildings and utilities; and
- b. Supply—recognize Big Island resource potential and encourage renewable energy sources.

The Department of Business, Economic Development and Tourism's (DBEDT) "Sustainability Indicators for Hawai'i" provides an excellent basis for measuring energy.<sup>7</sup> DBEDT applies the International Atomic Energy Agency's Energy Indicators for Sustainable Development to Hawai'i, and captures trends in Hawai'i's energy use, dependency,

<sup>7</sup>Steven C. Alber, Energy Planner, Department of Business, Economic Development & Tourism, Strategic Industries Division, P.O. Box 2359, Honolulu, Hawai'i 96804, Telephone: 808.587.3837, Facsimile: 808.587.3839, salber@dbedt.hawaii.gov. See Appendix A for a bibliography of sources cited in his report.

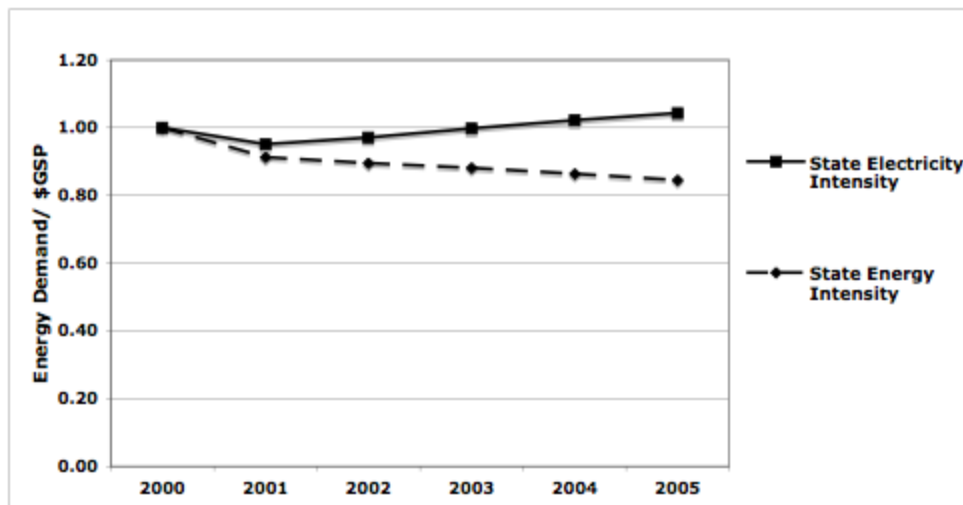
prices, and emissions. DBEDT determines which indicators are of greater concern and, where possible, which agency already monitors the facts necessary for the indicator. Though the mayor frames energy self-sufficiency goals in terms of supply and demand, the following set of indicators, drawn from Alber's report, very capably monitor progress towards energy self-sufficiency.

### Energy Demand and Energy Mix Indicators

- Energy Demand and Energy Efficiency (Major Concern);
- Renewable energy shares in energy and electricity (Major Concern);
- Fuel shares in energy and electricity (Major concern); and
- Net import dependency (Major Concern).

Energy security starts with energy efficiency. This is typically measured as energy intensity or the amount of energy required to produce a dollar of economic output. While Hawai'i's overall energy intensity has been improving, its electrical intensity has become worse as more luxury homes are built.

**Graph 9. State Energy Intensity**



*Source: RMI analysis based on DBEDT data.*

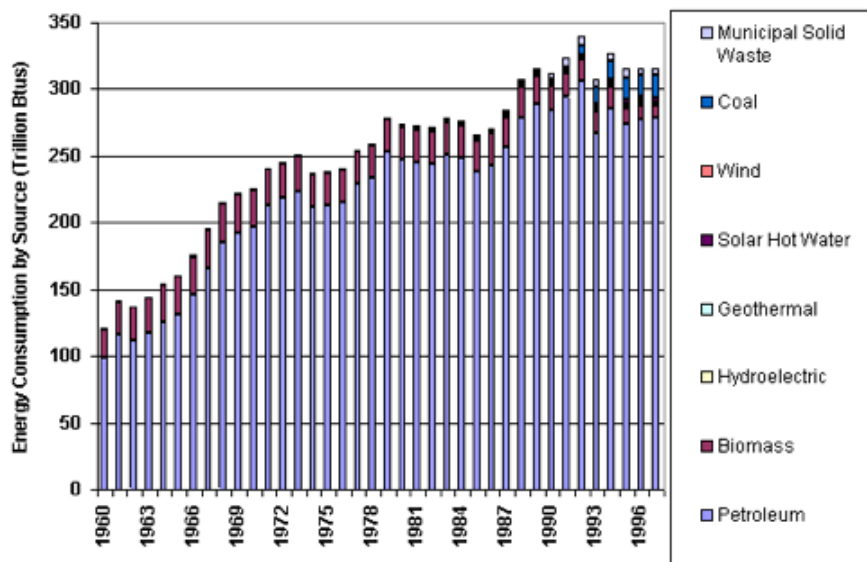
The diversity of the energy supply mix is a key determinant of energy security. The ideal is a well-diversified portfolio of domestic and imported or regionally traded fuels and sources of energy. With respect to the environmental dimension, the energy supply mix has a major effect since the environmental impacts of each energy source differ greatly and include the following: (i) traditional local or regional atmospheric pollution related to the combustion of fossil fuels (e.g., urban smog, acid rain, etc.); (ii) global climate change related to the emission of greenhouse gases (GHGs) generated by fossil-fuel electricity production and transportation and use; (iii) land use for a range of energy activities; and

(iv) risks attributed to various fuel chain cycles (fires, explosions, spills, radioactive emissions, etc.).<sup>8</sup> Greater use and storage of local fuels improves reliability and disaster resilience, particular given Hawai`i County has no fuel refineries, limited fuels storage capabilities, and limited port infrastructure.

Fuel shares in energy and electricity measures the percentage of energy and electricity produced from various sources of energy. It gives a useful picture of primary energy supply mix and energy diversification. Renewable energy shares are the percentages of renewable energy used in overall energy use and in electricity production. This is particularly important given HELCO’s commitment to “no new fossil fuels” and its Integrated Resource Plan 2006 Preferred plan that relies solely on renewable resources. Further, if Hawai`i County supports biofuels production, an increasing share of its fuel mix can be grown locally.

This indicator will also measure reliance on imports to meet Hawai`i County’s energy requirements. Energy security is a key policy objective in the pursuit of sustainable development. Ensuring physical availability of supplies and avoidance of energy supply interruptions are aspects of energy security. There are quantity and price risks in the supply of imported energy. Policies to increase indigenous energy production and enhance energy efficiency can help mitigate both risks.

**Graph 10: Primary Energy Consumption by Source, Hawai`i (Trillion BTU, 1960–97)**  
 This graph shows that energy consumption has been on the rise since 1960 and stabilized in the 1990s. Almost all of energy consumed comes from imported petroleum.



Source: DBEDT Energy Database

• **End-use Energy Prices by Fuel and by Sector (Major Concern)**

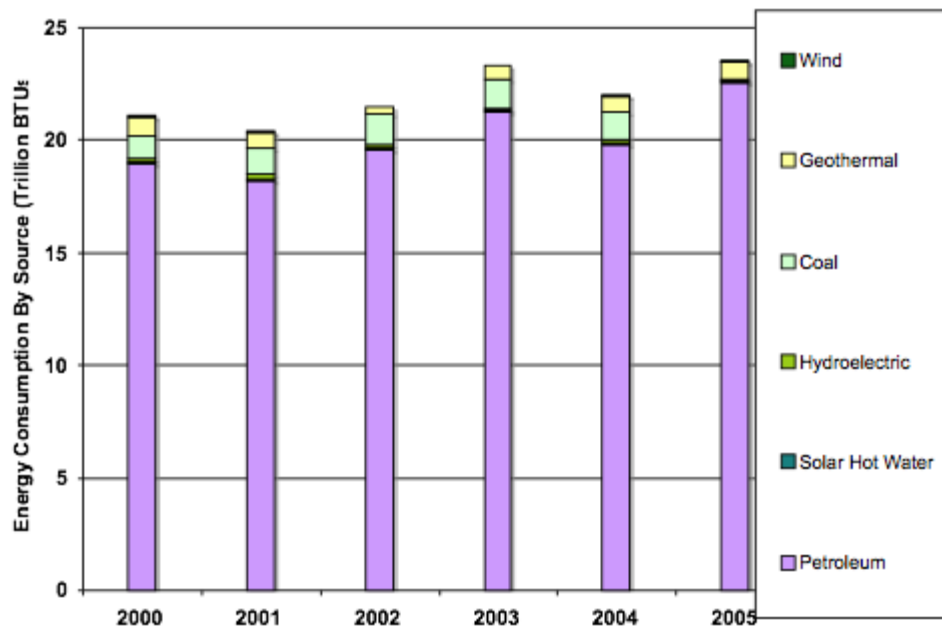
This indicator reflects the final price paid by consumers for energy services. Energy prices are driving forces for incentives or disincentives for consumption or conservation, or

efficiency improvements.<sup>9</sup> High prices directly impact affordability and standards of living in Hawai'i County. Hawai'i has the highest energy prices in the United States for both gasoline, and natural gas. Hawai'i County has nearly the highest statewide average electricity rates—far higher than HECO's customers. Further, even though HELCO will be providing much of the renewable power for the HEI system, HECO enjoys the RPS benefits, but provides no price support to the HELCO ratepayers.

*Sources: USEIA, State Energy Data 2001: Prices and Expenditures; HELCO Annual Report to the PUC.*

**Graph 11: Primary Energy Consumption by Source, County of Hawai'i (2000–2005)**

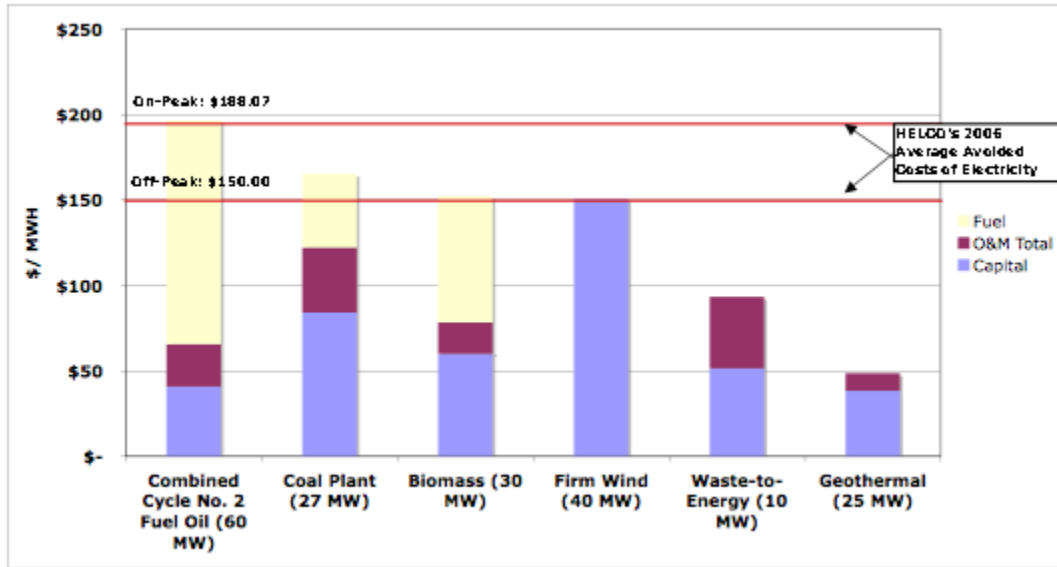
Similarly, Hawai'i County's primary energy demand is met overwhelmingly with petroleum. The following graph depicts the county's growth in energy consumption over the last five years, excluding marine and air transportation.



**Graph 12: Renewable Versus Conventional Power in Under IRP Market Price Case**

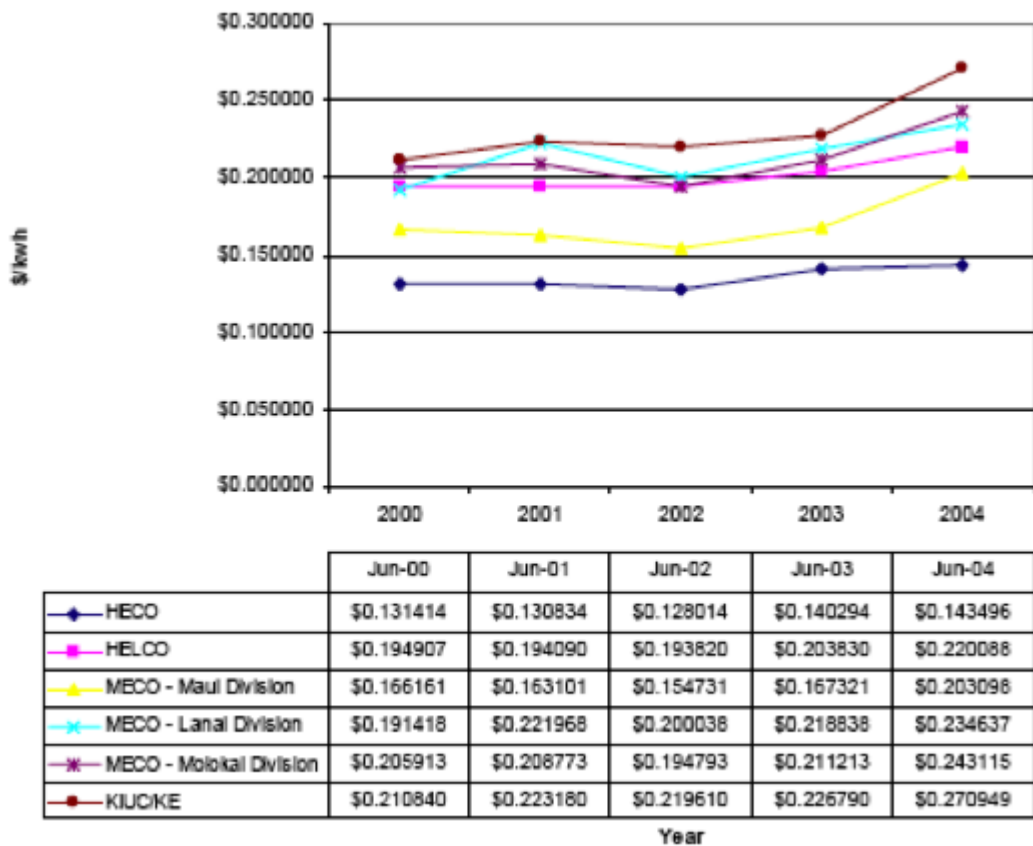
This graph shows the relative costs of power resources under expected future market price conditions in Hawai'i County. Renewable power is expected to provide significant cost savings. These savings will be passed on to HELCO ratepayers if the PUC allows for greater fixed price contracts for renewable power rather than linking the prices to the floating price of oil.

*Source: RMI analysis of the levelized costs of plants installed in 2012 based on Black and Veatch Unit Informa-*



*tion Forms for HELCO; Global Energy Concepts, "Select Hawai'i Renewable Energy Project Cost and Performance Estimates, 2004"; Bollmeier, Warren et al. "Interim Report on Renewables and Unconventional Energy in Hawai'i," Hawai'i Energy Policy Project, University of Hawai'i at Manoa, November 2003.*

**Graph 13: Comparison of Effective Residential Rates for All Utilities in Hawai'i**  
 Electricity rates for HELCO, the only electric utility in Hawai'i County, are on the high-end for the state.



Source: Public Utilities Commission Annual Report, 2003–04

• **Share of Household Income Spent on Fuel and Electricity (Concern)**

“This indicator provides a measure of energy affordability. ... In 2003, the latest year for which an average household expenditure data [are] available, the average income of Honolulu households was about \$59,144, before taxes. Of this amount an average of \$2,353 was spent on energy, or about 4%. The expenses included gasoline and oil, electricity, and utility gas. There were about 2,995 utility gas customers who paid an average of \$474 a year for gas service. (TGC 1) ... We project that average household energy expenditures for a utility gas customer will increase from \$2,799 in 2003 to \$3,687 in 2005—a 31.4 percent increase. This is 5.9 percent of the utility gas customer’s average household income. The average non-gas customer’s energy bill is projected to increase just over 40 percent from \$2,300 in 2003 to \$3,237 in 2005—or to 5.2 percent of average household income.” (Alber, pp. 4–5)

Sources: DBEDT, State Data Book Updates

## Environmental Indicators

### • Greenhouse-gas Emissions from Energy Production and Use (Major Concern)

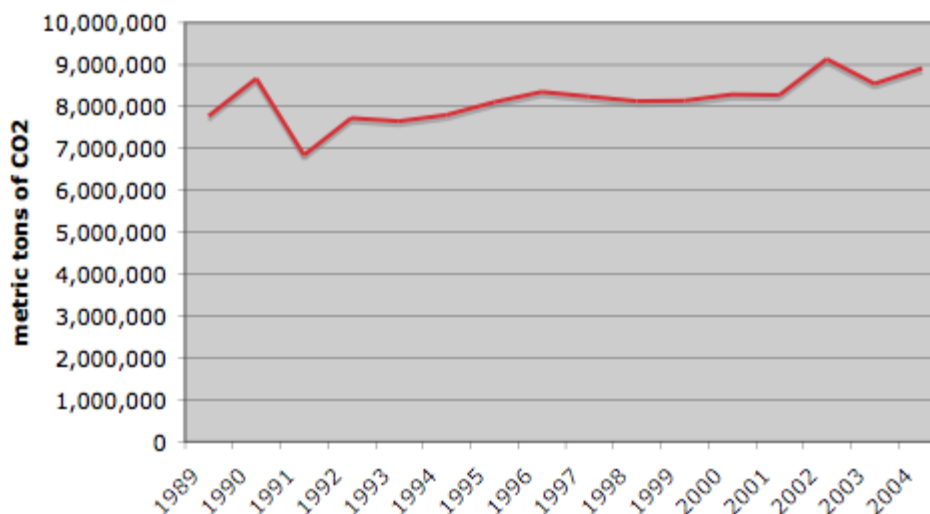
“Under the Kyoto Protocol to the United Nations Framework Convention on Climate Change, signed by the United States in November 1998, the United States was committed to reduce its emissions by 7% less than 1990 emissions by 2008–2010. ... Hawai`i’s human-caused greenhouse-gas emissions for the 1990 baseline year were estimated at 16,961,453 tons of CO<sub>2</sub>, 75,717 tons of CH<sub>4</sub>, and 680 tons of N<sub>2</sub>O. (DBEDT4)

“The global warming potential (GWP) of Hawai`i’s 1990 emissions was 18,810,906 tons CO<sub>2</sub>-equivalent (CO<sub>2</sub>E). This was 0.3% of total U.S. emissions in 1990. While the Kyoto Protocol did not require the national target for emissions reduction to be apportioned among the states, a 7% reduction in Hawai`i’s 1990 GWP would be 1,316,763 tons CO<sub>2</sub>E, reducing total GHG emissions to 17,494,143 tons CO<sub>2</sub>E. ... Hawai`i’s 2003 greenhouse gas emissions are estimated at 18,792,926 tons CO<sub>2</sub>E, an 11.7% increase over the baseline. United States GHG emissions were up 13% in 2003. (USEPA2)

“Based on data available at the time, and continuing with ‘business as usual,’ Hawai`i’s overall domestic GWP was forecast to be 22% over the Kyoto Protocol target by 2010 and 36% over the Kyoto Protocol target by 2020. The domestic GWP from energy use was forecast to be 23% above the energy emission Kyoto Protocol target by 2010 and 32% above the target in 2020, unless actions to reduce greenhouse gas emissions are taken. (HES 2000)” (Alber, pp. 21–22)

*Sources: DBEDT, Hawai`i Energy Strategy, 2000; DBEDT, Hawai`i Climate Change Action Plan, 1998; HELCO Annual Report to the PUC*

**Graph 14: CO<sub>2</sub> Emissions by All Hawai`i State Utilities (1989–2004)**

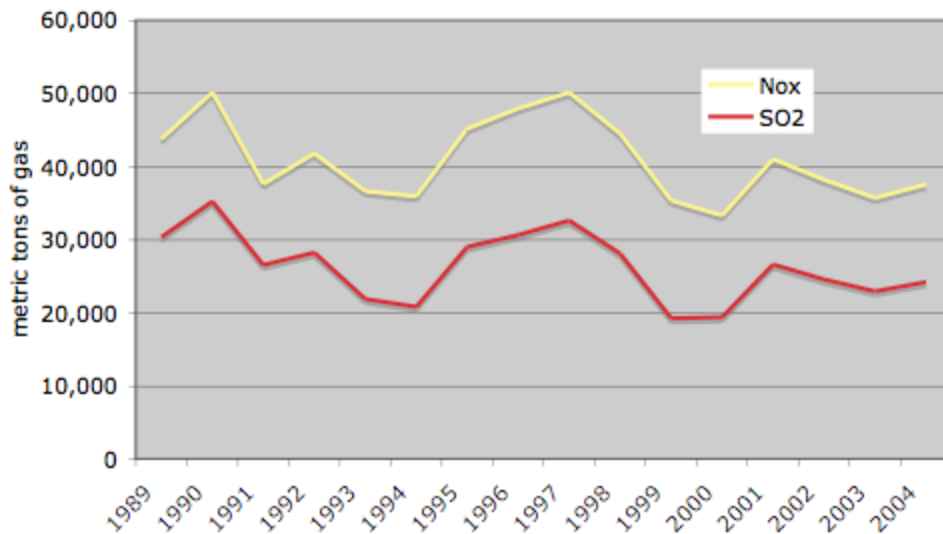


*Source: USEIA – Environment*

### Graph 15: SO<sub>x</sub> and NO<sub>x</sub> Emissions by Hawai'i State Utilities (1989–2004)

Perhaps due to cleaner technologies and more stringent environmental regulations, sulfur and nitrogen oxide emissions appear to be on an overall downward trend.

Source: USEPA – Environment



#### • Liquid Effluents from Energy Systems, Like Oil (Major Concern)

“The purpose of this indicator in the global context is to monitor the discharge of harmful pollutants from energy industries, particularly coal mining and oil extraction, into rivers, lakes and marine waters. ... Oil lost or discharged into the sea represents a pollution threat that can damage coastal ecosystems, endanger or kill marine life and pollute beaches and coastlines. (IAEA 101)

“Transportation of oil and oil products poses a risk of this bill assessment damage to the environment and the economy. In 2004, 51,453,000 barrels of crude oil and 6,062,000 barrels of refined product were imported into Hawai'i by sea, mostly through Barbers Point Harbor and Honolulu Harbor, on Oahu. ... Other risks to water resources are posed by cooling water use by fossil-fuel generators, leaking fuel storage tanks, and fuel spilled from trucks transporting fuel overland. In addition, there is nonpoint source pollution from energy use, such as improperly disposed of lubricating oil, run off of gasoline and oil from highways, etc.” (Alber, p. 25)

Source: U.S. Coast Guard Marine Safety Hawai'i Office; see also sources under the environmental indicators for water quality.



## • Ambient Concentrations of Air Pollutants in Urban Areas (Concern)

“This indicator provides a measure of air quality, which can be a health concern in urban areas. It also provides an indirect measure of the population exposure relevant to impacts on human health and vegetation. An increasing percentage of the world’s population and a majority of Hawai`i’s population live in urban areas. Air pollution from energy use in households, industry, power stations and transportation (motor vehicles) is often a major problem. As a result, the greatest potential for human exposure to ambient air pollution and subsequent health problems occurs in urban areas. (IAEA 91)

“Hawai`i’s air quality meets federal and State environmental health standards because trade winds and lack of major polluting industries reduce the build up of air pollution over the islands (Juvik 297). Under the Clean Air Act, standards are set for “criteria pollutants.” These include ground-level ozone, nitrogen dioxide, particles less than 10 μ in diameter (PM10), sulfur dioxide, CO, and lead. The State Health Department has set standards that are up to twice as stringent as the EPA criteria for most of these pollutants.” (Alber, p. 23)

*Sources: Hawai`i State Department of Health, Clean Air Branch*

## 8. Fair And Trusted Governance Goals

- a. Allocation of resources based on objective level of service standards;
- b. Open and responsive; respect divergent views;
- c. Fiscal prudence; and
- d. Equitable taxes.

*Note: With the possible exception of goal 8a, these goals are subjective. Equity, prudence, and responsiveness are judged differently based on each person’s values and experience. The most effective way to measure progress on these goals would be through period public-opinion polls.*

### a. Allocation of Resources Based on Objective Level of Service Standards

This report directly addresses this goal. Adoption by the County of indicators of progress would effectively set “objective levels of service standards” regarding each of the Mayor’s goals. However, there are many County services that are not enumerated in the Mayor’s goals. Therefore, objective standards could be developed for selected County services not mentioned in this report. For example, time required to secure a liquor license or a building permit.

If the County can then identify its budget for each adopted indicator and service standard, a challenging but worthwhile task, it will have achieved this goal.

### b. Open and Responsive; Respect Divergent Views

As mentioned above, progress toward this goal could best be measured through periodic public-opinion polling, a useful practice, which may, however, be quite expensive. If polling does not take place, other very indirect ways to measure this goal include:

- Percent of residents who attended a County-sponsored meeting in the past year; and

- Percent of registered voters who vote. Compare to voter participation rates at state and national levels (State of Hawai`i Office of Elections).

**c. Fiscal Prudence**

As above, this goal might be measured through polling.

**d. Equitable Taxes**

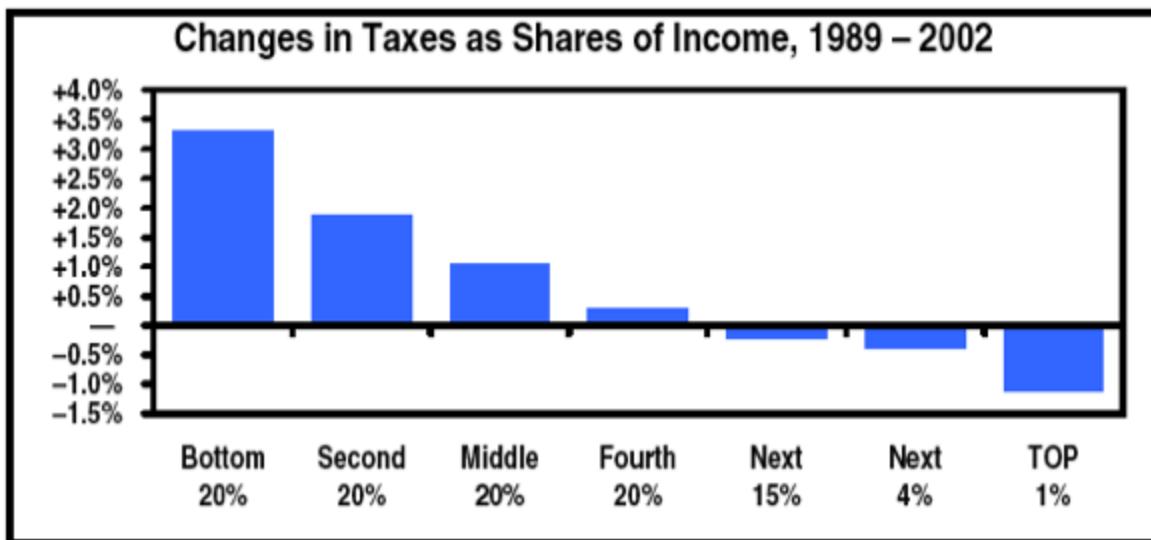
According to the Institute on Taxation and Economic Policy, low-income people in Hawai`i pay more taxes than those in 43 other states. The state’s poorest 20 percent pays 12.6 percent of their income in taxes, after federal offsets, while the richest 1 percent pays 5.8 percent in taxes, after offsets. Since 1989, the poorest 20 percent have had to pay 3.3 percent more in taxes, while the richest 1 percent has had to pay 1.1 percent less. Of the poorest 20 percent’s taxes, 10 percent of the 12.6 percent went to sales and excise taxes. The Center on Budget and Policy Priorities notes that Hawai`i, unlike most states, charges income tax for a family of four with a total income of as low as \$11,600. Also unlike most states, it charges as much tax on groceries and clothing as on other goods. Since the federal and State governments set most tax rates, Hawai`i County may not be able to greatly influence tax equity. Nevertheless, the following are major indicators that would demonstrate whether or not taxes are equitable.

- Size of the standard deduction for married couples
- Percent of low-income families receiving a federal or state earned income tax credit
- Ratio of percent of income paid on taxes by the poorest 20 percent versus the richest 1 percent

*Sources: U.S. Department of Labor’s Consumer Expenditure Survey, IRS, State of Hawai`i Department of Taxation*

**Graph 16: Changes in Taxes as Shares of Income, 1989–2002**

*Source: Institute on Taxation and Economic Policy, based on government Finances, U.S. Census 2000*



## 9. Managed Growth Goals

- a. Concurrency—infrastructure keeps pace with growth;
- b. Development pays its fair share;
- c. Compact—encourage infill, discourage sprawl;
- d. Agricultural lands protected for open space values and future potential for agricultural use; and
- e. Community participates in planning and implementation—“living” community development plans.

### a. Concurrency—Infrastructure Keeps Pace with Growth

Hawai`i's infrastructure is in dire straits. The Government Performance Project grades Hawai`i's infrastructure as a C-. The ASCE Report Card for America's Infrastructure finds that 23 percent of Hawai`i's major urban roads are congested, 65 percent of Hawai`i's major roads are in poor or mediocre condition, 47 percent of Hawai`i's bridges are structurally deficient or functionally obsolete, and that 77 of its dams are in the high hazard category. In addition, the ASCE notes that Hawai`i's drinking water infrastructure will need \$146 million over the next 20 years and that its wastewater infrastructure needs \$1.74 billion. Given these backlogged infrastructure needs, and the high rate of construction growth, it is crucial to control the rate and location of new residential and commercial growth to fully use and support existing public infrastructure.

- Infrastructure deficit, that is, funding required to pay for repair or replacement of existing substandard infrastructure
- Number of approved developments that, if constructed, will contribute traffic to areas that have levels of use that violate, or will violate, standards.
- Number of approved developments in areas where public infrastructure can accommodate the additional capacity demanded by the development.
- Annual increase in potable water/electricity/wastewater treatment demand

*Sources: County Planning and Finance Offices, Environmental Management Department Wastewater Division, Public Works-Engineering, State Department of Transportation – Highways Division, County of Hawai`i Department of Water Supply*

### b. Development Pays its Fair Share

An essential component of infrastructure and public-service concurrency is development paying its fair share. The significant existing “infrastructure deficit” in the county is, in part, due to previous developments not paying their fair share. Many smart-growth studies have demonstrated that development in areas previously not provided with public services exacts a greater public cost in the form of infrastructure and public service extensions than they contribute in tax revenue. Requiring developments to internalize costs—such as paying impact fees, using efficient lighting, appliances and water features, and minimizing stormwater runoff—will help pay for concurrent infrastructure and public service development.

- For each proposed development project, the ratio of public revenue to public costs for infrastructure and public-services (e.g., roads, sewer, water, utilities, schools, emergency and other services—including marginal capital costs).

- Number of development projects that implement renewable/onsite energy production; onsite stormwater minimization, treatment, and retention; construction waste and erosion minimization; and green building techniques.

*Sources: County Planning and Finance Offices*

### **c. Compact—Encourage Infill, Discourage Sprawl**

- Acres of open space converted to development or built space;
- Average number of dwelling units per acre within urban, suburban and rural areas;
- Population density in the urban, suburban, and rural areas; and
- Rate of increase in the population of certain designated areas versus rate of increase in area of built space;

*Sources: Hawai'i County Building Permits and Planning Offices*

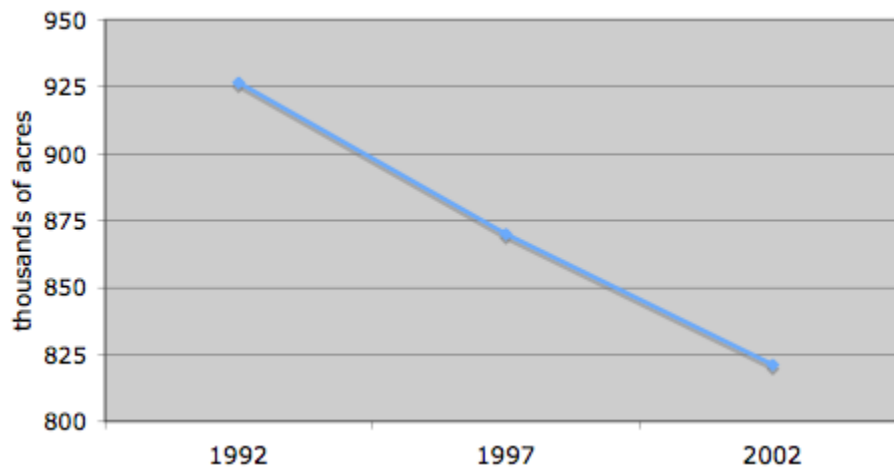
### **d. Agricultural Lands Protected for Open Space Values and Future Potential as Farmland**

As noted in Hawai'i County's Revised General Plan, the county supports protection of agricultural land. Nevertheless, the rapidly increasing value of land in the county creates significant pressure to convert zoned agricultural land to residential and even commercial uses. Additionally, there is a significant need for affordable housing. Therefore, the County should redouble its efforts to protect high-quality agricultural land for agricultural uses while releasing certain marginal agricultural-zoned lands for affordable infill development. Additionally, the long-term protection of agriculture in Hawai'i depends upon the protection of its soils.

- Acres of high-quality agricultural land lost to residential or commercial uses;
- Acres of high-quality agricultural land permanently committed to agriculture;
- Acres of land in farms;
- Acres of agricultural land converted to other forms of open space; and
- Area of land affected by soil erosion and salinity.

*Sources: Hawai'i Department of Agriculture, U.S. Census of Agriculture*

**Graph 17: Land in Farms (Acres) in Hawai'i County (1992–2002)**



*Source: U.S. Census of Agriculture*

**e. Community Participates in Planning and Implementation—“Living” Community Development Plans**

- Number of community and neighborhood associations, and citizen groups per capita;
- Number of open meetings per capita per year, and number of attendees; and
- Voter turnout for municipal elections.

*Sources: State of Hawai'i Office of Elections*

**10. Taking Care Of Family—*Ohana* Goals**

- a. Comprehensive support services for the elderly
- b. Reintegration of ex-offenders into community

**a. Comprehensive Support Services for the Elderly**

It is difficult to measure this indicator without an on-the-ground survey, as satisfaction with the level of support is subject. The following indicators give some sense of the availability of support services, but most are not currently being measured.

- Percent of family caregivers and older adults who feel supported by programs and services;
- Percent of older adults who need formal care and are able to receive them;
- Ratio of available affordable housing for elderly to the number of people who need it, especially in areas close to public transportation and services; and
- Elderly support ratio—the number of people aged 18–64 to people aged 65 and older (U.S. Census).

*Potential Source: Hawai'i State Department of Health, Executive Office of Aging*

**Table 6: Elderly Support Ratio 1990 to 2000**

As this table demonstrates, both the 18–64 and the 65+ age groups have grown as a percentage of the population, indicating that there are fewer people in the less-than-eighteen-years-old range. This may mean that in the future the elderly support ratio will be even smaller.

	<b>% Pop 18-64 Years Old</b>	<b>% Pop 65+ Years Old</b>	<b>Elderly Support Ratio</b>
1990	58.8%	12.5%	4.7:1
2000	60.3%	13.5%	4.5:1

*Source: U.S. Census 1990 and 2000*

**b. Reintegration of Ex-offenders into Community**

Hawaiian correctional facilities provide a great deal of educational and vocational training as well as abuse counseling. Nevertheless, given the rapidly increasing rate of incarceration and the high levels of recidivism (about 47–57 percent in 2003, according to the State Department of Public Safety), the County could do a better job of preparing offenders for jobs and ensuring (through placement and follow-up) that they have obtained and retained a job. Given the hot housing market, affordable housing for ex-offenders is also a critical issue of reintegration success.

- Percent of ex-offenders who find a job within a certain time period of leaving prison;
- Percent of ex-offenders who find an affordable place to live upon leaving prison;
- Percent of inmates who receive substance-abuse treatment, or education and job training while incarcerated, or job placement and transitional services upon release;
- Rate of recidivism among all ex-offenders, within three years; and
- Total crime rate per 1,000 people in Hawai'i County.

*Sources: Hawai'i Department of Public Safety, Hawai'i Community Correctional Center, Kulani Correctional Facility, Big Island Substance Abuse Council, Police Department*

## Section 7: Better Solutions Through Whole-System Thinking

### How Do We Know if a Solution is Working? Whole-system Thinking and the Power of Leverage Points

Whole-system thinking seeks to understand and find the best ways to respond to a complex system. It has been applied to problems as varied as affordable housing, diabetes, and manufacturing. It helps us to understand how a complex system might behave over time and how a policy or program can best solve a problem, not just now but for the long term. Also, whole-system thinking helps us examine why a program or policy might be less effective than we had hoped. It might even show how a policy pushes the system in a direction opposite of what we intended.

#### Unintended Consequences: DDT and Public Housing

The following excerpt from the book *Natural Capitalism* provides a cautionary tale of a well-intentioned solution running amok in a complex system:

Consider what happened in Borneo in the 1950s. Many Dayak villagers had malaria, and the World Health Organization had a solution that was simple and direct. Spraying DDT seemed to work: Mosquitoes died, and malaria declined. But then an expanding web of side effects (“consequences you didn’t think of,” quips biologist Garrett Hardin, “the existence of which you will deny as long as possible”) started to appear. The roofs of people’s houses began to collapse, because the DDT had also killed tiny parasitic wasps that had previously controlled thatch-eating caterpillars. The colonial government issued sheet-metal replacement roofs, but people couldn’t sleep when tropical rains turned the tin roofs into drums. Meanwhile, the DDT-poisoned bugs were being eaten by geckoes, which were eaten by cats. The DDT invisibly built up in the food chain and began to kill the cats. Without the cats, the rats multiplied. The World Health Organization, threatened by potential outbreaks of typhus and sylvatic plague, which it had itself created, was obliged to parachute fourteen thousand live cats into Borneo. Thus occurred Operation Cat Drop, one of the odder missions of the British Royal Air Force.<sup>10</sup>

Jay Forrester, the father of “system dynamics,” wrote a book in the late sixties called *Urban Dynamics* in which he suggested that the enormous concentrated housing complexes that were popular solutions to poverty at the time were shifting the burden—and pushing the system in the wrong direction by concentrating poverty in one area. He proposed that mixed-income housing and business redevelopment zones provided a better, more long-term, systematic fix to the problem. Although roundly criticized for his ideas at the time, they have since been accepted into the theory (if not always the practice) of U.S. affordable housing policy.

<sup>10</sup>*Natural Capitalism*, p. 286–287.

## Shifting the Burden

A central archetype of whole-system thinking is known as shifting the burden, in which an action attacks the symptom of the problem, but not its fundamental cause. Typically, the action provides a short-term fix to the problem and things appear to get better. Unfortunately, since the action ignores the fundamental problem, the beneficial effects tend to be short-lived. Even worse, in many cases the action may have unintended consequences that adversely affect the fundamental problem and make it worse over time. The causal loop diagram below expresses this phenomenon in general terms:

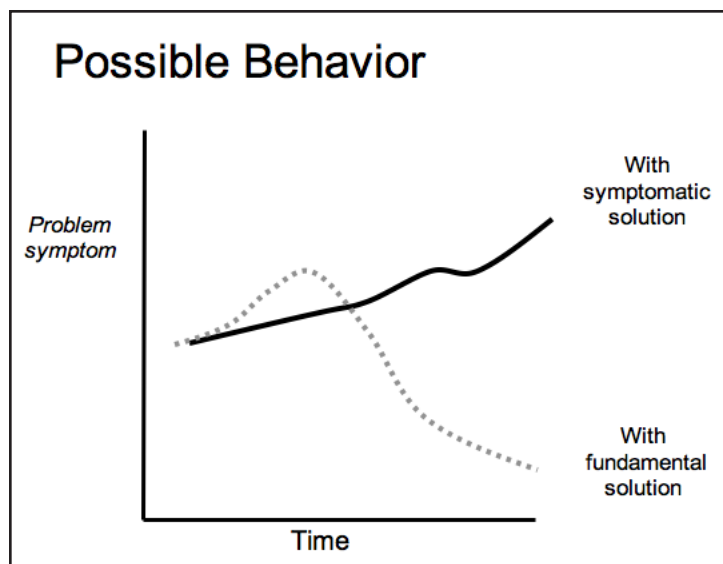
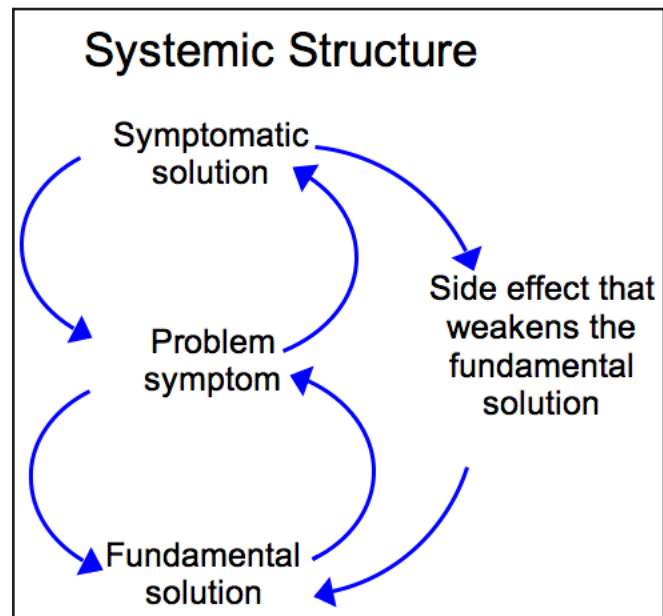




Table 1 describes some examples of shifting the burden, along with the unintended consequences of the solution, and a possible alternative solution that addresses the fundamental problem.

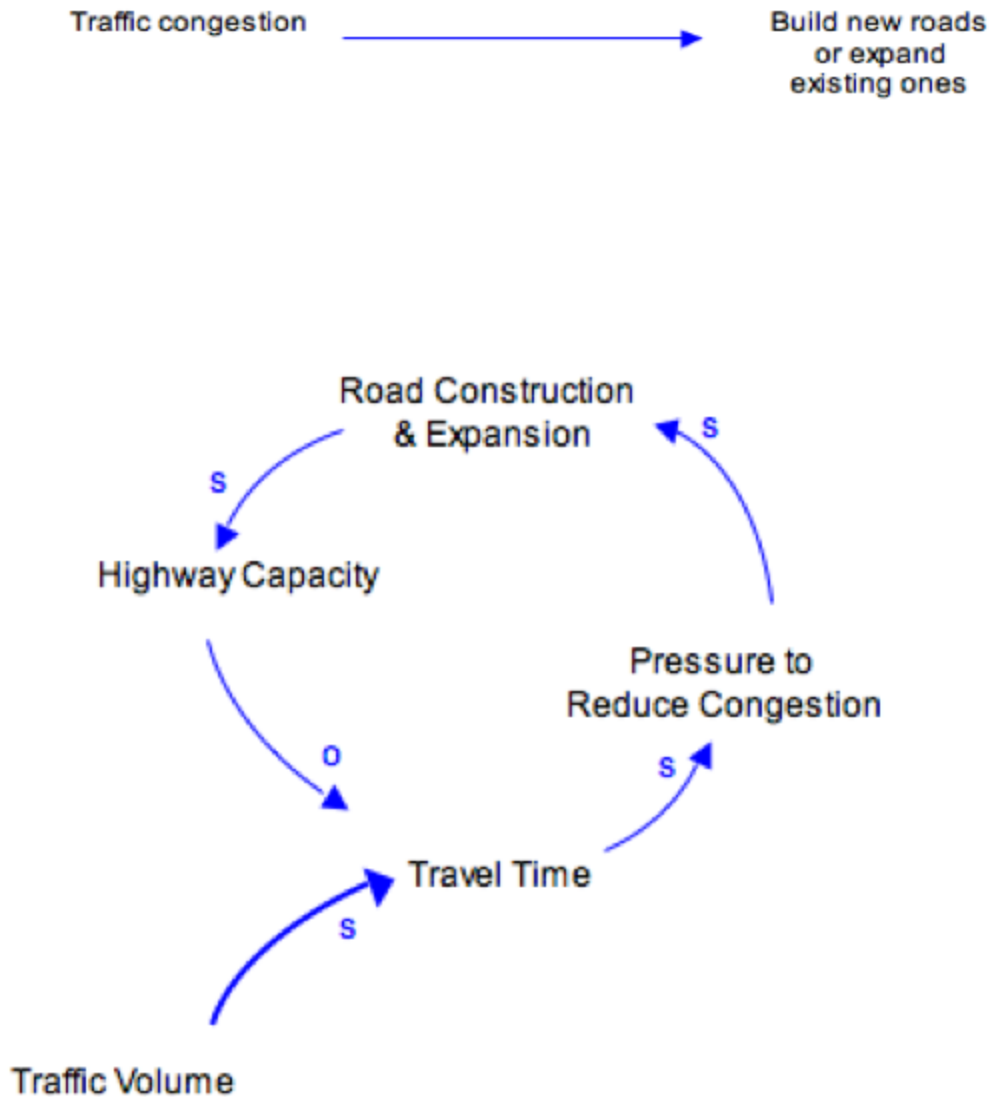
Table 1.

<b>Problem Symptom</b>	<b>Symptomatic Solution</b>	<b>Unintended consequences</b>	<b>Fundamental Solution</b>
Low self esteem	Drug use	Loss of friends; compromised dopamine levels	Invest time in personal development
Famine	Food aid	Food prices falling, hurting local farmers	Develop regional capacity to produce food
Crop damage by insects	Pesticide use	Loss of knowledge about how to rotate etc.	Crop diversification and rotation
Child's inability to get things done	Parents do it	Child's assumption of incompetence	Child learns how

### Shifting the Burden Example: Traffic Congestion and Mobility

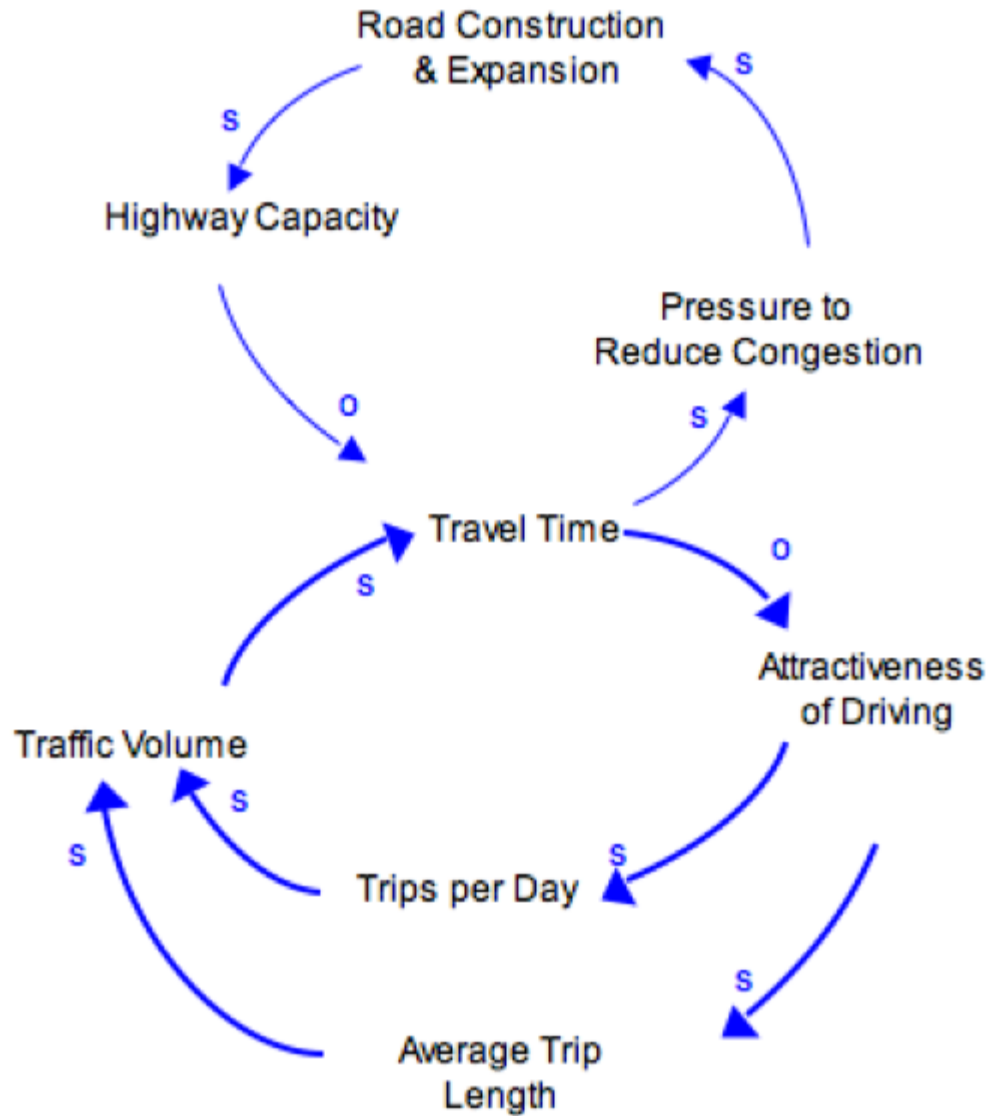
We can apply the “shifting the burden” archetype to highway congestion (problem symptom) and the expansion of highways to reduce that congestion (symptomatic solution). Widening highways is a popular and seemingly easy fix: it relieves traffic, generates construction jobs, and provides a visible and concrete solution to the problem.

Unfortunately, traffic congestion is not merely a function of highway capacity; it is also a function of traffic volume, which is not a constant:

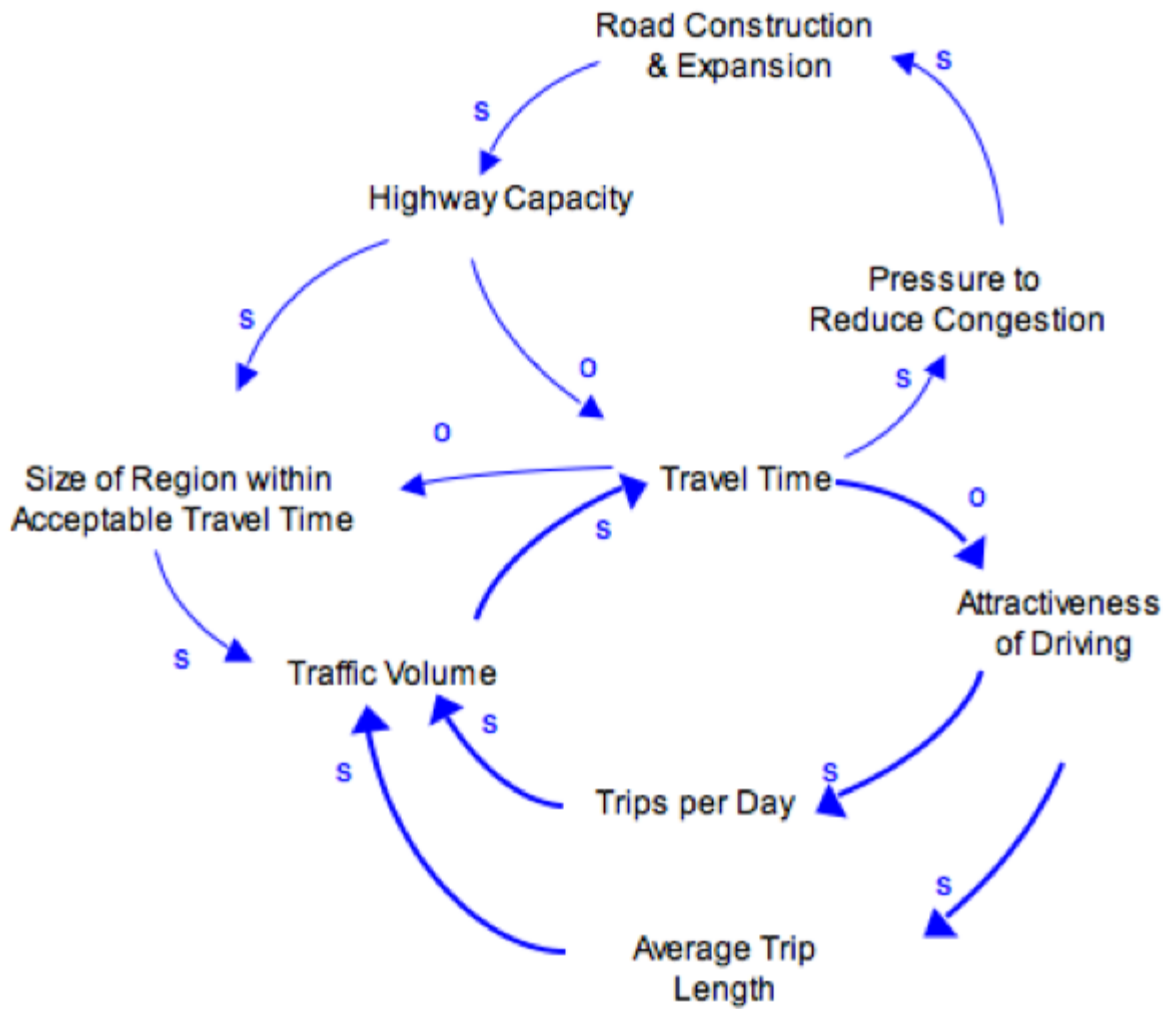


Traffic volume will change depending upon how attractive it is to drive. If congestion is heavy and driving takes forever, people will either forgo trips or choose public transportation. If there is little congestion and driving is faster, people will take more frequent and longer trips. This in turn increases traffic volume, which increases travel time, which increases congestion.<sup>11</sup>

<sup>11</sup>The causal loop diagrams used here are a standard systems thinking tool. The 's' and 'o' symbols express the direction that one variable drives another. As traffic volume increases, travel time also increases moving in the same (s) direction; if traffic volume were to decrease, travel time would also decrease. Highway capacity, on the other hand, drives travel time in the opposite (o) direction: increased highway capacity means faster driving and therefore shorter travel time .... at least temporarily. At the end of this section is a short list of systems thinking terms and symbols.



Furthermore, expansion of roads will (at least in the short term) make it possible for people to commute via car to jobs that are farther away, since drive time is at least temporarily shorter thanks to greater highway capacity. More commuters coming from farther away increases traffic volume, which once again increases travel time and congestion:



All of the above has been also shown to have a corrosive effect on public transportation ridership. When traffic congestion is reduced, public transit becomes less attractive than driving cars; as ridership decreases, public transit revenues decrease and services decline, making public transit even less attractive. As people commute from farther and farther away, and because the more remote areas lack the infrastructure for public transportation, commuters become locked into car dependency, further increasing traffic volume, travel time, and congestion.

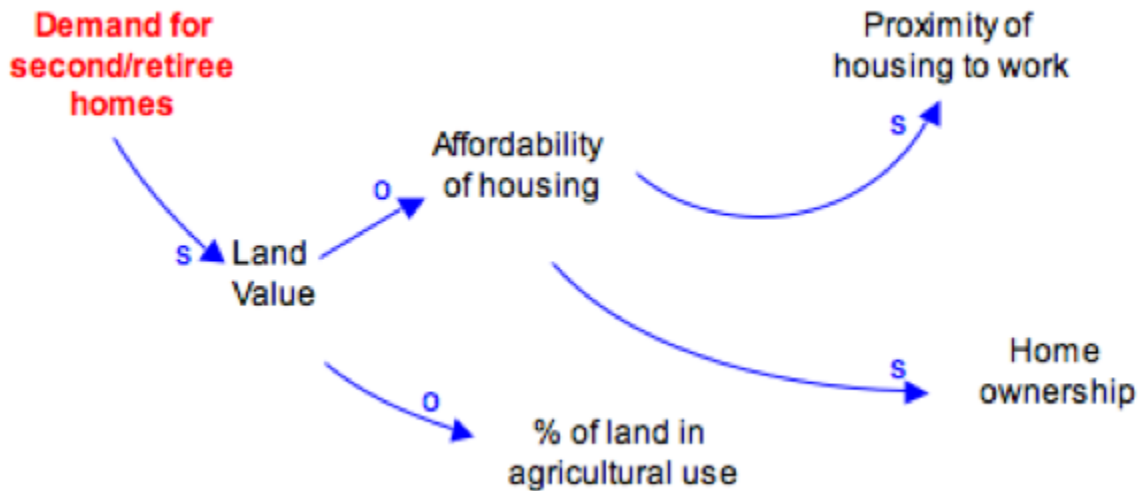
All of the above have been proven multiple times. A 1995 study of U.S. transportation showed that, on average, a 10 percent increase in highway capacity would be followed by a 9 percent increase in traffic volume within five years. In other words, *within five years* of a major highway project, traffic congestion would be almost as bad as it had been prior to the project.

The examples above emphasize the importance of several factors when examining problems and seeking solutions, or evaluating the effectiveness of existing policies and programs. First, it is crucial to consider a problem in the context of the entire system. Second, it is important to realize the multiple connections and effects of single actions, both positive and negative. Third, it is important to measure the impact of a solution using performance indicators that track the fundamental outcome that is desired. Fourth, it is important to recognize ahead of time that fundamental solutions often involve delays, while symptomatic solutions are often highly attractive because of the short-term fix that they provide. We will examine each of these in turn.

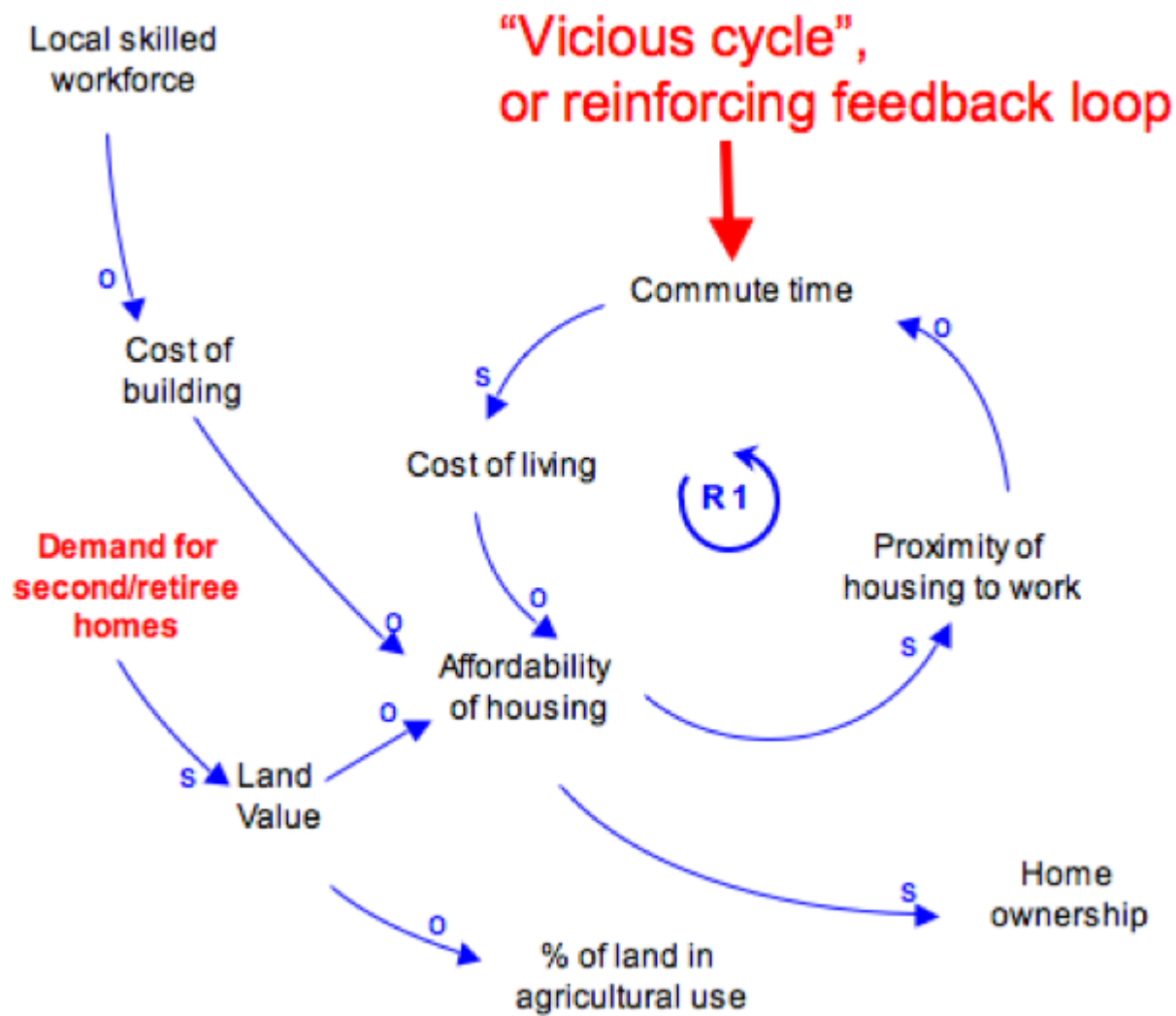
## Housing, Agriculture, *Obana*: A Whole-system Map

The growth in demand by Mainlanders for expensive housing over the past several years has exacerbated several stresses on society on the island. The diagrams below portray how the overall system is affected.

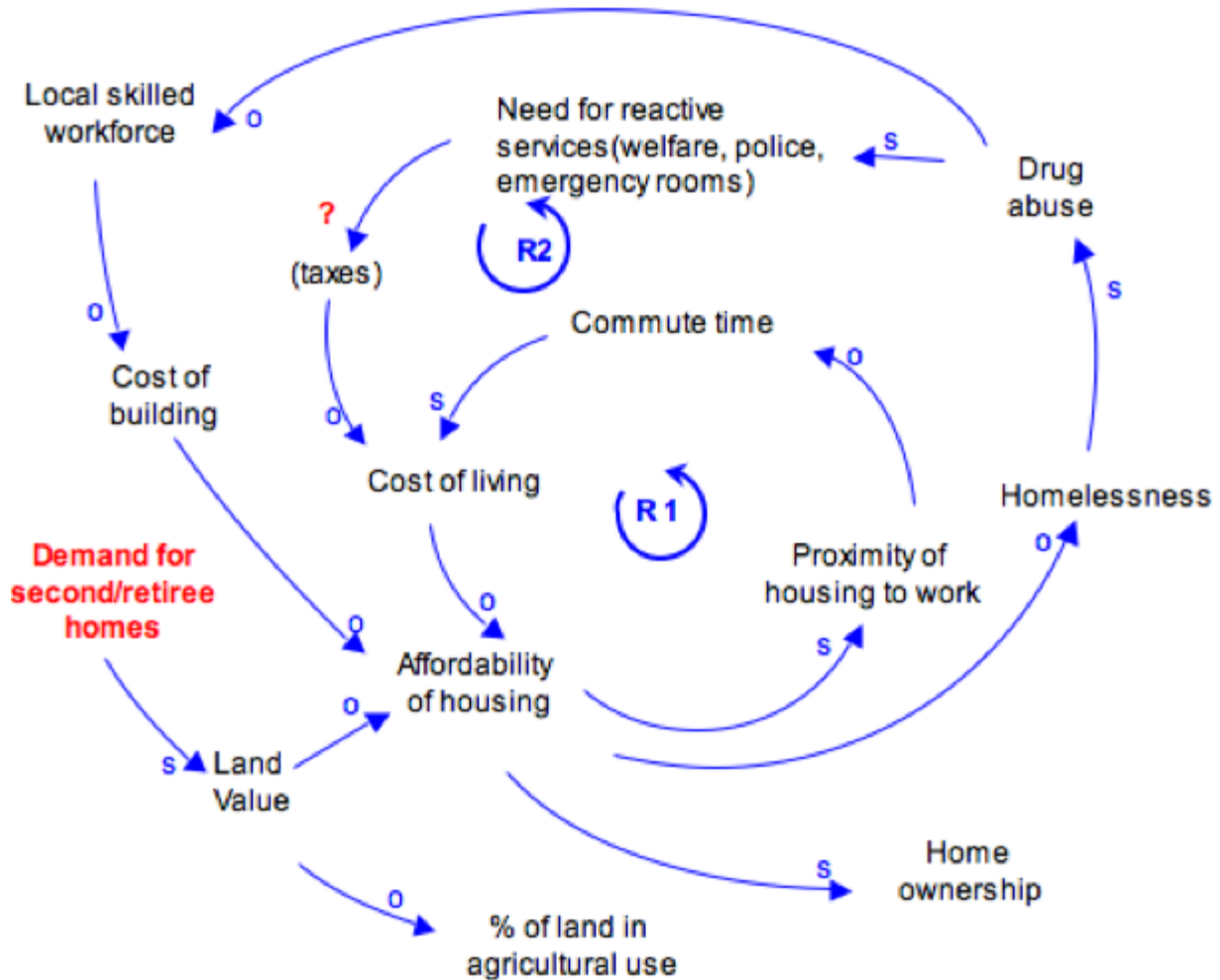
As demand for second and retiree homes increases, land value also increases, leading to a decrease in affordability of housing, as well as a decrease in the total percentage of agricultural land due to runaway land prices. Decreased affordability of housing means lowered local land ownership and reduced proximity of housing to work as people take jobs far from their homes or are priced out of real estate located closer to their jobs:



As people commute farther and farther to work, the additional time and gasoline required drive up the cost of living, making affording a home even more out of reach—meanwhile the cost of building houses is driven up by lack of a local skilled workforce to build them:



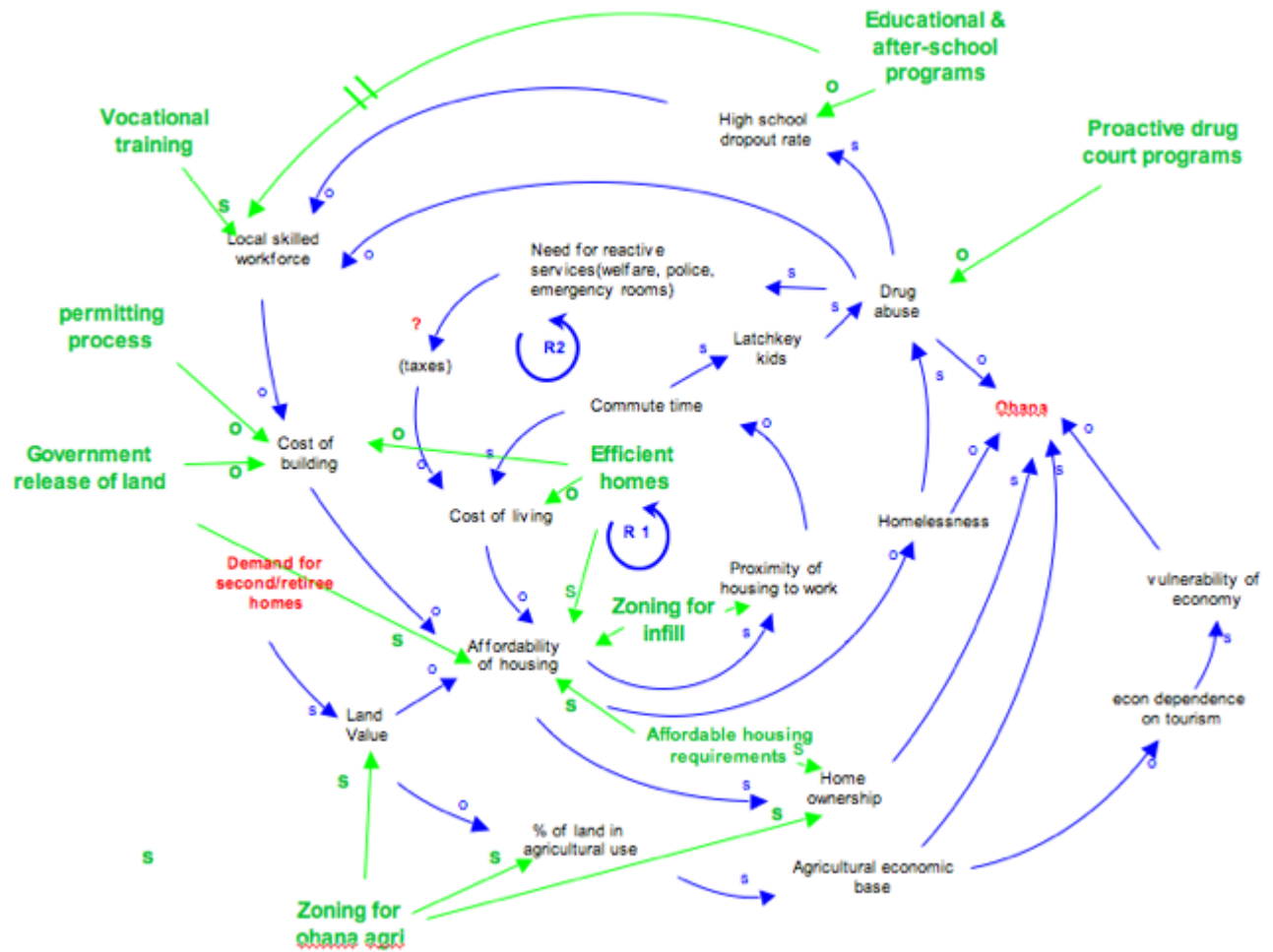
Decreased affordability of housing leads to homelessness. Increased homelessness can increase the rate of drug abuse and the cost of subsequent social services such as welfare, police, and emergency services, which further burdens the tax base and drives up cost of living:



Long commute times for parents means unsupervised children and an increased risk of drug abuse. Together with decreased local home ownership and increased dependence upon a fluctuating tourist economy leads to a general erosion of *obana*. Meanwhile, the rate of drug abuse decreases the available local workforce—both directly by people ineligible for work because of drug use, and indirectly as high school dropout rates increase.

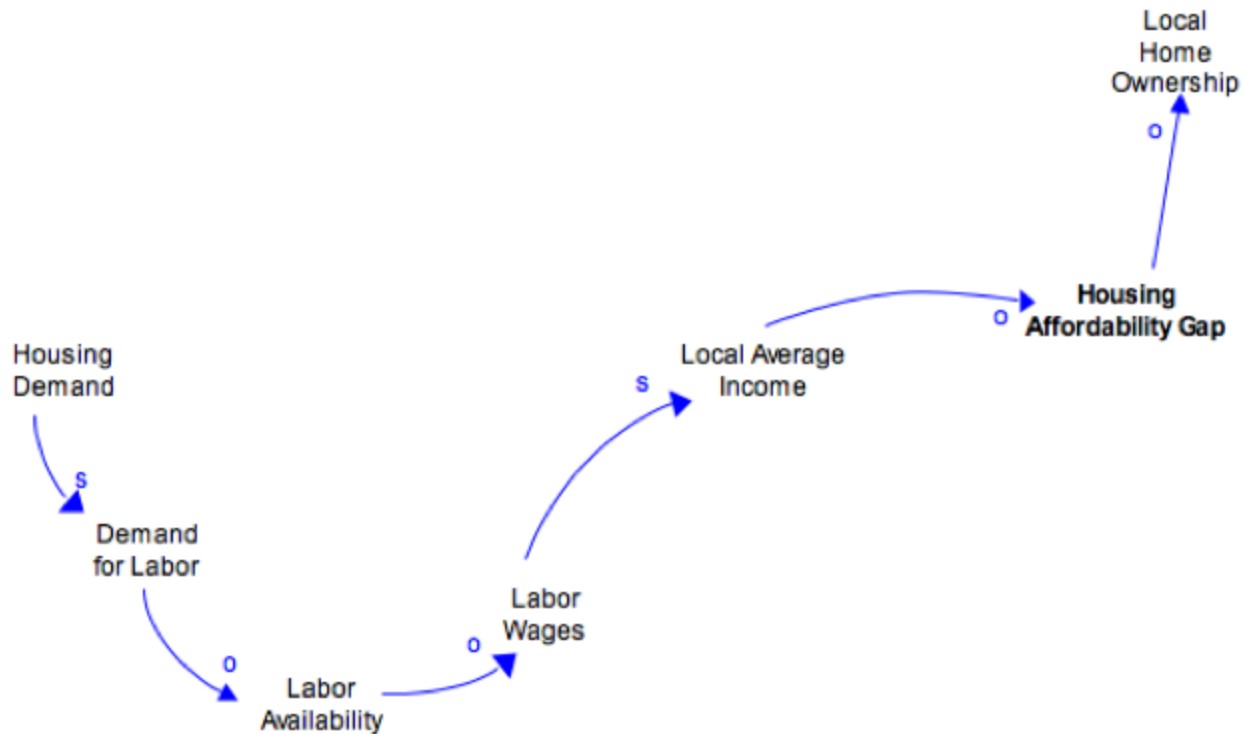




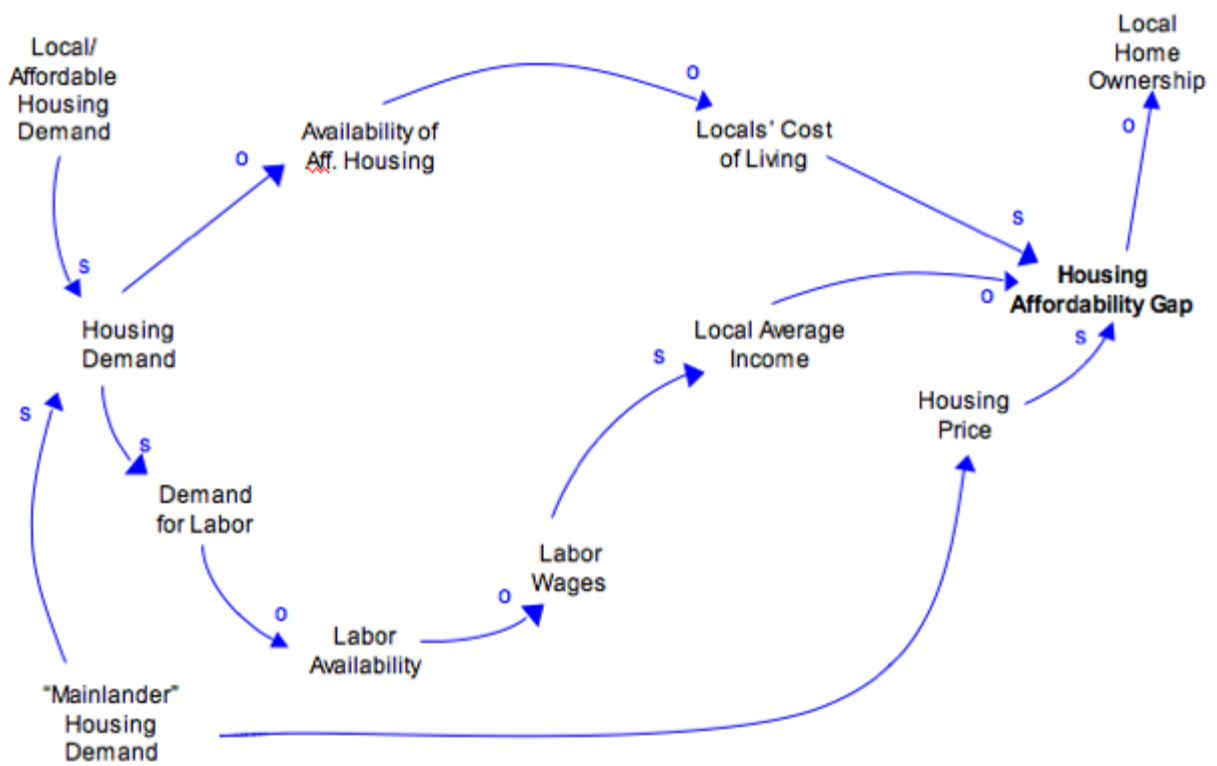


## Using Whole-system Thinking to Examine Assumptions and Outcomes

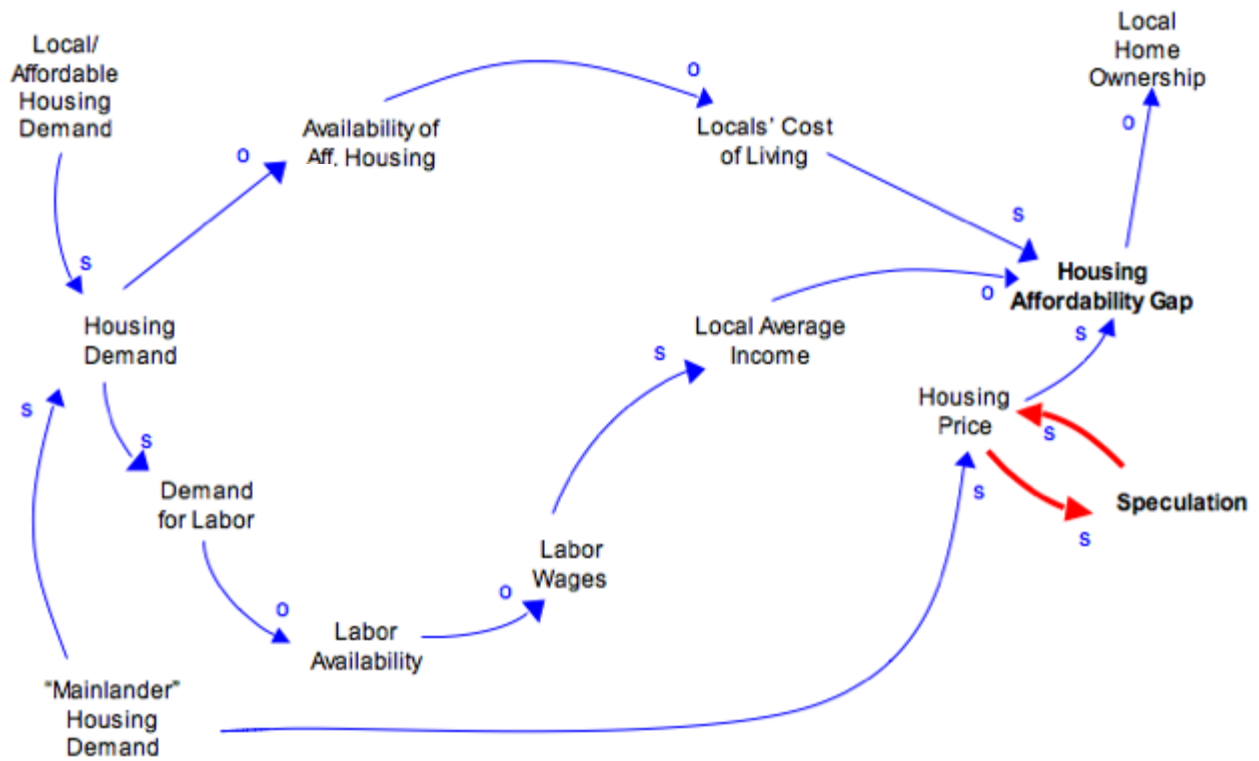
One response to unaffordable housing is the suggestion that the market will provide a solution and that affordable-housing programs are not necessary. This idea can be explored using whole-system thinking tools. Its premise is that increased wages will increase the income of local working people enough so that they will be able to afford to rent or buy adequate housing without the need for intervention by government or nonprofit housing organizations. Thus, increased demand for houses which leads to greater demand for skilled carpentry labor will drive up construction wages, leading to a decrease in the housing “affordability gap” experienced by many native islanders.



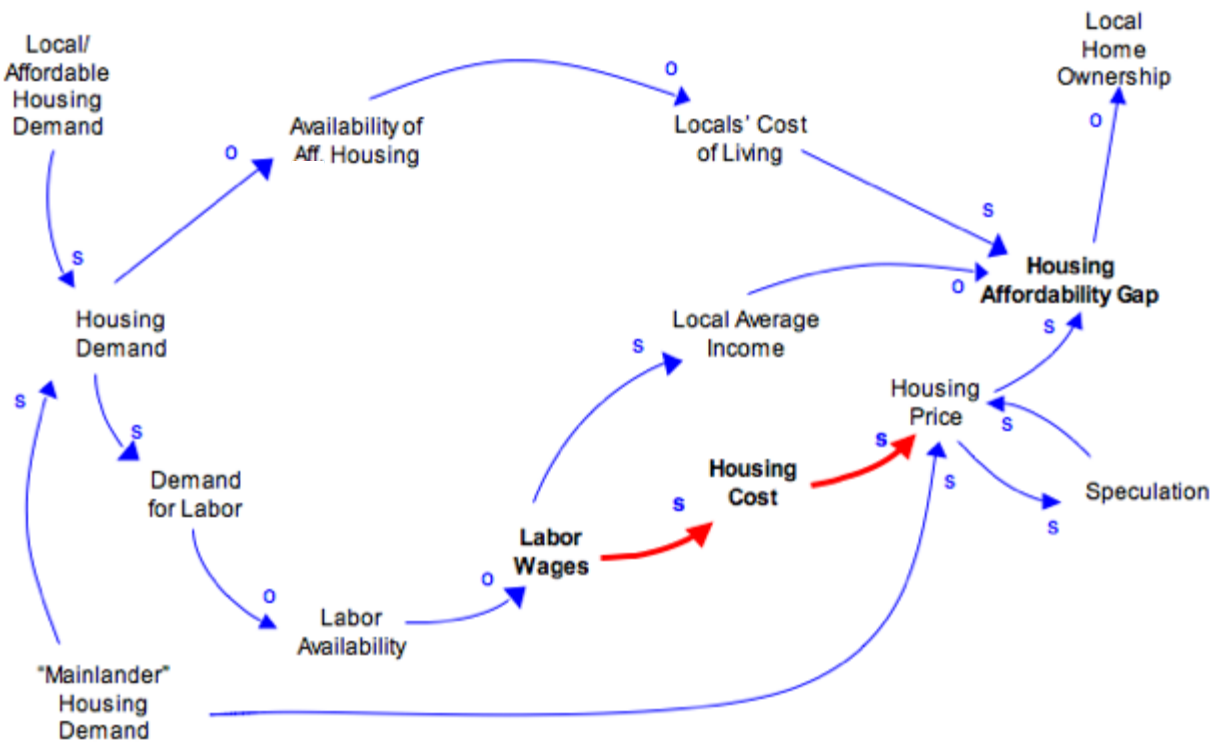
If the only effect of increased housing demand were to increase the wages of the local workforce, this might be the case. However, increased demand for housing (particularly for expensive housing) drives up prices while decreasing the availability of affordable housing:



Increased prices will drive speculation in a hot real estate market, which continues to drive up price, which further widens the gap between cost of housing and what is affordable:

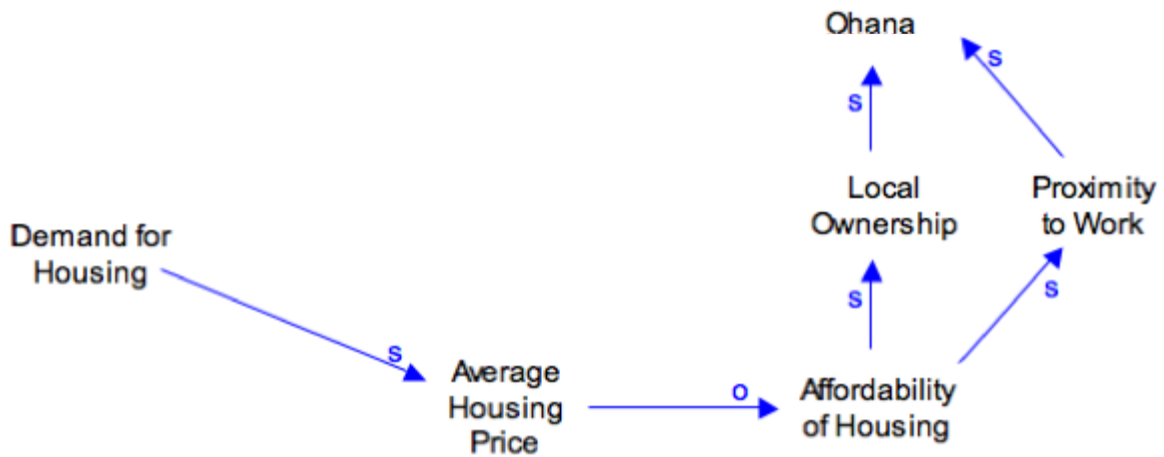


And it is important to think about the effect of higher wages on the cost of building houses as well:

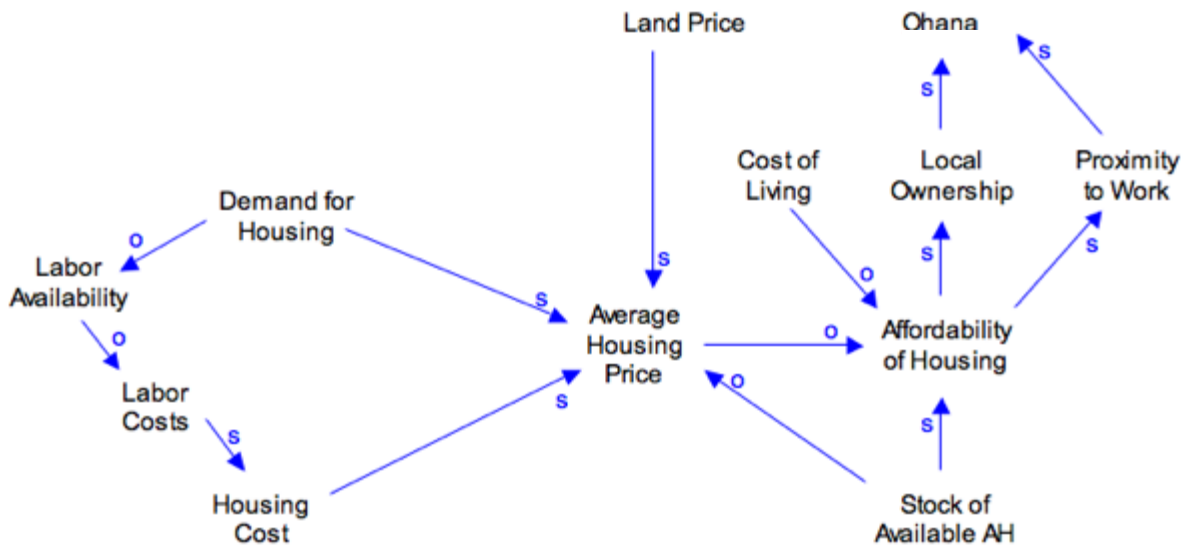


### Housing, Growth and Multiple Points to Intervene in the System

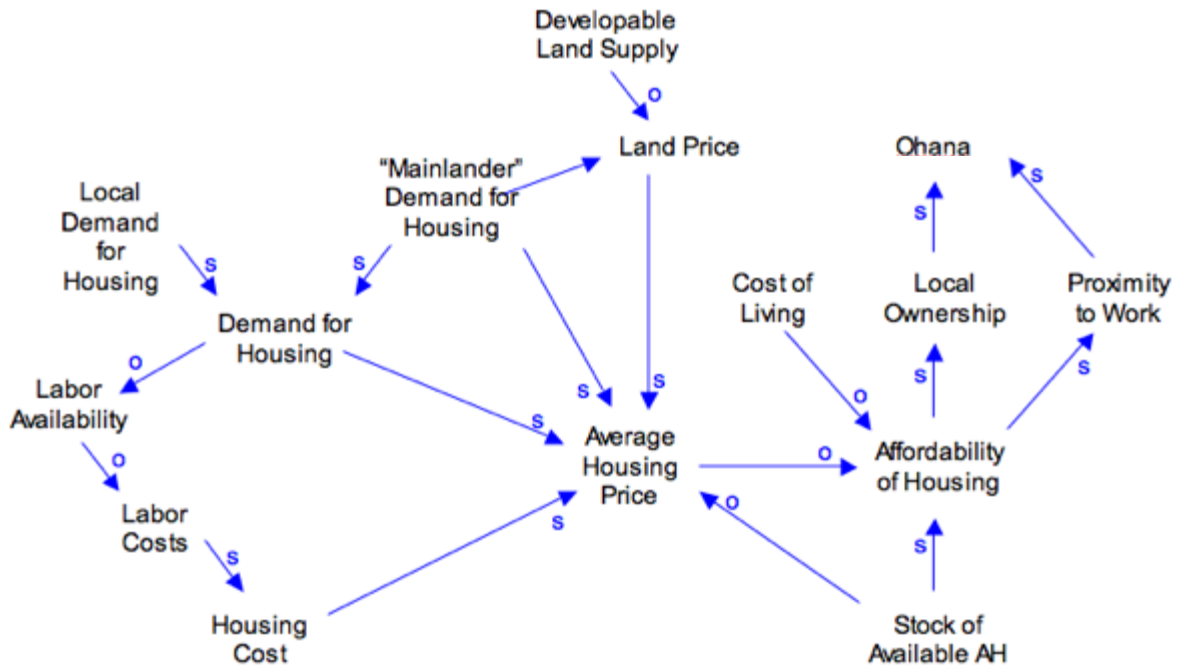
As described above, the current real estate market has driven up prices. Decreased affordability of housing has had an impact upon *ohana*.



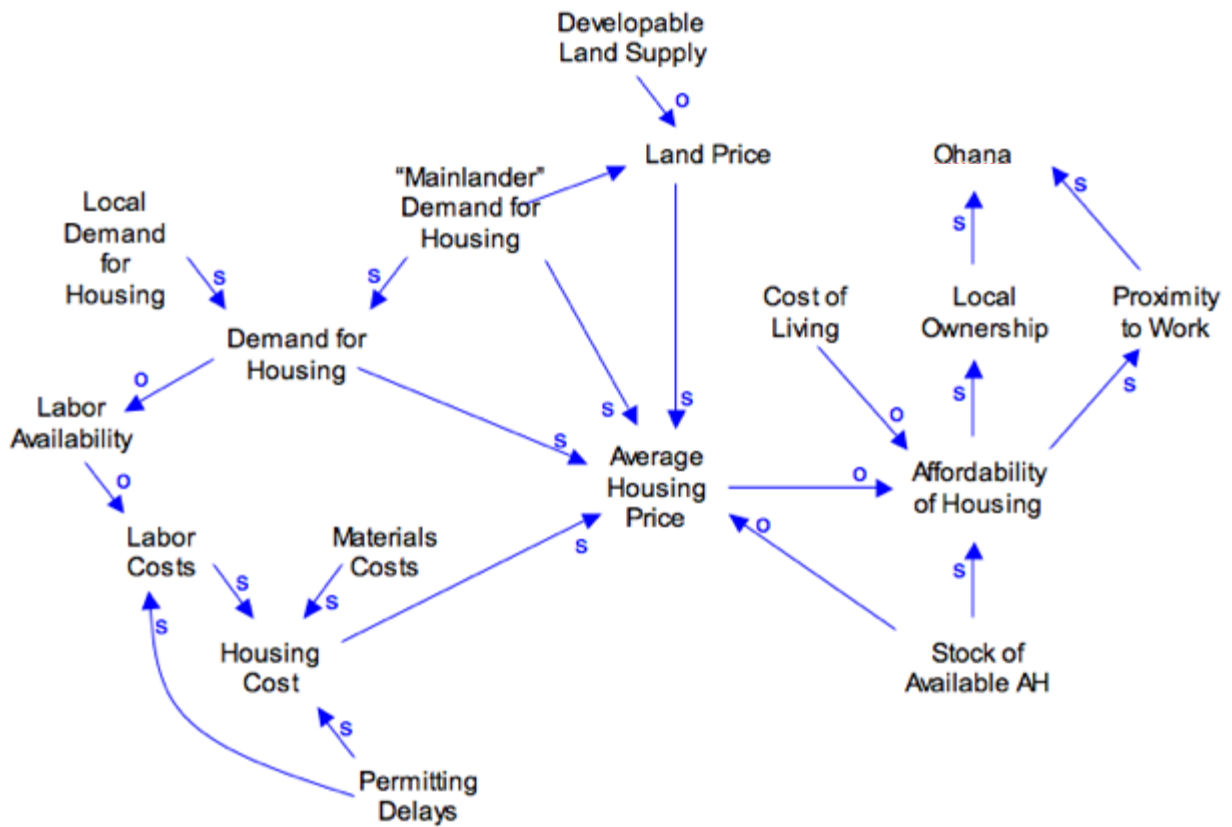
If we examine the problem from a whole-system perspective, we see key drivers and how they connect to the overall picture. Also, we can identify leverage points for addressing the drivers. For example, land price and labor costs affect housing price, while cost of living (not just house price) affects the affordability of housing:



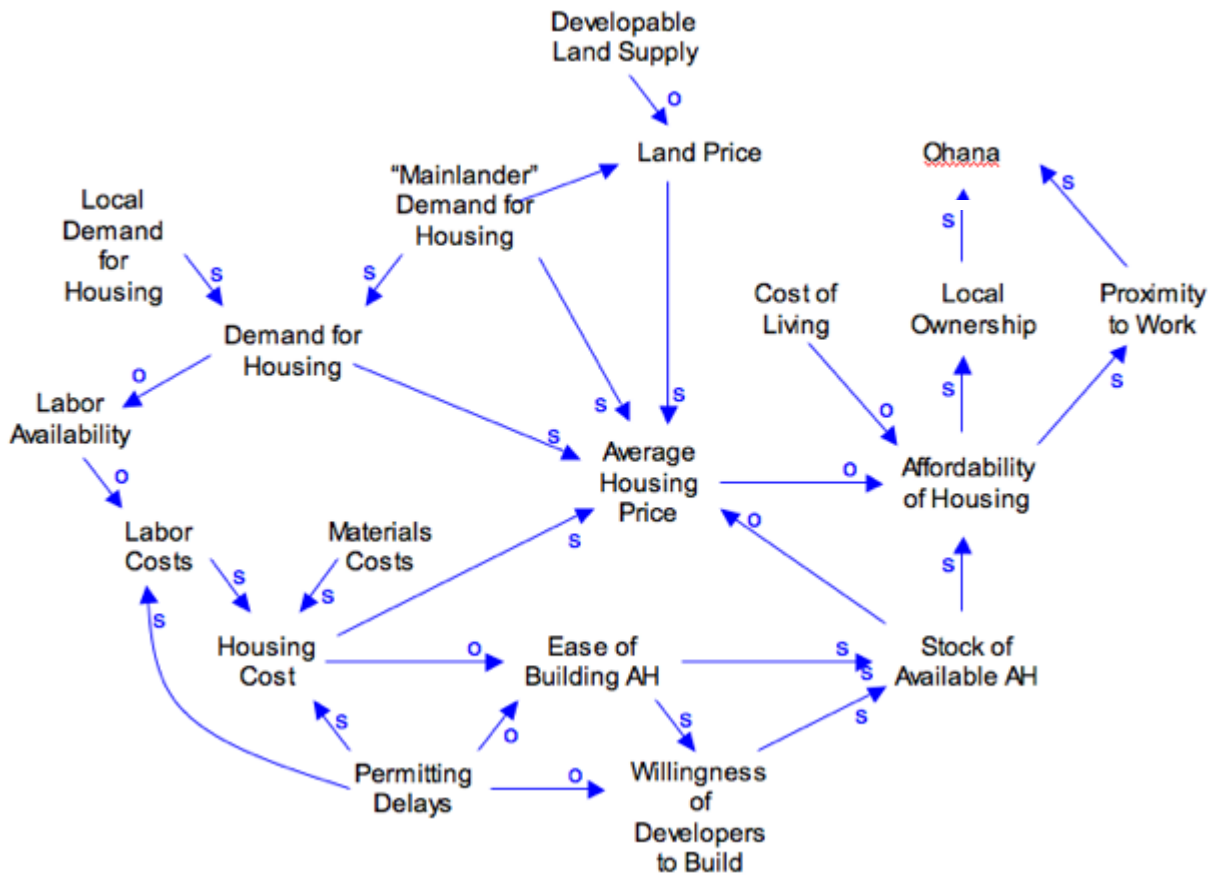
The amount of developable land and Mainland demand for housing both impact land prices, while local demand affects overall housing demand but is not directly as crucial in driving up land prices:



And housing price is a function of labor costs (driven by demand for housing, which drives demand for labor), material costs, and permitting delays:

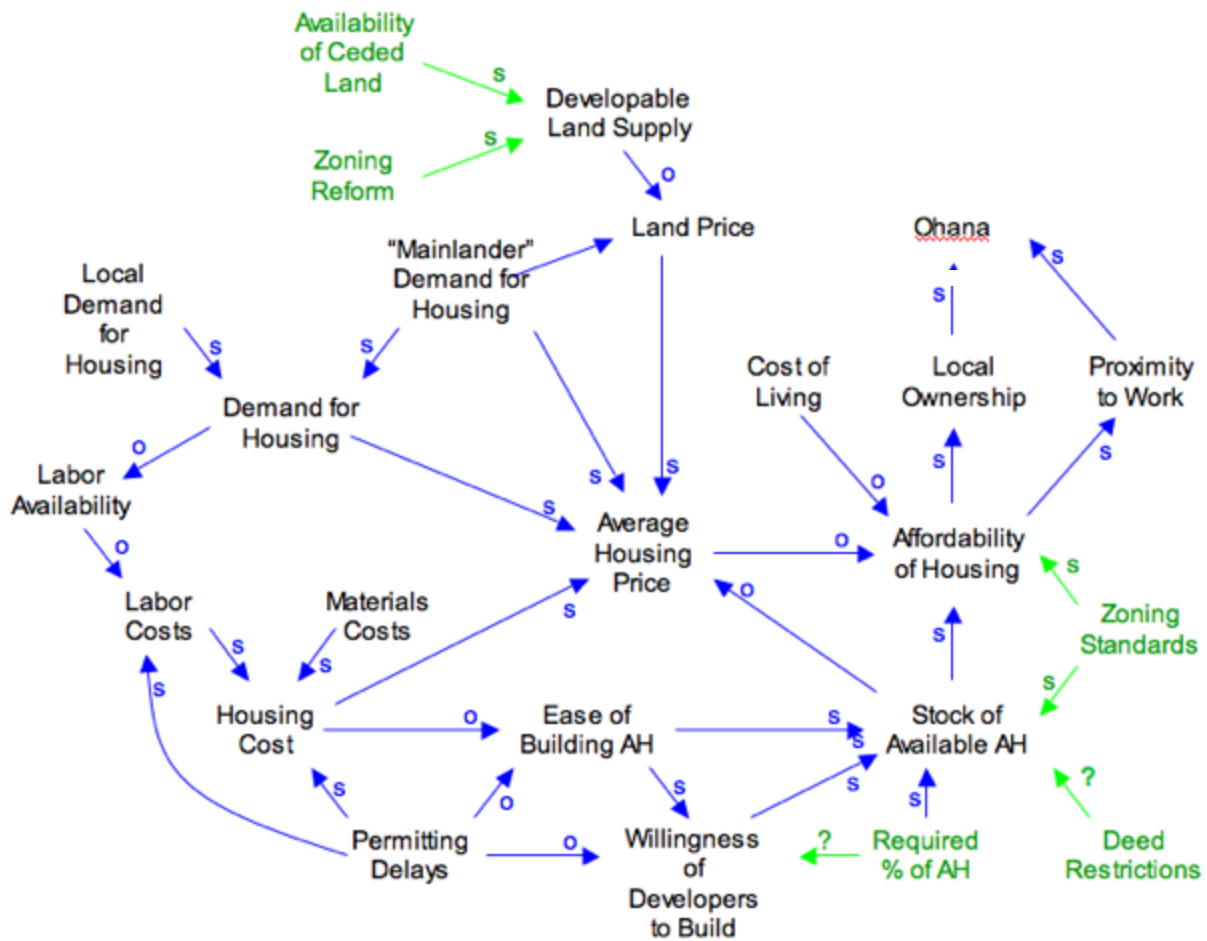


The costs and risks associated with building housing can be a significant barrier to building affordable housing—and the willingness of developers to do so—thus influencing the stock of available affordable housing.

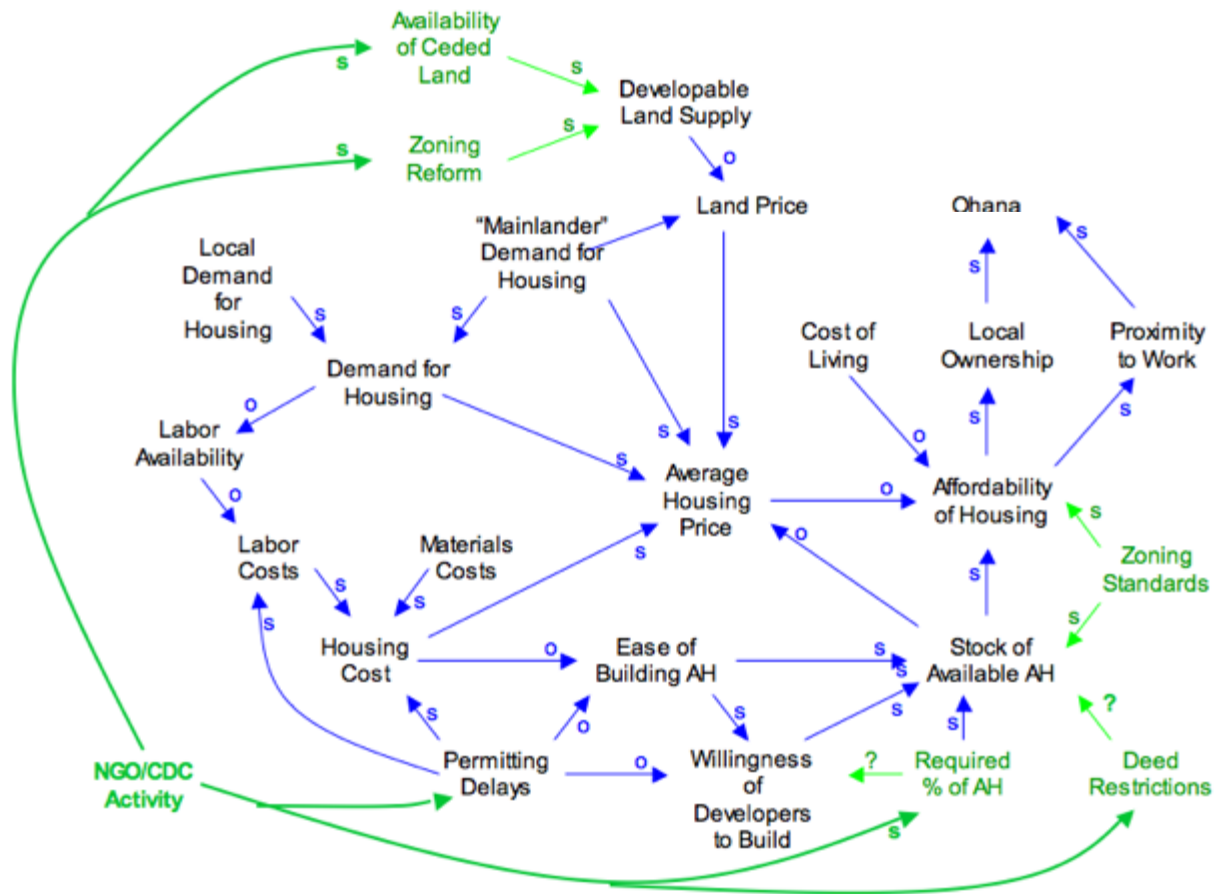


With the known variables mapped out in relation to one another, leverage points (and where they interact with the system) begin to fall into place. Zoning and ceded lands influence the supply of developable land; buildings codes, deed restrictions, and a requirement for a percentage of affordable housing can influence total affordable housing stock and developers' willingness to build affordable housing:





And the activities of the existing Community Development Corporation or a nonprofit organization could further influence each of these leverage points—in addition to other things:

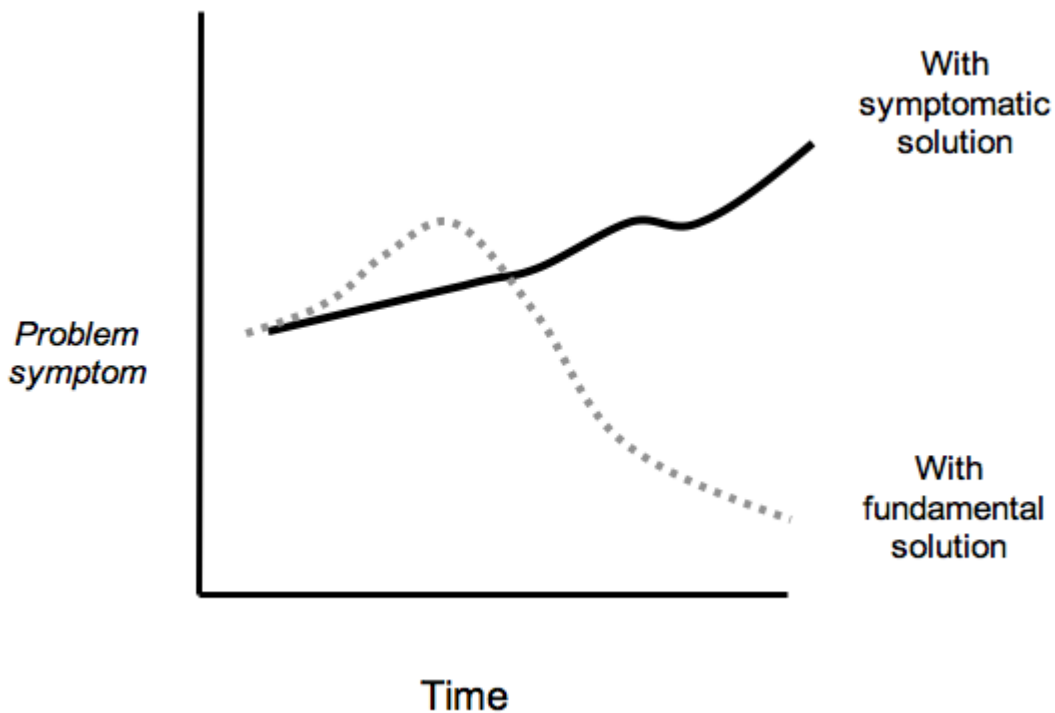


## Worse Before Better: Commitment to Long-Term Solutions is the Key to Breaking out of Addictive Cycles

The attractiveness of symptom fixes is that they tend to be visible, logical, often dramatic, and fast-acting. They make leaders who implement them look terrific, in the short run. If performance indicators are in place, they may measure dramatic change in a short period of time. Fundamental fixes are often less intuitive, less dramatic, slower to take effect, and less easy to measure. For example, science education programs aimed at a population that won't be in the workforce for another twelve years may help ensure a highly employable generation of islanders capable of running businesses or scientific organizations; however, this is at least a decade (and several election cycles) down the road.

Many fundamental fixes involve a phenomenon known as “worse before better,” where a commitment to long-term system-wide improvement may require riding out a period where things get worse. The chemical company Dupont faced this when rehabilitating a manufacturing plant that had runaway maintenance costs but more engine breakdowns than the industry average. To fix the problem, Dupont had to overhaul its entire infrastructure and significantly change the culture of its facilities managers. In the short-term this led to a significant dip in productivity. It required a leap of faith on the part of management, but in the long run it proved worthwhile.

**Figure 1: effect of symptomatic solution (black line) versus effect of fundamental solution (dotted line)**



## Choosing Goals and Objectives with the Whole System in Mind

People whose *keuleana* is affordable housing often choose “low capital cost” as the goal for housing projects. Their quest becomes inexpensive land, design, materials, infrastructure, and construction costs to ensure lowest possible capital costs.

What could be a nobler quest? It was the quest of Isles, a nonprofit housing-development organization in Trenton, New Jersey. And they did it well. They built lots of affordable units and housed hundreds of low-income residents.

However, Isles CEO Marty Johnson began to look deeper. He noticed what happened to the families that moved into inexpensive housing built by Isles: their utility bills were so high and unpredictable that, combined with their mortgages, monthly expenses were often out of reach.

Another housing group might have had the attitude that high electric bills were not their *keuleana*. They might see their job as building inexpensive housing, period. In effect, this hypothetical, though typical, group would contend that energy consumption is not within the “box” it had defined for itself when it dissected the problems of low-income people and chose housing as its focus. The group (and its financial backers) probably would not have examined the larger system to understand, for example, that more efficient buildings save tremendous amounts of energy. Unfortunately, even when a developer does know that, most assume such measures are too expensive for low-income residents.

But the folks at Isles are whole-system thinkers. They look at the big picture, at the long-term, at inter-relationships among many different factors. They refuse to confine themselves to some artificial box; they seek integrated solutions.

In effect, Isles officials said to themselves, “Wait a minute, our job is not to keep the first cost of the house low; it’s to keep monthly payments low. Also, we know that the capital costs of aggressive energy-efficiency measures, carried in a mortgage, are far less than the monthly savings they achieve. And as a bonus, we can help clean the air by reducing demand on the local power plant.”

Isles and CEO Johnson learned two important whole-system-thinking lessons: first, seek solutions that include factors outside the boundaries you’ve defined for yourself. Second, when your chosen goal or objective leads to counterproductive results, consider a different goal, one that focuses on what’s really needed. The Isles goal of minimizing that first cost led to high monthly energy bills. Its new, better-targeted goal became “monthly housing cost.”

## Glossary of Systems Thinking Terms

S = variable moves in the *same* direction as the variable affecting it. (demand for houses goes up, land value goes up). This can also be expressed as a +, plus sign.

O = variable moves in the *opposite* direction as the variable affecting it. (affordability of housing goes down, homelessness goes up). This can also be expressed as a -, minus sign.



= Reinforcing feedback loop. Like a snowball gathering mass as it rolls downhill. Drug abuse leads to the breakdown of *ohana*, which leads to further drug abuse, which leads to more erosion of *ohana*.



= Delay in feedback (e.g., an after-school program may contribute to a local skilled workforce, but only after several years)



## **Appendix A:**

### **Discussions with Hawai`i County Residents Regarding the Mayor's Goals and County Performance**

In the fall of 2005, Rocky Mountain Institute convened two groups of influential Hawai`i Island residents—one in Kona, the other in Hilo—to discuss the mayor's goals. Also, RMI spoke on the phone to several people who were unable to attend. To ensure a frank conversation, RMI committed to participants that no statements from the meetings included in this report would be attributed to particular individuals. The following is a transcript of the meetings, transcribed by Marni Herkes. The transcript is summarized in section four of this report.

Recommendations and statements offered elsewhere in this report are the sole responsibility of Rocky Mountain Institute and not the county residents listed below.

In the transcript, "P" refers to participant comments.

"RMI" refers to Rocky Mountain Institute, in particular Kyle Datta, (former) senior director for Research & Consulting and RMI Principal Michael Kinsley.

#### **Participants included:**

Charlene Hart  
Claudia Woodward-Rice  
Eric Kapono  
Gay Mathews  
George Zymeibel  
Guido Giacometti  
Jack Kelly  
Jacqui Hoover  
Jeffrey Melrose  
John Ray  
Keith Kato  
Ken Bouche  
Leinaala Enos  
Mark McGuffie  
Marni Herkes  
Paul Buklarewiz  
Rick Gaffney  
Sally Rice  
Sharon Vitousek  
Tane Datta  
Tom Whittemore

RMI: Mayor Kim has three years left in his term and wants to know where the gaps are left in accomplishing his stated goals. Where can the mayor do things better? What are the whole-system root causes, how those root causes affect his goals? RMI has brought people together for a whole system perspective. This group that has the ability to stand back and look at the county as a whole, draw out the linkages and focus on the mayor's goals. The priority actions will affect the economy, the social fabric, and the environment. RMI is getting feedback from Hilo and Kona to work on a whole-system view of the county and the mayor's goals. Where are the gaps against what they are already doing? RMI met with county cabinet members; discussed practical issues/problems. Talking to other folks about county issues as well as those in the room.

P: Discussion with the mayor about addressing goals, most get done to influence a set platform.

P: Can we narrow issue to what are most important things that could be accomplished?

P: Can we influence long-range thinking? There is a frenzy of development in West Hawai'i, what else? All master development, all parcels on island, are in play. Things will change when all is done but there will be no growth outside these nodes. Plans for hotel are now resort residential. Planning was based on five more hotels but there will be no more hotels. Resort residential, time share? What are we building?

RMI: How do we prepare the path, so we are not always behind? Stand back and look forward 50 to 70 years. Hawai'i began with one economy, moved to economic vision of industry, military, housing not hotels.

P: We need to understand nature of developments, who will live there? Full and/or part-time. Also their recreational needs, energy use, needs, wants, desires. Are there service economy jobs? Income, raise in real property tax, how likely is this to provide a high level for county? What does that mean? Windfall property tax dollars for county? What kinds of transportation? How do these part time resident/visitors recreate, shop, travel? How to best handle? They went to Mauna Kea property early on and only spent two months, unoccupied rest of year. Like Mauna Lani, there was a part time resident. Then a rental pool, fractional time share with higher occupancy, more people. There is still a presumption about hotels coming.

P: Hawai'i Tourism Authority HTA report on impact of time share and part time residents. What are the impacts on residents? Development of part time residential has an impact on local community. No impact on locals according to some developers. What is the nexus between changes and social economic dynamics? Property revenue in a bubble but provides a great revenue stream. County needs to identify the nexus for using this revenue stream.

### **Introductions:**

P: From Hilo and has conservation grants to work with residents.



P: Pays attention to Honokaa. Conservation land, sugar workers with hotels, Hamakua Agriculture Plan, grass roots community input, land use offer for housing.

P: NHCFCU working with RMI to create community development.

P: Community advocate for Ka`u. Worked on Ka`u Strategic Plan with a county writer. They began in Y2000 with QLT grant and now have students in 8–12 grades doing a survey.

P: From rural S. Hilo, works on conservation with non profit, economic development projects integrated with public policy. She is distressed by local style that waits until there is a problem. Energy costs are impacting us all. Encourages us all to eat local.

P: Waimea for 30 years. Small business man, restaurant man, worked with shrimp on Molokai, worked on Waimea Main Street, County Council for 4 years, HLPC and now Parker Ranch Trustee. He has been involved in community as well as social service non profits like Family Support Services West Hawai`i.

P: HLPC ED and supports effort to enhance and preserve. Worked for NELHA, Natural Energy Laboratory of Hawai`i Authority. and with County, federal state national international. Now chair of board for Conversion Charter School, Waimea. Look at opportunities and challenges with the infusion of money in this county.

P: Here for 20 years; came to bring students from UC Santa Cruz for outdoor learning situation. He ran construction crew for wind farm in Kahua Ranch, built house in N. Kohala by hand with irrigation and nursery with native Hawn plants. Now he teaches at HCC. He was on the community committee for Chalon (Development in Kohala). He has watched the Hamakua Agriculture Plan going by. He has done disaster relief with Red Cross in N. Kohala.

P: Recycle Hawai`i, education, sustainability and photography. Volcano Art Center.

RMI: What is the revenue stream into islands, its history, and is growth paying its way?

P: Building infrastructure encourages growth; you can build congestion with infrastructure. Transportation and traffic is a problem.

P: Vision with Norway bus system, seamless. Could we do with Hilo to and around Kona? Resorts have vans to take into resort. Have system to use what we have. Can't get rid of by building roads, can limit cars not people. Bus increases in scale. Roads and transportation congestion are linked.

P: Are there solutions with public and private partnerships?

P: There are always opportunities but there are barriers put up by public sector to work with private sector. Delays in projects multiplies cost factor by taking more time, slows

everything down. Often the public sector already has destination before they ask private sector. Resorts could phase work-start and end times better; cycling job times, what to do different with relation with transportation? Many levels of public sector work with each other, timing between private and public sector different.

RMI: Leeward side issues are different, have growth challenges. Has the Hawai'i Leeward Planning Conference [HLPC] started to look at different models, what are the implications? If they have has any work been done?

P: In the mid-80s focus on tools, financing mechanisms to county and state. Then economics slowed and all went to other extreme with creating as many growth opportunities as possible the priority. County and state might have entitled too many. There is an institutional resistance to anything new. HLPC had a growth workshop and brought information to county and it fell on deaf ears. They did an economic analysis of new resort/residential model in West Hawai'i. Point is to utilize the income stream. There were many deficiencies pointed out. Waikoloa Village entitlements are just coming on line.

RMI: What are the top three or four more creative partnerships?

P: Roads, water with the project with N. Kohala to move 20 million gallons. Now island is playing catch up. High level of ground water has been identified by Waimea Water Round Table. The Kawaihae bypass was planned in the late 1960s with a utility corridor for water. The county has been very uncreative and unresponsive to all suggestions. The Keahole to Kailua Plan is in place, use it. The General Plan is all laid out. Getting it in an ideal shape is an opportunity and all players can contribute. Water department has never been proactive

P: Development paying own way, new development in general paying proper taxes, etc. mayor arrived in a catch up mode. HLPC focuses on infrastructure, affordable housing (rent) public and private, financing land uses. They are working on list of developers who have outstanding obligations to develop a consortium to build housing. They have been waiting since March for county to provide and list still not there. You can ask county housing to water but you can't make them drink.

P: The county is overwhelmed with permitting and this is a challenge for the administration. HLPC in the 1974-early 1980's HLPC created non profit for housing. There are three projects in Kona. The county Housing agency is passive. Under Yamashiro administration the State lands in Kealahou were entitled. Lai Opua (Housing) was then built on ceded lands and this took these lands out of play. State gave to DHHL. HLPC went to Harry Kim to help but never got any response. County and Waikoloa parcel is moving but lots more could have been done. HTCD Corp. self help and elderly housing were all possible. Buying housing credits, housing ordinance is working, projects are moving. Bolton went with mayor Stephen Yamashiro to the Land Use Commission to urbanize Keahole to Kailua and everyone opposed. Plan is to urbanize whole area but now there is resistance because of traffic issues. Lots of opposition to where planned growth was planned but he needs to make it happen. There are no complete communities with infrastructure. Hous-

ing is just a small part of the issue. Leeward growth in residential housing has series of infrastructure problems. Need creative public-private partnerships. Fuel coming into island comes into Hilo Harbor, huge amount trucked through Waimea.

P: Infrastructure issue, socio economic issues. Impact fees, study on carrying capacity for various components. How many more homes can we build? Where?

P: What is the real question? Transportation: why are we driving? How many homes is a different question. How can we integrate workspaces?

P: Transportation is with one highway and we don't know when or how we have to evacuate in an emergency. With more people, we are less likely to be able to get out of harms way.

RMI: Hamakua has an underlying concern about economic growth. What is the model?

P: Growth is in the pipeline and reactions from the community are not to put more land to development. mayor never gets really cohesive input. People don't go to public meetings, no testimony; they talk through friends and clients. Hawai'i Island is Urban, Conservation, Agriculture and Rural: 2/3 of land is conservation; 66 percent is agriculture. Change from agriculture to residential never goes back to agriculture. What/how does land zoning preserve lifestyles? Can small, diverse agricultural enterprise be possible? It seems to be the government's best possible choice. People are moving here because baby boomers need somewhere to go and we have nice weather and beaches. Agriculture lands need affordable housing. Transportation is a problem because people work in hotels. Choice is to grow and stay closer to home, spend time with family, have pride in own business. Put all your eggs in one basket for visitor is not good. What happens if visitors cannot afford to come? Hamakua has deep soil but we need a policy that favors agriculture. That favors residential. Mayor could be key player, could set that policy.

RMI: What could mayor do?

P: He can implement the Important Agriculture Lands law, Community Development Plan process, see what community really wants. Hamakua Agriculture plan is focused. Mayor could amend county housing policy.

P: In the Important Agriculture Lands Statute, each county planning department may implement task force to get people in room to begin the planning process. If they don't get the Advisory Group in place, we get stuck with the county making decisions. We are treated like children. Did anyone ask the residents where they wanted housing? Do they want to work in Waikoloa? We need better Agriculture land zoning; make a clear distinction between important Agriculture and let rest of it be zoned rural.

P: The county could do the inventory.

P: General Plan has IAL designation. Where are the farmers? Where is the market? All

consumables in state are on 12-15,000 acres. Eighty percent of people live in Honolulu. How to compete? Ship? There are barriers to farming on the Hamakua coast.

P: There are state and county lands available.

P: Was on Agriculture subcommittee at Chalon and people want to live near farms. Kohala did as a community. Integrated development for agriculture housing in a small community would be within one area with no need to commute. Present zoning does not permit mixed use. Housing cluster development is desirable.

RMI: Where are best opportunities for positive changes in this county? Smart growth infill development, work centers, easy transportation? County owns land/put on hold for sale?

P: Caution against plantation models, camp mentality has deficiencies.

RMI: When you do development, agriculture or urban, some planning applies. What is complete set of socio economic infrastructure issues, needs, power/social infrastructure? What is the tax network through all of it? How do we utilize smart growth development?

P: Our economic growth model/policy needs to follow community future vision. Not sure that community has voiced what they want. There will always be growth. Why do people come? What is it? We always want more and ensure government is there all the time. How to keep government in check? Stick to principles; put resources into development of community plans. Make government follow plans. County government touches everyone's life; it can be a good engine. How do we get county government to touch our lives?

RMI: In the feed back loop, the system loses intelligence. How to get trust in government?

P: County has been overwhelmed since day one, the money is there. They need to assess what to do and get it done. General Plan, got it done and pushed it through even though it is an embarrassing plan. The community plans can be its savior.

P: They want us to solve problems that a lot of us think government should solve. How can community meetings be conducted? Inappropriate meeting times, people in the room are the people who have the time to go to meetings.

P: Some people are too tired, so easy to say "That's the county's job". What is the best time? What allowed it to happen, what did you enjoy the most? Shift to what was really great? Access is important to us.

P: She goes to many meetings, hears lots of "happy talk" ordinary people have problems with childcare; the unemployment rate is low because so many have left.

RMI: Debate about how to plan locally is going on nationwide. The old way is to focus first on needs, which often degenerates into whining and blaming. A more effective approach is to begin by identifying community assets and build from there.

P: Mayor values something else in planning process. Most of our problems are *kuleanas* of feds, state and county. There is a big problem developing the county development plan and the use of county energies to make county better. He is not clear on what product will do for county operations. Will there be clarity in a zoning context; recognition that siting issues create corridors/strip zoning. Planning department and legislature will in future agree on what we do. But plan will let everyone talk. There will be a draft from consultants then begin to talk with the community. Worried about what will happen if county does not know up front what they want. Kona and Puna plans are difficult. What would success look like? The political agenda in community planning has never been in government.

P: Ka`u as an economic model has no economic base at all, no large employer, some macadamia farms, Pahala nut pickers. George and Eric just as easily talking about Ka`u when they talk about their communities. DBEDT hired a consultant to see what could be done in Ka`u. Wrote plan in two years, aquaculture, fishing, farming and ranching. Did on own without government money just Queen Lili`uokalani Trust, who gave \$8000 for five years and community people, like Puanani Burgess. Ka`u has large landowners, three separate communities, which did not like each other much. The community had lots of gatherings with food. Visioning is planning; rural community was against development reputation. They are all pioneers, self sufficient. 500 households, not the 298 counted by the county. They want development but want control over it. They are now revisiting people to see if things still work.

P: There is no infrastructure with people driving to Waikoloa to work. Kona wannabes and want water and jobs; along with Wal-Mart. Can't afford to live in Kona, they are unhappy people. Don't care about Ka`u. Shorelines being sold off, surf beach. Burn down real estate office, but the people wrote the plan. They want to impact county general plan but don't care if they don't. They know that this is what they can live with. This is the largest district in the state but Kapu Ka`u, don't come to Ka`u is popular sentiment. Don't want world to know about Ka`u. HOVE wants tourism to visit Naalehu; feel water is a human right. TNC has helped to preserve Punaluu. TPL asked to buy 8 years ago at Honuapo. There is small industry agriculture and water is the biggest issue. Pahala water also scarce but reservoir bought by Mr. Olson still available. There is no faith in government, state or county but especially county.

P: Toward assets, past enjoyed Plantation Days, what is missing in our lives? Need leadership from county, need to know what they are thinking. Don't walk the walk or talk the talk. If they say they want community input, they need to be more aggressive. Be There! Meetings not well advertised and they need to support what the community has to say. Ice problem equals ice families. They come out once a month, once in a while with politicians coming out to wave at all the ice users. Parks & Recreation gyms closed when families are home; not open in evenings, no red tape, and no cost. Schools and gyms are dark, gate now at Naalehu School. P&R support facilities for community to use? Pool closes when lifeguard goes home at 4pm. County has access, community does not.

P: What does county responsibility look like? Cluster of *keuleana* with county parks and recreation, Police and Ice a high priority. Parks should have clean bathrooms. Programs for resident and be open when kids are there. In the last storm, the mayor doing civil defense what artful, time to do it. Take advantage of those moments.

RMI: Diversity of county, what do you want from growth? Housing, transportation plus infrastructure. Environment, open space, preservation of agriculture lands. We discussed at Monday's meeting. What is the demand for the second retiree homes? Affordable housing? Affordability itself, how much land do we have? What is affordable for ordinary people who live and work here? What is rental housing stock? How can we preserve lifestyle, what is the ownership issue of rural agriculture? What are land values, cost of building?

P: Real estate agents selling before general public gets to table raises the cost of housing. We should target real estate agents as they can be speculation drivers.

P: People who were formerly landlords. Rental stock has been sold for second retiree homes. How to shift economy locus from plantation to resort residential? This could be a vicious cycle with social issue cycles. People work away from families and this creates problems. There is lack of family time and they may turn to drugs and then need social services. More positive look would be agriculture land maintained in agriculture, building an agricultural base. Allow different infrastructure for agriculture lands; home ownership rides with an agriculture economic base; ability to have extended family and positive infrastructure. Economic development found in Ka`u takes the pressure off the commute, to re-diversify, lower economics than depending on tourism. Diversification could be building on the diversity that exists.

P: Agricultural economic base needs stringent rules on agriculture and different for tourism. County tried to do one size fits all. This has been divisive in Hamakua. We need a skilled workforce with people who build buildings. There is no professional class, skills gap is negatively enforced; not enough people; no one wants to come, so cannot upgrade. The brain drain loop missing, no one comes back. Hawai'i Community College teaches skills, can increase skill level and is accessible to everyone. Jobs now are lower skills and we need to know how to correct. We are lacking in human capital, social capital and land capital. What is our model of economic development and is education only into the tourism industry.

RMI explains causal-loop diagrams that it developed based on an earlier discussion.

P: Watch and start with demand for second housing. Give an "us" piece to begin. What is the economic model? Is it the *Ohana* concept and how well imbedded in place is that? Do we respect place in which we live? Are we in time with land, *Ohana*, family? Do we have the sense of place reinforced in our community of *Ohana*? Do we have stewardship, connection to place you live in? We have no intimate sense of location, what does land mean? We live in a storied landscape and just living on land or driving to work over that landscape. Waipio is a county park with 200,000 visitors every year and there is no sign

that introduces the valley, it is undersigned, under interpreted. We lose the opportunity to develop intimacy with the land.

RMI: This is an anchor of philosophy with the native population. Asset building is nationwide. These are things we can control: essence of place, connectivity to who we are. How to do? Understand multiple concerns and the potential for finding solutions, what are the wider implications?

P: Honor host culture, use Hawai`i Island. Don't use another name. *Ohana* to integrate with circles, Hawai`i Island are all *Ohana*. We work together and all have a stake in it. Make ourselves Pono (right); malama (care about) each other. All of us need a *keuleana*. It's a kakou (good) thing.

P: Play out pieces. Challenge is for how county do all things, they should focus on what they can do. As far as land values, agriculture and economic base there is not really much they can do.

RMI: Government release of land is not enough, what are the affordable housing requirements for affordable home ownership? What are land values, zoning for *Ohana* agriculture? Percentage of land in agriculture use? What regulatory environment changes are needed: building standards, codes, adaptable permit processes, cumbersome processes, and/or code flexibility?

P: Kawaihae transitional housing is good, why can't we do more? It is housing?

RMI: Housing can be different to fit other models, how do we define affordability? New prefab housing available, but we need to add more supply. Zoning spill over from leeward side growth can affect Hamakua and Ka`u.

P: Agriculture economic forms towns with small lots (6000-square-foot lots). Hamakua Plan has nine action steps: Price controls on new affordable housing, buy back controls; leased farm lands from state (state agencies not county); county received one piece of land, leased parcel not TMK; catchment water; infrastructure requirements; Real Property Tax structure would have two tier system; tax benefit for building rental housing; county does have land; allow denser development on outskirts of existing towns.

P: Legislative requirements that state inventory all lands that could go toward affordable housing.

RMI: Permit process: zoning infill Kailua town. Some has agriculture land zoning and it takes two steps to get it into urban. Economic diversification, what are the conditions to make it work? What are the elements the county needs to be doing?

P: There are marketing opportunities but this is a tiny market on an isolated land mass. Ornamentals, acreage to fee, compete with Oahu agriculture; expand to food, biomass and fuel forestry; Coop/hui (group) idea. We do well in isolation. Don't cross market.

What opportunity for smaller operators to move out? R&D department could find answers.

P: Agriculture economic base, people who farm are not in the meeting. How to build agricultural base? Start with what you have and build on it. Where is it happening and why? Puna has most agriculture and all the anti clichés about agriculture but has flowers, foliage, papaya, noni, awa, boutique crops. Land is cheap; you can live there and farm. The issue is not soil or water. Hamakua Ditch serves 15 farmers, a very limited network that would go better somewhere else. North Kohala not much new agriculture but Kona has 600 small farmers in *mauka* areas, small and diversified; who sell on internet. Two billion dollar industry, how do we keep that way? Hamakua is eating its young, largest remake of agricultural crop, stabilized land use, build industry, with long time frame.

RMI: What is the role of the county? What can county do? What role to take?

P: County sets taxing structure, simplest answer with the most benefit. Encourage agriculture or not.

P: Kauai fishery, JAL niche market flew fresh fish to Japan. More dollars than if they went to Honolulu.

P: Water, what is county role? Explore options for how to do. Subsidized agriculture rate for water.

RMI: Maui is now doing an IRP for water, least cost package process for water planning.

P: \$20 million dollar ditch system, culture, anger, history tied into decision making. What are they trying to preserve?

P: Hamakua Agriculture Plan. Works with N. Hilo to form a Hamakua agriculture coop for farming. The ditch became unavailable and farmers failed. Hamakua has good potential according to the Farm Bureau. Trees were not mentioned in Hamakua Plan, not one person mentioned. They are trying to get community vision by getting community input.

P: What are the important things? Agriculture but I don't know what the county can do. This is a hard life, creative life for those who want to do. We all make choices about what we perceive as good life. Lifestyle, work/grow/in a beautiful place seems like the ideal kind of life. Caution not to romanticize it. He does agriculture and runs the business but have not had healthcare for 20 years. His business linked to resorts and million \$ homes. Landscape association, golf is agricultural so he has a link with tourism. These are niche markets; B&B for farm food, can be a smart format to do. Forestry managers can be the resource of the future. They have diverse mandates from landowners but all need Math/science. Students want to stay and get jobs with Park Service. What are the skills employers need?

P: We need to focus on the self-tending part by loving it in all its details. Be intimate with



the place we live in, train with skills to manage, teach values, train with sense of skills that are local, keep them in school.

P: Outcomes: Basis for four years. Started own best forest management practices class. Loan applications; teach business so students can start their own business. SBDC tools, gorse project and how to get a contract.

RMI: Sense of place, teach *aloha*. Short cut and infuse those of us who have a vested interest. Retain what it means to live here; in the whole dimension each district has diverse development themes with several different overlays and maps. What about Biofuels. Do we need tax incentives, what are the pros and cons if we pursue? What does it mean to our communities?

P: We would need more information.

RMI: Strategy is not development. Biomass byproducts or dedicated crops, supplant a power requirement with bio diesel/ethanol. Large tracts of land so it does contradict the 1000 points of green but could be on small diversified agriculture ventures. What is in the best interest of community?

P: We need more information, need forums to listen. Become informed decision makers.

P: What ways to happen? To grow on small farms, off site owner.

P: Ka'u wants diversified small farms.

P: There is a lot of land in diversified that sets up the framework. There are very few large owners.

P: Forestry has potential future, chip crop as first rotation, more local processing interest and has a large energy potential here and on Kauai.

P: Kamehameha Schools at forefront. Plant seeds and lot more land to make this happen, Next agriculture is energy. Forestry saved Hamakua, keeping land in agriculture. Short term forestry reserved the land below.

P: Relationship with Parks and Recreation and not using facility when kids are available. Deal with kids with renewed community-run programs, engage children with time spent constructively. Open times are important as parks and programs are services to children. Police enforcement is important. Building a sense of place, use identity signage mo`olelo (tell story). Museums are not necessary. Bundle the message with the image, places are created with image we make up. County could be the Image-maker. County could use Hawai`i Tourism Authority money to do this.

P: We could take a finite set of resources to package for the visitor industry. Remind us of who we are.

P: Read the Hawai'i state constitution, it describes the system we are in. Do we have approval to send thoughts? What happens now? Follow up for us, give feedback and expand this discussion. Package up and get more feedback from groups.

RMI: At the end, the product will go directly to the mayor. If this was your vision, these are the biggest gaps. What is right? What is missed? What are the root causes? What does the mayor have the authority to do? Help prepare budget? What bodies do? How things interlink?

P: What is the outcome, what are the several tipping points, and the priority areas?

P: Counsel our mayor that interpretive signs is the spot that you can make a difference. Use all tools, HLPC, data books and anything you can find.

P: Most important is Economic Development, this should be on the priority list.

P: County has been in a growth spurt, resort residential is a new market not thought of in the past, smart growth issues, economics driving the whole thing. The mayor showed up at the right time.

P: Education is not down here (on list). The worst reading scores in the country; cause for many of our ills. It needs to be added.

RMI: Where are the linkages, the root causes and what progress can we make and what can we do different?

P: Rental and ownership possibilities pushed out of range because of real estate values. Rent near work: only can afford locations to the south which is not near work. Too many people in each house. Ownership is a huge issue, rental, transient housing needed, pull pressure off for the rest of the housing market.

P: We had this housing conversation in 1995, before the latest boom. There has been a big demographic change in more than one community. People in North Kona have different ideals than people in South Kona. Rentals are gobbled up, no rentals for farm workers so we have labor shortage. South Kona is different, only affordable rentals are south and this creates traffic with construction workers going north. South Kona/Ka`u many Hawaiian) and base root of problems in land ownership lessens people who have no ownership. Economic Development is different in different cultures with subsistence with the family a resource for some.

RMI: Subsistence is not even on the radar of economic development professionals nationally. We know that people who live a subsistence lifestyle, do not feel as poor.

P: Housing is about food, community and heads of households. Breakdown in family system has occurred. Families always lived together before. (Notetaker: This is what he said but I am guessing he means employment on the land and in towns near the farms)

Western economic model develops jobs about the land. He tried to convince Kamehameha Schools to build a school and then build a community around the school. Have an agricultural opportunity around the school, build a caring community. Make a different model. Return to an agrarian lifestyle, open space and preservation of the agricultural land. Access is also an issue. He was not successful. We need to define affordable housing beyond structures.

RMI: Man in Scandinavia and a few on the Mainland are doing “co-housing”.

P: Ka’u group is doing also.

P: Farmers can’t compete in business for employees, don’t see how employees can afford to buy home. Even hotel employees find it very difficult to buy home. Science community (astronomers) have higher pay and can afford homes. There is a problem in economic development, trying to increase wage of people who live here.

P: County housing agency works with non-profits and developers to build affordable housing which is always required in real estate development. (Notetaker: I think he meant that the regulations for federal and state money are state and federal rules and the county has to follow them). Rules are way beyond the county ability to influence. Interest rates are low but there is a lifestyle issue; a finite land mass and an expanding population. A more urban community is being built. The county and state compete with each other and are working at odds against each other, especially regarding their land holdings. Could government provide housing, rental housing, and/or government assisted financing? Why is self-help housing or DHHL housing not built? People just can’t afford a place to live.

P: How/why does the county housing not work? What does it take?

P: For some rentals, cost is too high and developer cannot build. State land is not available for housing but there is lots of it. Are there any affordable/for sale projects on any state land? There is no common measure.

P: We need measures of progress. What is the percentage of population owning housing? What is the percentage of population traveling less than X minutes to work?

RMI: Minimizing first cost might not be the right goal. Instead, might want to reduce monthly housing cost to homeowners.

P: What are the common measures of success? Economic community development is a common value for success and/or failure. Integrate family staying together with economic development. We need family self sufficiency, generational ownership.

P: What are our values, space/how much to build, trees or houses on Hamakua land? County needs a policy as a leverage point. Build affordable housing or use older housing/plantation housing.

P: We don't have old downtown stock to fix up. No urban center to build housing.

P: Population concentrations have changed.

P: Some of the older stock might be useful.

P: How to keep affordable housing affordable? Pualani was supposed to be affordable, but not when built.

RMI: Let's address ownership

P: We need more rental units in urban areas, loosen up the housing in rural areas.

P: Developers will produce if the bottom line works

RMI: Rentals close to affordable housing projects to preserve a cultural lifestyle.

P: Don't know any county policy that will fulfill the goals.

P: Set a policy that has a high level of intervention, better health for the community. There is no policy against gated communities.

P: Land taxes could be different rates for residents. We need a policy that makes it possible for residents to live on the land. Assessments are up, there are more appeals.

RMI: Summary of problems seems to be:

1. Problem with the housing stock, not enough and in the wrong places, at wrong price.
2. Where housing stock is and where is economic development now?
3. Lack of concurrency with development.

Solutions to increasing the housing stock may be changing developer requirements to build affordable housing: where to build; what mix to build? Rentals? With Commercial? Different income levels? How to build efficiently?

P: Better health if we reduce commute time from current 3–4 hours a day.

P: Positive feedback, market demand blooms when we have a construction boom. Now we have pickers and no place to live. This is a seasonal workforce and we cannot afford to go through the planning process to build anything.

P: What makes a developer want to build?

P: A profit. In Hawai'i there is very little profit in rental housing so very little built. Add-ons include development permitting. We should encourage mixed use; commercial and residential. Developer has to work out so banker will loan the money. Community development, job creation, service, affordable components are in that mix. County process,

incentives, affordable housing is another process. There has been a huge fight with housing on property and the need to segment property.

RMI: How do you make building affordable property attractive to developers?

P: Reduce the minimum lot size.

P: Get land zoning straightened out. There are too many processes.

P: Is government Land Use Commission the problem?

P: Reclassifying always requires affordable housing. We should create an urban development area. Hilu Hilu (whom Guido works for) has just reclassified the last piece of property to urban. In this region there is a significant amount of state land. Most of this is not the county's problem.

P: Economic development where the housing is.

RMI: Other side of housing is cultural lifestyle. The goal is to preserve the community with the agricultural land and open space. How to keep from being pushed off the land by development issues and concentrated more in urban areas?

P: There are 3 different types of land that are defined agricultural and may not be large pieces. What 3? (Notetaker: I am guessing he mean real agricultural, rural agricultural and residential agricultural, the first two are actual state land classifications and the third is a county zoning issue.)

P: Kamehameha Schools is opening up more areas. Self-help housing would put people back on the land and profitably.

P: What impact would the number of people living on land have if that number doubled/tripled? A lot more people grow coffee now and there is an increasing market share of pure Kona Coffee around the world.

P: There is a new segment, new diversity, boutique, niche farming.

RMI: Hamakua has agriculture that you cannot see from highway. If you break up large tracts they are harder to manage.

P: Changeover is not easy, we need assistance from state. It is hard to compete with agricultural products from outside and wish there was some way to increase cost on imports and even the playing field to compete.

P: Subdivision code requirements are a disincentive for owner (Savio tried agricultural-condo but did not work). There are questions of profitability.

P: C. Brewer law – allow agricultural farms on agricultural land with minimum infrastructure. No housing could be built but owner could subdivide. People allowed into farming at a reasonable rate. Kamehameha Schools worked really hard to renegotiate 35 leases; from now on a percentage of income based on crop will be charged. We need a modification for subdivision code for agricultural lands to make more affordable with a lower cost and more income. Lower price of agricultural land, make it more build able. Lower cost of infrastructure with different zoning; offer more land; change tax rates; raise income and get greater income for farmers. If land price is lower the restrictions for developers and disincentives for development could be eased to lesser standards. There are many things to do.

P: No water, now community is saying where is the water?

P: Lots are big enough, so not about agriculture.

RMI: Agricultural water, show Board of Water Supply that a percentage of income comes from agriculture. Tie productivity into land tax/value.

P: Open space, natural areas vs productive areas. With more lands preserved in the National Park and on the Ka`u Coastline by TNC, our island has lots of good changes from ranching into natural areas. The Legacy Lands bill is paid for by conveyance tax to protect special places. Hawai`i County law to fund open space purchases is great progress. Access and control of access is a problem. Public wants to get into lands, how do we keep areas natural?

RMI: Do we need more work on access on agricultural land.

P: Lots of open space already zoned. Educate public on long term open space.

P: What is open in state lands? What is available for development?

RMI: Permanently preserved lands vs. just undeveloped. Do we need to identify the difference for the general public?

P: Open space bill and the layered use of rural designation (don't know what he means) will work for mini agriculture. How will this process occur? Important agricultural land definition changed to rural will affect development in a different way. It will define special places but we need to use all tools. There is a distinction between permanent agriculture, urbanized and rural (heritage and cultural), and legacy lands. The Important Agriculture Lands and the Legacy Lands acts will shift the balance too many marginal lands.

P: When land classification was begun, Conservation was for watersheds and mountains; Rural was not defined well; Urban for cities and towns and everything else was thrown into Agriculture. We need to identify what are really useful agricultural lands. Once Important Agricultural Lands are identified, unimportant agricultural lands will go into rural with larger lot size. Input will come from community planning to create maps for important agricultural lands.

## **Health and Safety:**

P: Kona Hospital is the biggest threat to island health (Hospital is undergoing some major restructuring in administration); need access to high quality special care. Access to care is important as are crime and safety important.

P: Great leadership needed for a stable workforce, responsiveness, good survival rate, transportation time to hospital and than to tertiary care is good. Fire Department has excellent leadership. Police leadership is a problem. 70–80 vacancies, reflects leadership problem. One of the root causes is leadership, getting rid of chief is solution: we do not have uniform crime stats, not a standard definition for clearing a crime which looks like dishonest reporting. 70 vacancies are far too many with long hours and pay issue.

RMI: Mayor wants people to trust county government.

P: Community policing was effective but they get pulled back for staffing issue. What is the underlying cause?

P: Community police don't get to do the community policing.

P: Only 8 policemen on duty from Kailua to Honomolino.

P: The challenge of developing a qualified work force comes back to changing the way we do business and ties back to land use.

P: Access to medical careers hard to get with no housing. Public education is last in nation but there is a band of critical mid-level people. The shortages feed on themselves. Housing, education (higher and lower) and vocational training is needed but culinary arts has been a success. We need specialty schools, such as emergency response, environmental sciences, oceans, astronomy, volcano, TNC. Also nursing, health, holistic health, ethnic folk medicine practitioners and even "barefoot doctors" would work.

P: Community strategy to work on coqui frogs is a good strategy as was ice strategy. Drug Court is a huge success.

P: More in house treatment needed.

P: Conservation industry could be one of largest employers: management, bio science, fish and wildlife. UHWH and Hawai'i County could be helpful.

P: Access to quality health care and recognition of the problem needs to be addressed. County could catalyze conversations among key stakeholders, county could this if no one steps up? Health care does not do it because of the competition. Docs don't want more ideas/people brought in.

RMI: Could this be an NGO function? Medical School, state, clinics, UH Medical School may come to UHHilo. Fire safety, fire wise program is new and very effective in Waikoloa.

It cleaned up brush and saved homes during their fire. WH Fire management Group is successful. The Fire Department is also hit by labor shortages. Is Elderly Service doing a good job?

P: Elderly housing is good. At Hualalai, developers are joint venturing and this makes it attractive financially. Concern about 'Latch Key Kids' as they are a barrier to residential behavior. Parents-with-two-jobs have a repercussion on latch key kids, obesity, raves.

P: Youth activities needed. Sports and after school activities have been hit by budget cuts

P: Land use and the building code requirements discourage *Ohana* zoning. This zoning was the original idea to increasing housing stock, make it multigenerational. It became a way to subdivide lots. Go back to *Ohana* concept, family relationships, permit more housing and develop more. This would provide supervision for kids, more intensive use of neighborhoods, elderly housing options.

P: The Planning Director was so upset about a condo being sold off under *Ohana* zoning, that no one can get an *Ohana* permit now.

P: Education could provide leverage for county, what can county do to help? They could provide professional development and training and partner with UH for teacher training. We are not using an evidence-based strategy in our education system. The mayor could set up a think tank with DOH and Health Centers; use Ice for an example. Vocational education is important; R&D could increase scope, create an educational supplement, and use talent better. With lack of labor, negative feed back, shortage of core infrastructure all services get worse. Set up a base level for housing, schools and education; Health care, security, police, and environmental science. There may be a labor negative from drug use; two tier system possibility with bottom tier unemployable. Money and funding is a state issue. Meth summit did not approach the root cause with parents working two to three jobs. We need to increase bikeways, separate from roadways in urban areas. Build pedestrian walkways and work on walking ease in Kailua Village.

P: When license is pulled because of DUI, how to go to work? Better to keep offender employed than not have work. Transportation and Concurrency: What is the social contract with developers?

RMI: the workforce has to commute. Mass transit is rudimentary but rapidly expanding. Educate and schedule: how to people find out? Increase amount of buses, free buses brilliant. Make more available.

P: Hilo sampans jitneys for local buses came to front door. Unregulated and the PUC prohibited but they worked well.

P: There are decreasing motor vehicle crash stats and the mayor has helped. We need to encourage car pooling for school times and keep infrastructure up to growth.

P: Flood maps are a problem. Drinking water is not enough for planned growth and the distribution of water system is really old.



P: Water quality, ocean run off and sewage are a problem. Lack of drainage features for rain water is also a problem. Construction changes the water flow; there are no set drainage areas. This is a county and State issue. It is so bad now, if we had a major storm we would read about us in the national news. Houses are set in floodways and the county is not paying proper attention. The farmers are badly hammered in small events now. We need to increase water load and decrease drainage.

P: There is illegal grading and no one knows *mauka/makai* agriculture.

P: We need to monitor better and refuse to allow building in floodways.

P: He funded rewrite of ordinance from lawsuit, grubbing and grading too loose, no one has been prosecuted. There are not even accurate rain fall maps for WH. Soil and Water, not even NCRS has.

RMI: For domestic water, Maui has a least-cost integrated resource plan for water.

P: There is a two tier system that controls all management. The Board of Water Supply develops and maintains the system. The developer drills the wells with permission from the State Water Commission. Problem on West Hawai'i is that it is the dry side but also where development is. The wells are drilled at 800 to 1000 feet and high energy cost to bring up water. Some resorts have private systems. Source development is from developer and distribution is given to the county. Water is short in West Hawai'i. Is it efficient to build housing with development paying its own way for a 10-20 year pay back?

RMI: Public services cost = net loss. Do we know how much development costs? (No answer).

P: Government built infrastructure after statehood, developers pay facilities charge now. Waste water is not very clean, do we follow federal guidelines? What are the tests for water quality/ tracking?

P: Cruise ships increase and affect the quality of life, can we link testing after visits?

P: Hawai'i County has taken a limited role in community management with a tight budget and shortages. Conservation will push the mayor to make choices for his most important priorities. Eliminate any department/agency that does not work well and focus on what the county can do well but there are people in those departments and they are well protected

P: Someone get into economic development, clear that community in economic decline, substance abuse, health issues, domestic violence. Economic development could preserve what is special, meet family needs, and address housing and transportation. We should make Hawai'i County a "learning island".

P: This should be the learning island. Kids deserve more. Ocean, NELHA, astronomy on Mauna Kea, Kohala Center pulling some entities together.

RMI: Don't need to leave education to state. Planning should enhance all areas on mayor's list. We could strengthen attractiveness of island. Provide economic stability for all areas of island. Look at criteria for all efforts.

P: Who is doing economic development? Most investment is off shore now.

P: Look at success of Biotech/corn. Don't agree with it but it has been successful. Land development, resort development. Tane had a Mission Statement which read: Planning that enhances the quality of life for current and future resident, strengthens the social and environmental beauty and attractiveness of the island and provides economic stability equally for all segments of society.

The Specifics were:

1. Criteria needs to be developed to evaluate whether Hawai'i County spending and law making is achieving the goals intended. Each program, at time of funding needs to have an evaluation component built in. Similar to ISO type standards.
2. Biofuels – goal of energy self sufficiency. Used for electric power, transportation and on site at resorts.
3. Health – increase choices and facilities, encourage development of folk/ethnic medicine. Encourage folk practitioners to get higher education.
4. Schools – supplement reading, writing and math county initiative. Small schools for K-5 walking distance for community social development.
5. Environmental – ocean and mountain access – Swiss model. Trails wilderness, picnic areas, and simple bathroom facilities.
6. Multilevel approach to problems such as traffic and ice.

P: Scientific community, UHHilo/UHWH, Volcano logy, National Parks. It is a lot. HIEDB should concentrate on UHH.

P: Simplify county government; make Hawai'i County the NGO capitol.

### **Phone interviews with individuals**

P: Disappointed that the county ignores the ocean – it's a weakness. Ignores it this way: recognizing the importance of ocean recreation in tourism. State has offered all boating facilities on the island to county (or to private industry if county doesn't take it over). It would be bad for private industry does take it over.

The mayor is remaining neutral on this (acquisition). General trend seems to be that Home Rule is better, rather than the Honolulu bureaucracy.

The boating facilities could create revenue for the county.

A port authority would be the right way to do it. The State legislature won't do it, but the county can do it simply and some Councilmen (Angel and Virginia are on board – Hoffman and \_\_\_ would support it) are in agreement to try to do this.

The parks & recreation person has a tight budget and doesn't want to take boating facilities on for fear of cost issues. The State is charging ramp fees each year and the county would get this money and could increase the cost of it.

Responsibility for management of wastewater. County is doing a poor job of this and has been cited by the health dept. The primary treated wastewater is being injected into a lava tube very near the ocean.

Residential, park and municipal wastewater – regulations are not being strictly enforced regarding septic systems.

Sugar Plant (Hamakua?) may re-open as an energy plant but would put warm water in the ocean.

County wastewater people are probably competent but can't think out of the box and are slowed by inadequate funds.

A developer may be the solution by using that wastewater for methane gas generation. (Gicobe Development in the Harbor). They are planning a zero-net energy development.

Lifeguard Services and County's rescue functions (no coast guard presence only in Hilo). This is not a big issue because volunteers show up, but the fire dept. is not adequately equipped to put out a fire in a boat in the harbor or rescue someone who is seriously injured. They have old equipment. Fire dept. is highly trained and very capable. Oahu's lifeguard service and fire rescue service (and Maui's) are hugely better than Big Island's.

Affordable housing: making significant headway during a difficult time. A challenging task and has to be priority 1 for this county. It's going to be polarized otherwise. Rising costs of real estate recently (1.5 years) has significantly widened the gap.

RMI: What should they do about it?

P: Tax incentives for developers to get credits for affordable housing and stay in that price range not influenced by rising costs. Restrictions should be put on buy-backs. There has to be a cap on it so people get roots set and have pride of ownership.

RMI: The new Waikalua project will have that.

P: The capital gains tax and real property taxes will show. You really need to make affordable housing near the workplace. How do you get landowners to give up their land?

RMI: Any thoughts about preventing existing affordable houses going into the market?

P: The price of some of these houses in the camps... the camps are tempted by the money but if you sell high you have to buy high. It's not going to stop. Take the property of some large landowners out of the market and give them credits for keeping the property for affordable housing.

RMI: Is 25 percent affordable housing in new developments a good number?

P: It's prudent to do that in some cases but not all. For example, affordable units would depress the values of high end resorts. Some bartering in the process. All these extractions have gone into the

Our current mayor is doing a good job but the former administration didn't and we're carrying that. These are hard economic times.

RMI: His goals are admirable. Go back and look at them and what is the first priority in affordable housing that is achievable? What needs to be done?

P: Energy self-sufficiency – I think this island more than any other has such high energy costs due to the long distances to transport it. The costs aren't going to go down. This county is a great place for geo-thermal etc. Energy isn't going to go away, how are you going to get it affordable? Otherwise the workers will migrate to the other side. East Hawai'i is paying for part of west Hawai'i's utility because of the transmission costs. The reality is, historic... the only power generation is Keahole in west Hawai'i. The mayor's done a respectable job with safe communities. It's hard to keep good public servants in play. Police and drug enforcement – there are areas of the island that are still like the wild west. There needs to be more of a presence out there, but this mayor has done a good job in that regard.

RMI: Any areas that need a substantial amount of work?

P: Environmental Stewardship – the real controversy is a west Hawai'i issue. We are not better at managing our waste product in the state much less the county. Limited land as a resource, why would you want to be dumping garbage in the backyard of your economic... why would you want to haul trash long distances? There's too much politics – unions, very union oriented and always have been. They have a tremendous role in the formative years, but now are anchor in getting legislation through.

The biggest hurdle is this attitude of “we can't do it without union support”. Is this really helping the community? Trash – you may be taking away 3 jobs in Hilo but adding more for driving the trucks. I don't like to see this – east / west issues. I don't see the logic in these issues and they are environmental.

There are some good people in the unions. I have a hard time when a union director drives to a meeting in his Cadillac. The membership they represent has to catch the bus. Some of this is almost like the have and have-nots within the unions. Some of their leadership is a matter of greed.

The environmental thing goes hand in hand with energy efficiency. Do we need to be burying this stuff? Can't we do something with it to make energy? Some of these union people are involved with owning the waste sites as it's a tremendous source of income. How can we think more positively about converting trash to something we can use?

RMI: Coastal water quality? Is run-off an issue?

P: It is but you have that with development and these islands have a soil base. You don't see it on the west side as much unless it's more of an impact of the golf course fertilizing/bacteria. The Hamakua coast is the big challenge. When the big rains came, it was silt out there in the ocean and I don't know that it's going to change and it's not due to development, it's just the way the land is. Become a better steward of the lands *mauka*, Hawaiian homelands and State lands that are dedicated to pasture. Animals eat the grass, it gets dry and a good rain brings it all *makai*.

RMI: Managed growth?

P: Growth has been tremendous on the west Hawai'i side. The big engine is county and state gov. and Volcanoes park and the visitor industry. It's been controlled in east Hawai'i (economic growth) but how do you control it in west Hawai'i? What would you like to see in planned growth – what are the numbers? An influx of 10K people into Kona within the next years – how is that going to be dealt with? Puna is taking off. A good 60–70 percent of the homes being built are being built on spec. The market keeps climbing. The target market is the baby-boomer retirees. Mainland purchasers are driving the market. There's much inventory there but no infrastructure, so it will take a long time to build it out. In west Hawai'i, that's what we're seeing and it's pushing the local workforce out because they want to sell and get the money. There's some high-end development, the first new project like that on that coast in a long time. The mayor did a good job in getting the developer to provide some exactions that were meaningful to the community – they donated the beach park to the community – but who's going to maintain that in the long term?

RMI: Mobility?

P: I just read where there was some federal appropriation for the bus and it's being used to transport people to work. It's going to be a challenge to justify it if we don't bring affordable housing closer to work. You can't ask someone to sit on a bus for 2 hours. The mayor worked to get the bus going, can you keep it sustained? Once people use it and it works, it's great but it's the time commitment that you're asking someone to invest. You have to get up at 4am to get to work for 7am – this leads to the social problems with *obana*.

Affordable housing is an issue for me. I want to see what kind of opportunities are out there. I can't believe Hawai'i County is the first one to deal with it. It needs to be more centrally located.

RMI: How is success being measured and how are programs being monitored? How would you know if it's a success?

P: I think that one indicator, it should be clearly measured, is social impact in the communities. When you take away the hurdles from the family then the stress on the social

services are less. You can measure it in part that way. Pride of ownership, people putting their roots down. Turnover isn't being measured – look at the tax rolls to see how often properties sell.

RMI: There's a high level of expectation on county government from people to fix a wide range of problems. Is there a greater role for non-governmental entities in affordable housing?

P: Yes – but the tax incentives aren't there. You're asking someone who buys property at a high cost to develop it and give it away. In the 80's, they took the land use commission, they imposed 50 percent affordable housing on the developers which killed the economy because they couldn't do it. There has to be some incentive.

RMI: Can non-profits play a role in housing?

P: Yes, but they're terribly under-funded. They have management and volunteers but they are under-capitalized. There are great projects underway, using volunteer boards.

RMI: Do you think there is any opportunity to find more money for non-profits that are in a professional way pursuing some of these fundamental problems that the island is facing?

Yes, all the islands are a perfect opportunity. You've got all these people moving into these high end resorts, they want to be part of the community but not a target. These non-profits focus on how to get into the pocketbooks of the people at the resorts. You have get the people to want to give money. If you can get these people to interact with the workforce, they will find out how long it take for workers to get to work and they will see the problems and want to help.

RMI: Sounds like their needs to be some philanthropic organization to protect their identity?

P: There are some homeowner's funds. The funds then go to educational and housing needs of employees within the resort. The employees apply annually and the money is allocated. This type of program is isolated. The developer took on the sense of ownership in the community beyond the borders of the resort. The developer makes it a point to tell them about the fund and what it does, what its purpose is. The homeowner's who have expendable money can say they do want to support that sort of thing. How about the developer putting 1 percent profits of the job and putting it into an endowment? The Hawai'i Community Foundation exists but they focus on their own thing and they haven't taken on affordable housing.

Pau

## **Appendix B:**

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