

W A Y

P O I

N T S

**Charting Hawai'i's Course
for a Resilient Future**

Waypoint (n):

*/wā,point/ An intermediate point on a route;
a point at which the course is changed.*





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This moment represents both a dark time and an unparalleled opportunity to reshape and revitalize our collective future. Blue Planet seeks to contribute to charting a course for regrowth in Hawai'i through a climate, resilience, and equity lens.

This advocacy piece outlines a number of actionable programs and policies that can help foster economic growth, create new jobs, grow state revenue, ensure equitable access and affordability, accelerate our transition to 100% clean energy, and address climate change. The inertia of the incumbent fossil fuel interests and status quo institutions and the pull to return to “business as usual” will be strong in the coming months and years. Our intention is to illuminate, explore, and create a dialogue for a fresh path forward for Hawai'i's future.





Basis & Context

The disruption wrought by the COVID-19 pandemic has exposed the fragility of our economy and in many ways, our way of life. With over 200,000 residents out of work and the state’s main economic driver completely shut down, this disruption has also magnified underlying problems, such as disproportionate access to resources, our dependency on forces beyond our control, systemic racism, and human vulnerability. As we are confronted with tough choices about how best to proceed, we have the incredible opportunity to reimagine what is possible for our state and our collective future. How do we truly build an economy around the pillars of resiliency, equitability, and sustainability? How can we align our state fiscal policy with our other vital societal goals? How do we guide our recovery toward growth that is efficient, innovative, and creates meaningful jobs? More broadly, how can Hawai‘i use its position and image to model and leverage change needed globally?

This document presents a portfolio of actions to help Hawai‘i recover economically, grow good jobs, and accelerate our transition to a 100% clean energy future. These proposed initiatives, policies, and programs are targeted to help us in the near term and set us up for the long term. Our intention is to help shape the state’s recovery in a way that is informed by the values of Hawai‘i while being responsive to our urgent climate challenge. We wish to present a better path forward and be propelled onto it with newfound momentum.

This moment in time represents an unparalleled opportunity to reshape and revitalize our collective future. Let’s use it to create lasting change.

An important note about this document: we propose this with humility to contribute to the critical conversation about Hawai‘i’s sustainable future. It is not meant to be an exhaustive plan on how to respond to or recover from the COVID pandemic or other challenges that Hawai‘i faces. It is by no means adequate to address our economic, equality, or climate challenges. While it necessarily touches on a number of aspects of Hawai‘i’s economy, the focus is on developing a sustainable economy while serving as a climate and clean energy model for the globe. We welcome the opportunity for conversation and critique.



Connecting the Dots

The speed and saliency of the coronavirus pandemic has proven powerful at focusing the mind. It has also brought into focus another global crisis of our time: climate change. In many ways these two crises share similar trajectories—they have the same plot structure but different timelines. Three clear parallels have emerged between COVID and climate change.

“Both the coronavirus and climate are time-bound challenges—the longer we wait and debate, the deadlier the outcomes.”

WE HAVE A COLLECTIVE RESPONSIBILITY TO EACH OTHER

This pandemic lays bare that our fates are tied to our neighbors’, and their fates are tied to everyone around the world. The same is true with climate, where we all have our hands on the Earth’s thermostat. Our individual choices can have far reaching impacts—well beyond our immediate sphere of observation. The pandemic has reminded us that we are globally co-dependent, and that calls on each of us to accept our role in the solution. We cannot ignore or exempt our individual actions thinking that it’s someone else’s responsibility to solve the problem.

Our acute crisis also illuminates the artificial boundaries we’ve established to separate ourselves from others. We are a species fighting for survival—not as an individual or a company or a country, but as a whole. The divisions that too often shape our choices don’t always serve us. We’re all in this together—even when we are socially distant.

WE HAVE AN INCREDIBLE ABILITY TO ADAPT

It’s striking how a pandemic can disrupt seemingly unbreakable social norms and habits. In a matter of weeks or even days, people across the world adjusted their ways of life, not only for their own well-being but for the health and safety of those around them. Humanity has stepped up to make sacrifices that previously seemed inconceivable, and we are redefining what’s socially responsible for the greater good.

The urgency in response is also notable. Both the coronavirus and climate are time-bound challenges—the longer we wait and debate, the deadlier the outcomes. Like coronavirus, climate is a non-linear threat; every week we wait to respond means diminishing hope to “flatten the curve”—on emissions, temperature, and impact tipping points. The pandemic has provided a potent lesson on the criticality of staying ahead of complex global threats.

In responding to COVID, governments are being called to lead proactively, take bold actions,



and implement immediate policy changes. It is amazing to see what is possible when policy is mobilized to address a dire emergency. We've witnessed many leaders step up to do what's right, even when it's hard. We need the same leadership on climate, before it's too late.

CRISES AMPLIFY INEQUITIES IN OUR SOCIETY

The fact that many celebrities and well-known individuals globally have been afflicted by the coronavirus suggests that the disease is a great leveler. While that may be true in some ways, the deeper truth is that the disease—like the impacts of climate change—discriminates. Pervasive and persistent systemic inequities mean that the more vulnerable, the more economically disadvantaged, and the less privileged among us are the hardest hit. The coronavirus has disproportionately impacted people of color.¹ Nationally, Black Americans are dying at a rate nearly two times higher than their population share.² In Hawai'i, Pacific Islanders and Filipinos have had the highest COVID rates relative to their share of the population.³ We have seen this time and time again with climate impacts as well, with the most devastating consequences—such as famine, flooding, and fires—regularly being suffered by the poorest and least privileged among us.

Basis & Context

While many of us quarantined at home, others have no home to escape to. Access to quality medical care is unevenly distributed, as is access to economic stability and support. Some may receive economic bailouts, while others must fend for themselves. Like climate change, our current public health crisis is exposing the critical need for deep structural and systems changes. It provides an opportunity to re-boot and fix underlying systemic inequities that have consistently left some individuals and communities behind.

Ralph Waldo Emerson once wrote: "In each pause, I hear the call." The "pause" created by the COVID pandemic invites us to reflect on how we are living on this planet and with one another, how we have developed our economy, and what we value. It calls on us to think deeply about the world we wish to create, for our families and for our future.

The wicked problems of COVID and climate change call upon us to respond in extraordinary ways. Yet in that response we have the unique opportunity to soundly address deep, systemic issues and create benefits that extend well beyond our immediate crises.

¹ "The COVID Racial Data Tracker," The COVID Tracking Project, <https://covidtracking.com/race>.

² Ibid.

³ "Current Situation in Hawaii," State of Hawai'i Department of Health, accessed June 6, 2020, <https://health.hawaii.gov/coronavirusdisease2019/what-you-should-know/current-situation-in-hawaii>.



Basis & Context

Our Collective Challenge

ECONOMY

The COVID pandemic has devastated Hawai'i's economy. Necessary preventative measures taken to slow the spread of COVID brought much of the state's economic activity to a standstill. The tourism industry—a key pillar to the state's economy—saw visitor arrivals plummet 99.5% in the month of April 2020.⁴ Through this period, Hawai'i lost some 220,000 jobs, about 30% of the labor force.⁵ According to the University of Hawai'i Economic Research Organization (UHERO), more than half were the direct results of the halt in tourism, the rest due to the stay-at-home order.⁶ The state may have experienced the highest unemployment rate in the country during the shutdown.⁷

We need bold, immediate action to "flatten the curve" on carbon emissions to give us hope for a healthy climate.

While federal support and funding through the Small Business Association's Payroll Protection Program and the Coronavirus Aid, Relief, and Economic Security Act (CARES Act) have helped fill some immediate economic needs, the long-term outlook is daunting. Hawai'i's heavy reliance on tourism means that the local economy will lag behind the national pace of recovery progress. UHERO forecasts that even with good control of COVID and a quick re-opening of tourism in 2020, visitor numbers will remain

lower than 2019 for the next five years.⁸ Unemployment rates will average more than 20% in 2020 for each of the neighbor islands.⁹ UHERO also predicts that some 25,000 residents or more will move out of Hawai'i by 2022 in part due to the economic impact of the pandemic.¹⁰ The state is anticipating that tax collections will drop by 7% in the 2020 fiscal year and another 12% in the 2021 fiscal year, leaving the state's budget with an estimated \$2.3 billion deficit.¹¹ Building a more resilient economy that provides stability

⁴ "Hawai'i Visitor Statistics Released for April 2020," Hawai'i Tourism Authority, last modified May 28, 2020, <https://www.hawaiitourismauthority.org/news/news-releases/2020/hawaii-visitor-statistics-released-for-april-2020>.

⁵ Battered by COVID-19, Hawaii Begins to Reopen, The Economic Research Organization at the University of Hawaii (UHERO), May 28, 2020, https://uhero.hawaii.edu/wp-content/uploads/2020/06/20Q2_Public.pdf.

⁶ "COVID-19: Developing Economic Recovery Scenarios for Hawaii," UHERO, May 4, 2020, <https://uhero.hawaii.edu/covid-19-developing-economic-recovery-scenarios-for-hawaii>.

⁷ Gomes, Andrew. "Hawaii has the highest unemployment rate in the nation, USA Today reports." Honolulu Star-Advertiser, April 18, 2020.

⁸ Ibid.

⁹ Ibid.

¹⁰ Dayton, Kevin. "25,000 or more could leave Hawaii as economy struggles, economists predict." Honolulu Star-Advertiser, June 2, 2020.

¹¹ Dayton, Kevin. "Hawaii budget shortfall now projected to be \$2.3 billion." Honolulu Star-Advertiser, May 29, 2020.



and growth for Hawai'i's workers is foundational to the state's recovery.

CLIMATE CHANGE

Global climate change, largely due to carbon dioxide emissions from the burning of fossil fuels, continues to destabilize the Earth's life-support systems. We are rapidly running out of time to aggressively act to reduce carbon emissions globally.

Hawai'i is ground zero for the destructive impacts of climate change. In 2019, Hawai'i tied or broke over 270 high temperature records, and the waters surrounding the islands experienced record heat.¹² Research at the University of Hawai'i shows that Hawai'i's tradewinds have decreased by half over the past 40 years—making temperatures feel even hotter.¹³ The melting of land-based ice and snow globally contributes to rising sea levels that are starting to have devastating impacts on coastlines in Hawai'i. The state estimates that a sea level rise of one meter will result in \$19 billion in lost land and structures, with billions more in damaged or lost infrastructure.¹⁴ Higher temperatures and more moisture in the atmosphere mean heavier precipitation events. Two years ago, Hawai'i experienced a “rainbomb” on the islands of O‘ahu and Kaua‘i. It rained so much in Hanalei, Kaua‘i, that it broke the local rain gauge—and broke the national record for the most rain over a 24-hour period.¹⁵ Although Hawai'i has avoided a direct hit from a hurricane over the past few decades, climate modeling suggests that hurricanes could become larger,

stronger, and more frequent in the Pacific. Climate change presents myriad other challenges to Hawai'i's economy, way of life, and very survival.

The year 2020 was meant to be a pivotal year in global efforts to address climate change, marking the start of the decisive decade where emissions would finally be ratcheted down. But the COVID pandemic is threatening to derail those efforts. Renewable energy projects around the world have been stalled, and plans for many future projects shelved. Across the United States, nearly 600,000 clean energy jobs were lost in March and April.¹⁶ The Hawaii Solar Energy Association reports that their member companies have seen a 57% reduction in the workforce.¹⁷

Although global greenhouse gas emissions are on track to drop 8% this year due to the economic downturn,¹⁸ the buildup of carbon dioxide in our atmosphere continues unabated. On May 3, 2020, the laboratory atop Mauna Loa logged the record daily high for carbon dioxide concentration in the atmosphere in all of human history: 418.12 parts per million (ppm), up from 413.27 ppm one year earlier.¹⁹ Carbon released from fossil fuels that we have already burned can stay in our atmosphere for varying amounts of time, from months to millennia. Historical carbon emissions have already locked in more dangerous climate change ahead (2020 is on pace to beat 2016 as the hottest year globally in recorded history), but we still have an opportunity to “flatten the curve” on carbon emissions to avoid even more dire impacts.

Basis & Context

¹² Wu, Nina. “More than 270 record high temperatures, ties recorded in Hawaii in 2019.” Honolulu Star-Advertiser, December 31, 2019.

¹³ Garza, Jessica A., Pao-Shin Chu, Chase W. Norton, and Thomas A. Schroeder. “Changes of the prevailing trade winds over the islands of Hawaii and the North Pacific.” *Journal of Geophysical Research: Atmospheres* 117, no. D11 (2012).

¹⁴ Hawaii Sea Level Rise Vulnerability and Adaptation Report, Hawaii Climate Change Mitigation and Adaptation Commission, Prepared by Tetra Tech, Inc. for the State of Hawaii, 2017.

¹⁵ “National Climate Extremes Committee Memorandum,” National Oceanic and Atmospheric Administration (NOAA), December 14, 2018, <https://www.ncdc.noaa.gov/monitoring-content/extremes/ncec/reports/precip-24hr-kaui-2018.pdf>.

¹⁶ Clean Energy & COVID-19 Economic Crisis | April 2020 Impact Analysis, E2, May 13, 2020, <https://e2.org/reports/clean-jobs-covid-economic-crisis-april-2020>.

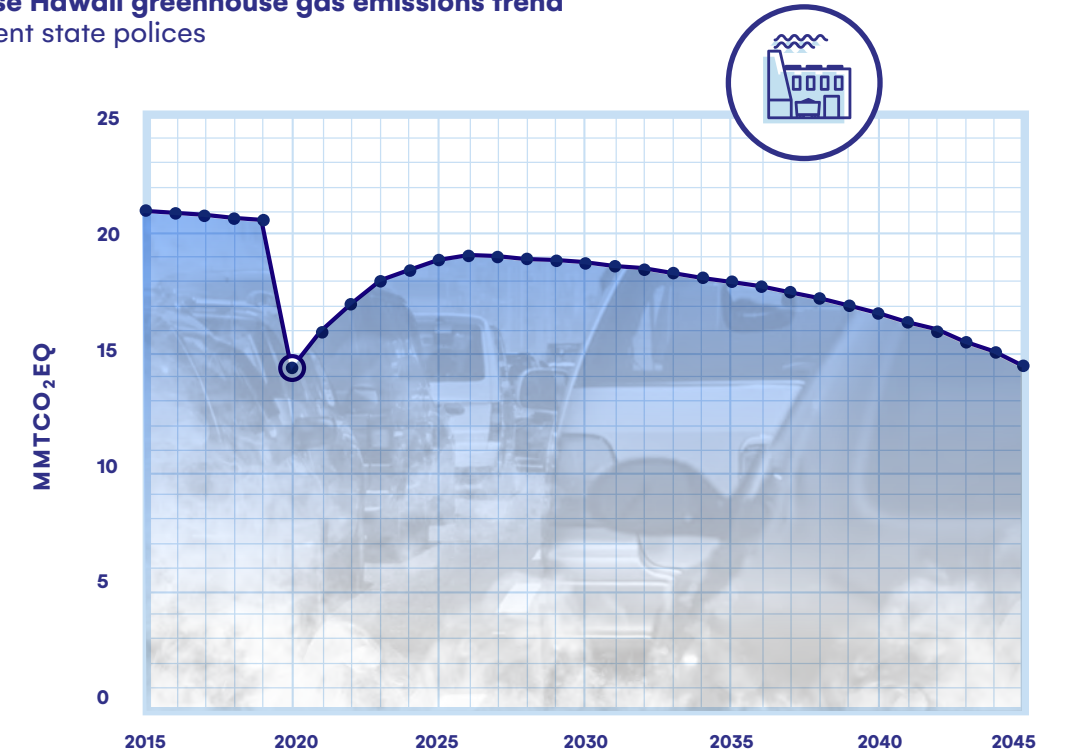
¹⁷ Fernandes, Megan. “Solar and energy industry feels the effects of COVID-19 challenges.” *Pacific Business News*, April 24, 2020.

¹⁸ Global Energy Review 2020, International Energy Agency, April 2020, <https://www.iea.org/reports/global-energy-review-2020/global-energy-and-co2-emissions-in-2020>.

¹⁹ Mauna Loa Observatory Data, NOAA Earth System Research Laboratories (ESRL), accessed via <https://www.co2.earth>.

Basis & Context

Best-case Hawaii greenhouse gas emissions trend with current state polices



Just 20 months ago, the UN Intergovernmental Panel on Climate Change (IPCC) warned that the world was far off course in its efforts to limit warming to less than 2 degrees Celsius (3.6 Fahrenheit) and prevent the worst impacts of global warming (the Earth has already warmed over 1 degree from past carbon emissions).²⁰ To have a 66% chance to keep warming below the 2-degree guide rail, only about 700 metric gigatons of carbon dioxide (or the greenhouse gas equivalent) can be released into the atmosphere. This is the Earth's remaining “carbon emissions budget.” If this remaining budget is divided equally among all people on Earth, Hawai'i's allotment to this remaining budget is about 126 million metric tons of carbon. At the current emission rate of about 22 million metric tons annually,

Hawai'i can only continue to emit for six years before all emissions must cease. Alternatively, Hawai'i can rapidly decrease its carbon emissions by about two million metric tons annually and spread out its allocation to the year 2032, at which time all emissions must cease. Either way, the change required is a radical departure from the status quo and far more aggressive than the best-case emissions reductions from current state policies.

This transition is no easy feat. As reported by the IPCC, avoiding the worst impacts of a warming planet will take transformation at a pace and scale unprecedented in human history. We need to take bold action, immediately, to secure our future.

²⁰ Special Report on Global Warming of 1.5 °C, Intergovernmental Panel on Climate Change (IPCC), October 2018. IEEFA Update: Renewables surpass coal in U.S. power generation throughout the month of April 2020, Institute for Energy Economics & Financial Analysis, May 4, 2020, <https://ieefa.org/ieefa-update-renewables-surpass-coal-in-u-s-power-generation-throughout-the-month-of-april-2020>.



What the Pause Revealed

If there is any silver lining about this incredibly dark cloud of pandemic and disruption, it might be that we are seeing a slight pause in climbing carbon emissions. Satellite imagery showed a clear decrease in a variety of pollutants around the world due to the slowdown in carbon-intensive activity. A cleaner world revealed itself, and people experienced what’s possible when fossil fuel use is reduced. It provided some perspective on the trade-offs that are made with contemporary “business as usual.”

Across the United States, electricity generated from renewables like solar, wind, and hydro surpassed coal-fired power for a record 40 days straight in March and April.²¹ Nationally, gasoline use dropped 40% after the COVID shutdown began, and jet fuel use decreased 62%.²²

In Hawai‘i, energy use also changed markedly. Daily electricity use maximums decreased by about 7% to 14% (varying by island), and overall energy use declined by about 6% in April.²³ With the overall decrease in electricity load, the use of renewable energy as a percentage of the generation mix increased. O‘ahu saw a record peak in renewable energy use in May of 64%.²⁴ With far fewer visitors and less residents out on the road, streets were largely devoid of cars during the lockdown. Gasoline use decreased 8% statewide from February to March,²⁵ and the refinery saw a significant drop in overall production, particularly with the diminished need for jet fuel. With

the decrease in driving, highway fatalities statewide dropped 35% in 2020 compared with 2019 between the months of January and May.

The COVID pandemic has been devastating. But it has also offered a glimpse of a cleaner world and opened our eyes to collectively imagine a different future—one without the devastation of a virus and one that is stronger, more resilient, and more just.



²¹ “IEEFA Update: Renewables surpass coal in U.S. power generation throughout the month of April 2020,” Institute for Energy Economics & Financial Analysis, May 4, 2020, <https://ieefa.org/ieefa-update-renewables-surpass-coal-in-u-s-power-generation-throughout-the-month-of-april-2020>.
²² “COVID-19 mitigation efforts result in the lowest U.S. petroleum consumption in decades,” U.S. Energy Information Administration, April 23, 2020, <https://www.eia.gov/todayinenergy/detail.php?id=43455>.
²³ Wu, Nina. “Demand for electricity has dropped during pandemic, Hawaiian Electric says.” Honolulu Star-Advertiser, April 9, 2020.
²⁴ Data from Blue Planet’s Island Pulse online energy dashboard for O‘ahu (islandpulse.org).
²⁵ “Monthly Energy Trends,” State of Hawai‘i Department of Business, Economic Development & Tourism (DBEDT), accessed June 9, 2020, <http://dbedt.hawaii.gov/economic/energy-trends-2>.



PHOTO BY SEAN MARRS



Hawai‘i’s Leadership Edge

ISLANDS OF ABUNDANCE

Hawai‘i’s best opportunities for a sustainable recovery will come from playing to our strengths. Although Hawai‘i will always be vulnerable to outside factors, we can minimize our exposure and risk by harnessing our abundance.

Hawai‘i is the only state in the nation with no indigenous fossil fuel resources. Yet we have an abundance of natural energy sources—this is our asset. Nearly all of Hawai‘i’s carbon emissions are produced by fuel brought to us by ship over thousands of miles of ocean. Hawai‘i exported upwards of \$3 billion in 2019 for these imported fossil fuels (and we will pay again for the impact of climate change caused by them). We have a growing list of local needs that would benefit from repurposing that \$3 billion: to support local investment, local jobs, and local fuel—all of which are renewable. Saving oil costs less than buying it, let alone burning it. When we switch to our abundant renewable energy or energy efficiency resources, we are trading carbon for local labor (and capital investment). Energy efficiency, for example, is 100% made in Hawai‘i and inexhaustible. Every action we take to employ our local clean energy resources slows the outflow of dollars to buy climate-changing fossil fuels. Buying local energy isn’t just good for our climate, it’s good for our economy and local jobs.

HAWAI‘I AS A GLOBAL MODEL

Hawai‘i has emerged as a global leader on clean energy policy, adopting a number of bold, first-in-the-nation targets that have helped inspire other states and regions to take similar action. Hawai‘i was the first state in the country to adopt a 100% renewable energy requirement for electricity by 2045, and California adopted a similar law in 2018. By 2020, over six states

and territories have adopted similar targets. In addition, Hawai‘i was the first state in the nation to commit to the Paris Climate Agreement objectives after the White House announced its intention to pull out of the agreement. Hawai‘i also pledged to achieve carbon neutrality by 2045, another first in the nation. Other states and other countries globally are looking to Hawai‘i’s lead on clean energy and climate solutions.

With climate change as with COVID, we are not truly safe until the world is safe. While we can theoretically close our doors to any outside travel, we cannot close our doors to climate. We can view this interdependence with resignation—or we can embrace the opportunity to help shape a future that serves all.

By making Hawai‘i a model of clean energy progress, we can inspire and catalyze climate solutions around the world. Climate change, like COVID, is a global challenge. Just as our first-in-the-nation 100% renewable energy law inspired other states to set bold clean energy targets, a low-carbon revival in Hawai‘i can catalyze innovative recovery efforts that empower communities to thrive.

What we’re doing together in Hawai‘i matters. COVID has underscored our interdependence. Let’s show the world the path forward.



UNIFYING OBJECTIVES

These action pathways are not intended to be a comprehensive solution set for rebuilding the economy of Hawai‘i. Rather, what is offered here is a menu of actionable policy and programmatic options that Hawai‘i policymakers and communities can explore both near-term and long-term in COVID recovery efforts, while necessarily keeping the urgency of climate change at the forefront. These proposals are unified by the following common goals and objectives:

• **Play to our strengths:** We already have the foundation through many policy tools in Hawai‘i to support an equitable transition to a low-carbon future. We aim to enhance these existing tools where available and create new pathways where they do not yet exist. Hawai‘i has an abundance of talented people, renewable energy resources, and culturally grounded community values. We seek solutions that play to our state’s strengths of community, innovation, stewardship, and aloha.

• **Bust down barriers to accelerating our low-carbon future:** Whether it’s the incumbency of legacy fossil fuel interests or economic and social roadblocks that prevent individuals and communities from accessing low-carbon solutions, these proposals aim to clear the barriers that stand between our current reality and the cleaner, more resilient future we seek to create.

• **Increase economic activity and quality job creation while decreasing carbon emissions:** The urgency of climate change must guide all aspects of our planning for economic recovery and growth. We seek solutions to ensure that economic activity and decarbonization are not mutually exclusive.

• **Ensure equitable access to our shared clean energy future:** We believe that access to affordable clean energy is a right and not a privilege. The COVID pandemic has exposed the critical need for deep structural and systems changes. This moment provides an opportunity to re-boot and fix underlying inequities that have consistently left some individuals and communities behind. The proposals in this blueprint offer a starting point for working with communities on building our low-carbon tomorrow.

• **Serve as a model for the globe:** Climate change, like COVID, is a global challenge. The islands have been leading on clean energy progress, in some ways serving as a global laboratory for high-impact solutions. Through bold leadership, we can similarly have an outsized influence on how the world recovers from COVID while decarbonizing our economies.

These waypoints seek to identify initiatives at the intersection of job creation, carbon reduction, equity, and economic growth.



Charting Our Course

- 01 Shifting Our Economy
- 02 Building Career Ladders
- 03 Ensuring Access & Affordability
- 04 Repowering Mobility
- 05 Reinvigorating Public Spaces
- 06 Deploying Low-Carbon Energy
- 07 Rebuilding Hawai'i

PHOTO BY MATT HEIRAKUJI

01

Shifting Our Economy

► The regrowth of Hawai‘i’s economy should seek to anticipate the future instead of replicate the past. Climate and equity should serve as our compass to guide this preferred economic path forward, and we can leverage the power of the market to enable us to achieve it. So how might we develop new sources of revenue for Hawai‘i to support the type of sustainable growth and equity that we seek? How can we create fertile ground for new businesses to grow? How can we support new economic sectors that will truly diversify our economy?

Shifting Our Economy

For a climate-resilient recovery, we must break with our old notions of “growth.” Our guiding star should be to reduce the carbon intensity of Hawai‘i’s economy. The state’s current carbon intensity is slightly over one-half pound of carbon emissions per dollar of gross state product. For the sake of our islands and the planet, this value needs to approach zero within the next two decades—or earlier. Our conventional approach to growth is often aligned differently. For example, commercial jet fuel consumption grew 22% from 2010 to 2016, more than twice the growth of the gross state product during the same period. Creating more climate-changing carbon emissions for less local economic value is heading in the wrong direction. Rethinking how we measure progress will better align our recovery with our preferred future.

By changing underlying market drivers, we can powerfully shape the regrowth of Hawai‘i’s economy. The following two initiatives would accelerate, focus, and perfect that market-led transformation.

PROPERLY PRICING CARBON

Putting an aggressive price on carbon pollution is a critical policy tool to help Hawai‘i “recover right” from the devastating economic impacts resulting from the COVID pandemic. Such a policy will drive efficiency and support the climate-friendly businesses of tomorrow while generating needed revenue for the state. Most importantly, the revenue developed by pricing pollution can provide directed relief to local residents and families hit hardest from the economic downturn and resulting job losses caused by the COVID pandemic. A well-crafted carbon tax has the potential to raise between \$450 million to \$800 million or more annually in new revenue while discouraging carbon pollution. Because of the recent plunge in oil prices, overall energy prices will remain below recent averages.

Done right, a price on carbon pollution—with a direct rebate to residents—addresses a number of critical challenges facing Hawai‘i at this moment:

1. Raise sorely needed revenue to help make up the shortfall in the state budget;
2. Provide directed relief to local residents and families who are hurting the most from the fallout of COVID;
3. Significantly reduce our climate-changing carbon emissions;
4. Develop funding to help Hawai‘i accelerate its transition to 100% clean energy and to adapt to the inevitable consequences of a changing climate; and
5. Position Hawai‘i as a global leader.

A properly designed carbon tax can maximize social good without significantly impacting the cost of living. This is particularly true today given the dramatic decrease in fossil fuel prices. The average price of oil futures contracts for the next five years is currently about 40% lower than the average oil price over the past decade.²⁶ A carbon tax of \$50 per metric ton of carbon dioxide would equate to about \$20.87 per barrel (based on approximately 0.417 metric tons of carbon dioxide per barrel for a typical

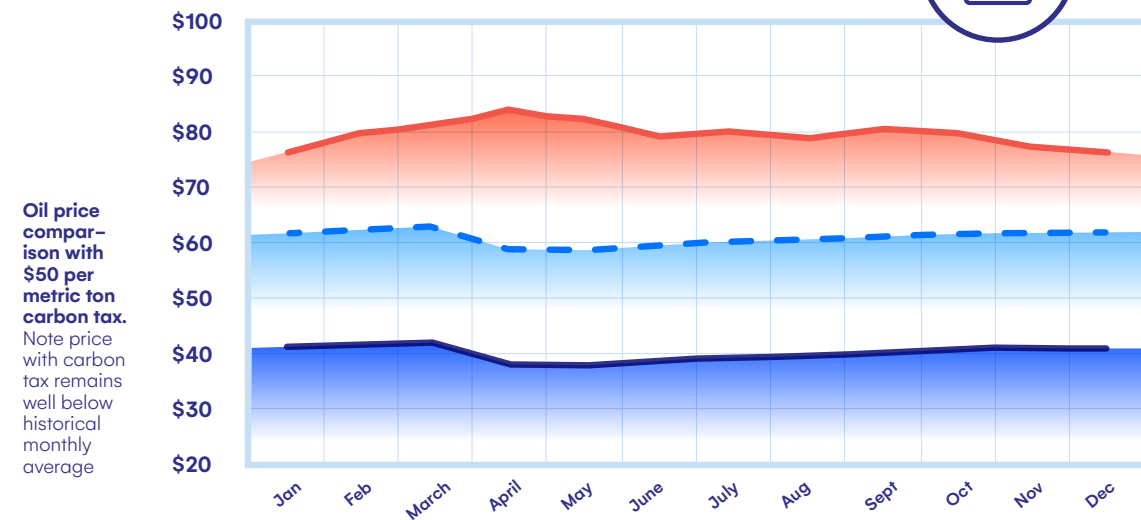
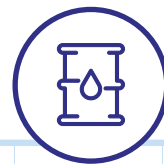
²⁶ “Crude Oil Brent Prices and Crude Oil Brent Futures Prices,” Barchart.com, accessed June 2, 2020, https://www.barchart.com/futures/quotes/CB*O/futures-prices.

mix of products in Hawai'i). Such a tax would raise about \$835 million in revenue based on the recent consumption rate of about 40 million barrels annually. If Hawai'i's petroleum use decreases by 35% due to the economic downturn, the revenue from a \$50 carbon tax would be about \$523 million annually.

The following figure shows how this \$50 per ton carbon tax would affect the projected cost of oil, and how this cost compares with the 10-year historical cost of oil.

Oil Prices:

Past, Projection, & w/ \$50 Carbon Tax



The ongoing COVID public health crisis and related massive impact to the global economy will have lasting negative effects on Hawai'i residents—particularly working families. To reduce the potential regressive nature of a carbon tax, a significant portion of the revenue generated from the tax should be targeted to support low- to moderate-income residents through a direct refund or dividend. A direct refund is the fastest way to put money in the hands of local residents and stimulate spending. It is also a tangible way to connect the value of the carbon price with behavior—this is a reward for making choices to reduce climate change.

Other jurisdictions have successfully implemented an effective carbon tax with a direct dividend to residents. For example, British Columbia currently has a carbon tax of \$30 per metric ton (\$40 CAD). The B.C. carbon tax started in 2008 at \$7.50 per ton (\$10 CAD) and has increased a number of times to its current level. The B.C. government lowered the tax rate on the bottom two personal income tax brackets. British Columbia provides direct rebate checks to residents from a portion of the carbon tax revenues: the current maximum "Climate Action Tax Credit" is \$154.50 (CAD) per adult and \$45.50

(CAD) per child based on income level, with increases anticipated in 2020 and 2021.²⁷ Other revenues support clean energy programs and tax reductions elsewhere.

The proposed \$50 per metric ton carbon tax will likely increase a typical resident's combined electricity, natural gas, and gasoline expense by about \$20 to \$30 monthly—if no actions are taken to reduce current consumption. A household of four may see their total energy (electricity, natural gas, and gasoline) bill increase by around \$45 to \$60 monthly with the same tax. In the near-term, however, residents likely won't feel a financial impact because this increase will be eclipsed by the decrease in energy prices due to the plunging price of oil. A typical family will actually see their energy bills drop compared with the average over the past decade—even with a \$50 per ton carbon tax. Plus, if paired with a direct refund or dividend, the carbon tax will put money back in residents' pockets.

Currently, the prices of electricity, gasoline, and other fuels reflect little or none of the long-term costs from climate change or even the near-term health costs of burning fossil fuels. This immense "market failure" suppresses incentives to develop and deploy carbon-reducing measures such as energy efficiency, renewable energy, low-carbon fuels, and conservation-based behavior such as bicycling, recycling, and overall mindfulness toward energy consumption. Taxing fuels according to their carbon content will infuse these incentives at every link in the chain of decision and action—from individuals' choices and uses of vehicles, appliances, and housing, to businesses' choices of product design, capital investment, and facilities. A carbon tax is an implementation of the "polluter pays" principle, where those who cause the impact or damage are responsible for the costs they create.

Pricing carbon emissions via a tax on fossil fuels has emerged as a broadly supported, economically efficient, and effective policy tool to reduce climate-changing carbon emissions. Economists and leaders from across the political spectrum—including Nobel-prize winning economists, four former chairs of the U.S. Federal Reserve, and 15 former chairs of the U.S. Council of Economic Advisers—have endorsed a carbon tax as a necessary market-based solution to our climate challenge. In fact, over 3,500 economists signed a statement last year in the Wall Street Journal—the largest public statement of economists in history—calling for a carbon tax.²⁸

But this measure is much more than an effective climate policy. It is a tool to shape choices—both macro and micro—in alignment with our preferred future. It will spur efficiency, foster innovation, and generate new job opportunities. This isn't speculation—this is exactly what British Columbia found after they adopted their carbon tax over a decade ago.²⁹

In addition to a direct refund to Hawai'i residents, a portion of the carbon tax revenue should be used for programs and incentives that accelerate Hawai'i's clean energy transition, and to support the other recovery initiatives described within this document. It makes good sense to tap the source of our problem—imported fossil fuels—to help fund clean energy solutions.

²⁷ "Climate Action Tax Credit," Province of British Columbia, last modified May 21, 2020, <https://www2.gov.bc.ca/gov/content/taxes/income-taxes/personal/credits/climate-action>.
²⁸ Greenspan, Alan, et al. "Economists' Statement on Carbon Dividends." The Wall Street Journal. January 16, 2019.
²⁹ "B.C. Businesses Support a Stronger Carbon Tax," British Columbia Sustainable Energy Association, April 4, 2016, <https://www.bcsea.org/bc-businesses-support-stronger-carbon-tax>.



Shifting Our Economy

→ **ACTION 1:** Adopt a meaningful price on carbon—at least \$50 per metric ton of carbon emissions—with the majority of the revenue returned to residents as a climate dividend and the balance invested in actions to accelerate our clean energy transition. The state should utilize the existing “barrel tax” to apply this upstream price on carbon across all fossil fuel products sold in the state. Setting a significant price on carbon pollution is the single most effective action that the state can take to reduce its contribution to climate change and demonstrate clean energy leadership.

CLEAN ENERGY ISLANDS AS HAWAII’S GLOBAL BRAND

Tourism has played a substantial role in Hawaii’s economy for over half a century. Until the COVID pandemic hit, the sector directly employed over 123,000 residents, with an equal amount in the supporting industries of retail, trade, and transportation.³⁰ Hawaii’s beauty, beaches, shopping, culture, and attractions appeal to visitors globally, with over 10 million vacationing in the state in 2019.

For all of its economic benefits, however, tourism growth has created and exacerbated myriad challenges on the islands. Hawaii’s “carrying capacity” is increasingly in question as a larger number of tourists strain the islands’ infrastructure and environment. Mass tourism erodes a sense of place and culture. Many jobs in the hospitality industry are low-wage, and workers are forced to find multiple positions to make ends meet. Given this impact, we would hope to see commensurate economic growth for the state. Unfortunately, attempts to grow visitor spending while decreasing the actual number of visitors have failed. Spending per visitor has decreased over the past decade, and competition from other visitor destinations worldwide makes changing this calculus unlikely. Visitor arrivals and spending will be depressed considerably for the next few years due to the COVID pandemic, and even if it is desired, 2019 visitor levels won’t likely return until 2024.³¹

Regardless of the pandemic travel recovery trend, another movement was taking root prior to COVID—the feeling of climate guilt from airplane travel. Due to the high carbon emissions of air travel, Greta Thunberg, the teenage climate activist from Sweden who was Time Magazine’s “Person of the Year” in 2019, refuses to fly and promotes “flygskam” (a Swedish word for “flight shaming,” or guilt from using high-carbon jet travel). This concept has particular currency for Millennials and younger travelers (who are attractive new markets) because of their increased concern about climate change.

Such guilt is warranted for Hawaii visitors, as tourism travel is the largest single source of carbon dioxide emissions attributable to the state (when properly accounting for all round-trip travel to Hawaii). While the number of flights and visitors will be substantially reduced in the near term, the emissions per visitor will likely stay the same—or be higher, as planes will be less efficient with more open seats. Since Hawaii lacks realistic and timely alternatives to travel to and from the state—and technological solutions are years away—“flygskam” could negatively impact Hawaii’s tourism industry.

³⁰ Hawaii Department of Labor and Industrial Relations, Research and Statistics Office, 2018.

³¹ “COVID-19: Developing Economic Recovery Scenarios for Hawaii,” UHERO, May 4, 2020, <https://uhero.hawaii.edu/covid-19-developing-economic-recovery-scenarios-for-hawaii>.



PHOTO BY MATT HEIRAKUJI

The tourism sector has an opportunity to transform substantially in order to be sustainable, both economically and environmentally.

What might this transformation look like for Hawaii’s visitor industry? It would place climate at the forefront. Hawaii has an unprecedented opportunity to embrace our global climate challenge and position itself as the clean energy islands of the world. Hawaii should be the epicenter for climate solutions, a living laboratory for renewable energy and mobility solutions. What’s more, this concept needs to infuse every aspect of the visitor experience, from arrival to departure—Hawaii can be a postcard from our sustainable climate future.

Hawaii already enjoys a competitive advantage in this regard. We were the first state in the nation to set a 100% renewable energy goal, and the state consistently leads on a number of measures of clean energy adoption. On some days, the island of Kauai is powered solely by renewable energy for a few hours, and clean energy use is rapidly growing statewide. Hawaii has a portfolio of policies and programs supporting clean energy, and countless examples of businesses, organizations, and individuals taking actions to accelerate our transition to carbon-free energy.³²

³² Many such stories are featured in Blue Planet’s “We Are 100” campaign, which aims to gather at least 100 stories from businesses, organizations, and individuals in Hawaii that have taken action to accelerate Hawaii’s 100% renewable energy future. The growing list of community stories is viewable online at weare100.org.



Shifting Our Economy

The messaging of “clean energy islands” aligns with and emphasizes how most visitors view Hawai‘i: a utopia with gorgeous vistas, flawless beaches, and clean water.

Showcasing Hawai‘i’s climate progress would be a unique and valuable contribution to the rest of the world, which is going through a multi-trillion-dollar transition to low carbon. Hawai‘i is where they can get inspired and learn best practices and see functional examples. Visitors can come to specifically learn about the clean energy transition, or they can simply enjoy Hawai‘i while seeing firsthand what a sustainable energy future actually looks and feels like. They will return home to share that unique Hawai‘i experience.

To succeed, however, Hawai‘i has to live up to its promise as a clean energy learning destination. That means a low-carbon visitor experience, with highly efficient and renewable-powered hotel properties, accommodations, and attractions; all-electric rental cars and transportation; successful and accessible models and demonstrations of clean energy projects; meaningful opportunities for visitors to contribute to low-carbon projects and solutions; and radical transparency about carbon emissions. This approach should also complement and support other appropriate visitor experiences, such as agricultural tourism, authentic cultural experiences, health tourism, and volunteering.

Hawai‘i is loved around the world. People hold the islands in their imagination as someplace magical. We can leverage that special relationship to inspire and catalyze change globally.

We are a small state, but we can have an outsized influence by modeling what change actually looks like. In many ways, we are the face of the climate challenge, with much to lose as a chain of islands surrounded by the sea. But we are also, increasingly, the face of the solution. This is a story that needs to be told, and tourism is our best opportunity to amplify that message around the globe.

→ **ACTION 2:** Integrate the commitment to “Clean Energy Islands” throughout visitor industry actions and messaging for Hawai‘i. Hawai‘i’s invitation to the world should present the islands as a postcard from our sustainable climate future, where visitors can experience and learn from the rapid transition to 100% renewable energy firsthand. This concept of clean energy islands should permeate through and be reflected in all aspects of the visitor experience and the visitor industry.

→ **ACTION 3:** Develop a Hawai‘i-specific program to offset 100% of visitor air travel carbon emissions through a combination of renewable energy, energy efficiency, and clean mobility projects for communities, schools, and nonprofits (with a particular focus on lower-income areas and residents), in combination with terrestrial offsets such as tree planting and sustainable agriculture support.

→ **ACTION 4:** Establish a pledge program for hospitality industry companies to commit to carbon-free or net-zero operations by 2030. Provide dedicated Hawai‘i Tourism Authority funding to specifically promote those committing to the pledge and track and highlight their progress.



Shifting Our Economy

→ **ACTION 5:** Dedicate at least half of the Hawai‘i Tourism Authority’s marketing budget to support and showcase authentic, low-carbon, and experiential visitor opportunities such as health tourism, agricultural tourism, cultural tourism, volunteering, and education and research.

→ **ACTION 6:** Require that an increasing percentage of Hawai‘i rental cars, tour buses, and other visitor industry transportation be zero-emission vehicles, with a goal of 100% zero-emission tourism vehicles by 2030. The rental car industry operates the state’s largest vehicle fleets, and the frequent turnover of the vehicles means greater availability of clean vehicles for local residents and businesses to purchase at discounted prices. Further, many visitors have yet to drive or ride in an electric or zero-emission vehicle—Hawai‘i should be the place where they have that initial experience.

→ **ACTION 7:** Electrify all ground operations at Hawai‘i’s airports, including airplane taxiing and towing, and ramp and ground support equipment. In addition, preconditioned air systems and ground power should be used for all large aircraft instead of using onboard auxiliary power units (APUs) that burn jet fuel.

→ **ACTION 8:** Develop renewable energy experiences and tours where visitors can see and feel clean energy solutions firsthand. These could include unique projects such as combined solar and farming installations, energy storage applications, high efficiency buildings, wave energy demonstrations, or other interesting projects.

→ **ACTION 9:** Update existing University of Hawai‘i research on the relative carbon emissions from visitors versus residents to highlight opportunities for deeper emissions cuts.

→ **ACTION 10:** Develop a carbon transparency tool to help visitors make informed choices about tourism attractions and experiences, and to quantify their emissions for offsetting programs.



“In each pause I hear the call.”

—Ralph Waldo Emerson

PHOTO BY MATT KWOCK

02

Building Career Ladders

► The workforce in Hawai‘i has been hit hard by the COVID pandemic. Over 200,000 Hawai‘i residents have filed for unemployment, many in the tourism and hospitality sector. With an increase in extreme weather and storms due to climate change, we can expect future disruptions to these and other industries. Even before the pandemic, the high cost of living in Hawai‘i was driving many young professionals outside of the state in pursuit of career growth and higher salaries.

Building Career Ladders

We have untapped opportunities to prepare youth and young professionals in Hawai‘i to thrive in a low-carbon future. By investing in workforce development and training programs, we can provide career pathways that are not contingent on the ebbs and flows of tourism. These efforts would also ensure we are preparing for the jobs of the future rather than prolonging jobs of the past in fading industries.

HAWAI‘I CLIMATE CORPS

Mobilizing the American people to rise to the defining challenge of our time—defeating climate change—offers a powerful potential to tap the spirit of public service that is deeply embedded in our American tradition. In 1933, when President Franklin Delano Roosevelt created the Civilian Conservation Corps (CCC) that put Americans to work to “conserve our precious natural resources,” he accurately predicted that the CCC would “pay dividends to the present and future generations.”³³ Likewise, in 1960, when President John F. Kennedy proposed the creation of the Peace Corps, he recognized that America held an “immense reservoir of such men and women—eager to sacrifice their energies and time and toil to the cause of world peace and human progress.”³⁴ Across the country and in Hawai‘i, leaders have recognized that this concept can be adapted to tackle climate change while spurring economic growth.

→ **ACTION 11:** Create a “Hawai‘i Climate Corps” to capture the best energies of our state’s young people, and provide a structured path for Hawai‘i residents of all ages to engage in the urgent work of ensuring the future of our state and the planet. The Hawai‘i Climate Corps could be funded through the barrel tax, a carbon tax (see Action 1), and/or public–private partnerships, and modeled after existing internship and career pathway programs like those offered through Kupu (kupuahawaii.org) and MA‘O Organic Farms (maoorganicfarms.org). Participants could be offered college credit and be trained and deployed for clean energy and climate mitigation infrastructure projects, such as tree planting, local farming, solar water heating installation, efficiency audits/retrofits, solar panel cleaning and maintenance, electric vehicle and charger maintenance, and other activities supportive of our low-carbon transition. With multiple other states exploring similar programs comes opportunities for collaboration, leveraged resources, and potential additional funding.

WORKFORCE TRAINING AND STEM EDUCATION

With the unemployment rate in Hawai‘i reaching 22.3% in April (compared to just 2.4% unemployment in March),³⁵ investments in workforce training and STEM education can help reposition the young people of Hawai‘i for more resilient career pathways.

By investing in creating and launching online job-skills training programs aimed at low-carbon jobs, the University of Hawai‘i (UH) system can better prepare and equip its students of all ages for the economy of tomorrow rather than the economy of yesterday.

³³ “Message from the President of the United States on Unemployment Relief,” U.S. House, Committee on Labor, Doc. 6, 73rd Cong., 1st sess., March 21, 1933, 2.

³⁴ John F. Kennedy, “Statement upon signing order establishing Peace Corps,” March 1, 1961, <https://www.jfklibrary.org/archives/other-resources/john-f-kennedy-speeches/peace-corps-establishment-1961030>.

³⁵ Seasonally Adjusted Unemployment Rate (for March and April 2020), State of Hawai‘i, accessed June 6, 2020, <https://www.hirehawaii.com/gsipub/index.asp?docid=723>.



→ **ACTION 12:** Expand UH system offerings for clean energy and low carbon jobs training. Building upon existing efforts at the community college level,³⁶ training and career development programs for low carbon jobs should be greatly expanded and include online learning components to increase access. Programs should include dedicated tracks for renewable energy and storage, energy efficiency, electric mobility, and various other trades that support our low-carbon transition.

→ **ACTION 13:** Offer opportunity grants or other financial aid to support clean energy job training or career development, prioritized for those in the tourism and hospitality workforce.

³⁶ See, for example, Act 145, Session Laws of Hawai'i 2019, which established renewable energy systems and technology training courses for county officers and employees.

03

Ensuring Access & Affordability

➤ According to Aloha United Way, 42% of households in Hawai'i are one paycheck away from financial hardship. With more than 200,000 unemployed residents in Hawai'i as a result of the coronavirus pandemic, the number of households struggling financially is undoubtedly now even higher.



Although no one is immune from the direct and indirect impacts of COVID, ALICE families are particularly vulnerable to hardship from both illness and economic disruption. Our collective path forward must seek solutions that do not leave ALICE families behind as so many policies and programs in the past have done. With nearly half of Hawai'i families living paycheck to paycheck even before COVID, reverting back to business as usual isn't enough. We need new approaches that protect families by ensuring access to low-cost renewable energy options and affordable monthly energy bills.

EXPANDING INNOVATIVE FINANCING OPTIONS

The Green Energy Market Securitization (GEMS) loan program was developed as a way to fill underserved gaps in accessing clean energy and lower the cost of clean energy financing. After a rocky start, the GEMS program has been successful in this mission, with nearly 80% of the \$80 million in funds committed to date being deployed as low-interest loans for low-income and moderate-income energy customers.³⁷ The now-profitable program has helped to create or retain over 1,000 clean energy jobs and avoid nearly a quarter million metric tons of carbon emissions.³⁸ Moreover, the program's on-bill financing option enables renters and low-income households to install solar and energy-saving equipment with reduced credit barriers and no upfront costs. Rather than using traditional measures of credit, applicants can qualify regardless of credit history, with eligibility based upon on-time payment of their recent electric bills. There are numerous GEMS success stories that could be replicated and expanded, like Kahauiki Village in Honolulu. Kahauiki Village (kahauiki.org) is an affordable housing development for homeless families, which has its own resilient microgrid powered by solar panels and battery storage and was funded through a public-private partnership made possible with GEMS financing.

Financing options, like on-bill repayment and simplified credit requirements, that break down barriers to accessibility should also be enabled beyond GEMS for efficiency upgrades for residential customers and businesses.

→ **ACTION 14:** Supercharge the GEMS program with additional loan capital—e.g., from the barrel tax, a carbon tax (see Action 1), the general fund, a bond, or other sources—that will allow it to spur the economy with direct investment in green infrastructure that can drive job creation, complement workforce development initiatives, lower the upfront costs of investing in community-based renewable energy, and assist low- to moderate-income energy consumers.

→ **ACTION 15:** Establish on-bill repayment programs and simplified credit requirements for energy efficiency upgrades to enable more Hawai'i residents and businesses to easily access the energy- and money-saving benefits from such improvements.

³⁷ Green Energy Market Securitization Program Quarterly Report, Hawai'i Green Infrastructure Authority, April 30, 2020.
³⁸ Ibid.



TRANSPARENCY OF ENERGY COSTS FOR HAWAI'I CONSUMERS

Hawai'i businesses and residents pay the highest electricity rates in the nation, which exacerbates our already high cost of living and increases monthly financial burdens. What's more, many Hawai'i consumers do not have access to accurate information about energy costs when making purchasing decisions about household appliances or when deciding to rent an apartment or house.

About 42% of households in Hawai'i are renters.³⁹ Because landlords primarily make the decisions about which large appliances go in the units they own, renters structurally lack options for choosing energy-efficient upgrades that will lower their month-to-month expenses. In many situations, the landlord has little incentive to install energy-efficient equipment because the increasing energy costs are simply paid by the renter.

Hawai'i residents who are able to make decisions about which appliances to install in their homes or rental properties may encounter inaccurate information about ongoing operating costs when shopping for those appliances. Since 1980, the Federal Trade Commission has administered the EnergyGuide labeling program aimed at helping consumers understand how much energy a given appliance uses and its ongoing energy costs. The bright yellow EnergyGuide labels, however, do not reflect the reality of energy costs in Hawai'i because they are based on national average energy prices and usage of the appliance. This labeling is misleading for Hawai'i consumers given that electricity rates in Hawai'i are nearly triple the national average.

→ **ACTION 16:** Similar to the energy cost disclosure requirement when residential properties are sold in Hawai'i, require that rental agreements disclose utility bill costs for a given period (e.g., the last three months of occupied use) so that prospective renters can make informed decisions.

→ **ACTION 17:** Where a landlord has elected to pass on monthly utility bill costs to the renter, require that rental units meet certain minimum energy efficiency requirements (e.g., LED light bulbs, ENERGY STAR appliances, etc.) before being leased to a new tenant.

→ **ACTION 18:** For large household appliances that carry the national EnergyGuide label, require that retailers include Hawai'i-specific labels in the showroom. These labels would display a statewide, rather than national, average of an appliance's energy operation costs and help consumers make informed decisions based on more accurate cost information than is currently available at the point of sale. By displaying information about Hawai'i-specific operating costs, consumers are better equipped to choose the model that most makes sense for their economic situation and preferences.

³⁹ "2014-2018 ACS 5-Year Estimates," American Community Survey, accessed June 10, 2020, <https://www.census.gov/programs-surveys/acs>.

041

Repowering Mobility

➤ Although Hawai'i has made substantial progress on policies, programs, and actions to reduce burning fossil fuels in the electricity sector, we are falling short on decarbonizing our ground transportation sector. Greenhouse gas emissions from transportation are increasing. Last year, more gasoline was sold in the islands than in 2018.⁴⁰ Over one million gasoline-powered vehicles are on the roads in Hawai'i—and from them comes nearly five million metric tons of climate-changing carbon pollution. Although we now have over 12,000 electric vehicles (EVs) on the state's roads, they still only make up a mere 1% of all registered vehicles in the state.⁴¹ Hawai'i drivers are increasingly choosing larger, heavier vehicles, which are often less fuel efficient. According to the Hawaii Auto Dealers Association, pickup trucks and sport utility vehicles accounted for 67.9% of Hawai'i vehicle sales in 2018, a sharp increase from 48.7% in 2012.⁴² Existing initiatives have failed to reduce carbon emissions from Hawai'i's cars and trucks.

⁴⁰ "Monthly Energy Trends," DBEDT, accessed June 9, 2020, <http://dbedt.hawaii.gov/economic/energy-trends-2>.

⁴¹ Ibid.

⁴² "Hawaii Auto Outlook," Hawaii Auto Dealers Association, accessed June 10, 2020, <https://www.hawaiiautodealer.com/hadadata>.

Without deliberate and forward-thinking planning, we risk accelerating this trend of increased transportation emissions as Hawai'i residents go back to work and tourists return, especially with lower than usual oil prices. In addition, the quicker we turn our private and public fleets over to electric, the faster we turn the spigot off that leaks billions out of our economy annually to buy gasoline. Mobility should be powered by homegrown power, not imported carbon.

INCENTIVES FOR AFFORDABLE ELECTRIC VEHICLES

With gasoline prices dipping and fluctuating as a result of the pandemic, and with the state's only incentives for EVs being eliminated, we face an uphill battle in encouraging Hawai'i consumers to choose electric transportation. Act 168 of 2012 allowed EVs to park free of charge for limited time periods at state and county lots and metered stalls, and exempted EVs from high occupancy vehicle (HOV) lane restrictions. The act set a repeal date of June 30, 2020, to sunset these benefits. Legislative efforts to extend the sunset date were unsuccessful, even for compromise versions that omitted controversial free parking at local airports. As such, access to limited-time free parking for EVs and HOV lane access have expired.

In addition to the expiring parking and HOV lane benefits, EV drivers now face increased registration costs with a \$50 surcharge imposed by legislation adopted in 2019.⁴³ Unlike a dozen other states that offer financial incentives to make EVs more affordable and more convenient to a wider range of residents, Hawai'i offers no such incentives.

→ **ACTION 19:** Establish a revenue-neutral “feebate” for EVs, which can equitably shift the vehicle fleet in Hawai'i from polluting gas cars and trucks to zero-emission vehicles. The policy is simple: place a larger fee on the sale of vehicles that pollute more per mile than average and use those funds to provide a rebate for lower-cost EVs. This market-based concept embraces the “polluter pays” principle: consumers who purchase low efficiency vehicles pay extra for the privilege of polluting—and in this case the additional payment is used to incentivize clean vehicles. A feebate is revenue neutral, meaning that it will require no additional money from the general fund or other existing funds. As an alternative to imposing a fee based on fuel efficiency, the fee could instead be collected on luxury gasoline vehicles over a certain price point and used to fund rebates for EVs under a certain price point.

→ **ACTION 20:** Offer preferential EV rebates for teachers and first responders. In 2017, San Diego Gas & Electric announced a program to provide instant \$1,000 rebates to teachers and first responders for the purchase or lease of a new EV.⁴⁴ The utility invested \$500,000 of its own shareholder money—not ratepayer funds—to provide the discounts over three years. A similar program could be established in Hawai'i.

⁴³ Act 280, Session Laws of Hawai'i 2019.
⁴⁴ “Champion for Clean Air electric vehicle rebate,” San Diego Gas & Electric, <https://www.sdge.com/residential/electric-vehicles/champions-clean-air-ev-rebate>.

→ **ACTION 21:** Require that future autonomous vehicles (AVs) be fully electric or zero-emission and integrated in a shared mobility ecosystem in such a way that reduces environmental impact, traffic, and health and safety risks.



EXPANDED ACCESS TO EV CHARGING

The International Energy Agency found that “the availability of chargers emerged as one of the key factors for contributing to the market penetration of EVs.”⁴⁵ Unlike gasoline car owners, 80% of EV drivers charge their cars at home or at work.⁴⁶ Residents in multi-unit dwellings (MUDs) or condos, however, are often unable to find a place to charge, preventing them from receiving the benefits of EVs. A large segment of residents in Hawai'i live in multi-family housing, in part because single-family homes are financially out of reach for many.

Expanding access to EV charging is critical to unlock benefits for all electricity users, not just for EV drivers. Enabling EV charging during the middle of the day allows more low-cost solar to be added to the grid and helps the overall energy system. When large numbers of EVs—which are essentially batteries on wheels—are connected to the electricity grid simultaneously, they

can be used to help manage the system through demand response, load shifting, and other grid services. But most workplaces lack such charging infrastructure currently. How we define “workplaces” may also be shifting. With increases in remote working situations as a result of the COVID pandemic, more homes could permanently morph into offices, underscoring the need to prioritize expanded charging access at both residential and commercial properties.

The most challenging aspect of EV charger installation is the common lack of electrical capacity and distributed subpanels to support broad deployment of charging infrastructure. By choosing not to install the wiring and conduit upfront in new construction, developers are forcing tenants to pay for expensive retrofit costs to upgrade power capacity and wiring to their parking stalls. Studies have shown that installing EV infrastructure at the time of construction can be 91% less expensive than

⁴⁵ Global EV Outlook 2017, International Energy Agency, June 2017, <https://www.iea.org/reports/global-ev-outlook-2017>.
⁴⁶ Ibid.

post-construction retrofits, and per stall installation costs can be reduced through economies of scale.⁴⁷ To address this issue, cities across the country and the globe have adopted “EV ready” policies to ensure that new buildings are constructed with the future in mind. These policies typically require that a certain percentage of parking stalls be equipped with appropriate power capacity and conduit.⁴⁸ In addition to “future proofing” new construction projects, we also need solutions for installing EV chargers in existing buildings. Since 2012, Hawai‘i law has required that publicly accessible parking lots with 100 or more stalls have a least one EV charging station.⁴⁹ Although a number of retailers have stepped up to offer EV charging equipment to their customers, many other properties have not complied or have not kept up with maintenance of their charging equipment. Moreover, the law doesn’t extend to residential MUD properties or private workplaces, nor does it specify enforcement provisions.

→ **ACTION 22:** Require that 100% of newly constructed parking stalls be “EV ready” and allow them to be paired with an energy management system (EMS). Vancouver, B.C., requires that 100% of stalls be wired for EV chargers, while allowing for an EMS to control the overall electricity demand (and therefore reduce the upfront electrical capacity investment). Because most personal vehicles are parked for 8–10 hours per day, an EMS allows multiple vehicles to share a circuit, which greatly reduces construction and utility costs.⁵⁰

→ **ACTION 23:** Conduct an analysis of existing large commercial buildings to determine surplus electrical service capacity that could be used to support EV charging. With the gains in energy efficiency over the past couple of decades, many older commercial buildings may be able to service an array of EV chargers with no additional electrical capacity upgrades.

→ **ACTION 24:** Allocate funding and establish additional incentives, rebates, and/or programs to jumpstart an ecosystem of EV charger installation and maintenance jobs. This can include expanded funding for EV charger rebates offered by Hawai‘i Energy and implementation of the career pathway programs identified in the “Building Career Ladders” section of this document.⁵¹

→ **ACTION 25:** Incentivize workplace and MUD charging with utility-supported “make-ready” infrastructure paired with hourly rates that encourage drivers to charge during grid-friendly times (i.e. by providing them a cheaper rate at those times). Using a similar model, San Diego Gas & Electric’s “Power Your Drive” program has installed more than 3,000 charging stations at 255 locations (including apartment buildings and workplaces) over three years.⁵²

⁴⁷ “Plug-In Electric Vehicle Infrastructure Cost-Effectiveness Report for San Francisco,” Energy Solutions, prepared for the City and County of San Francisco, November 17, 2016.

⁴⁸ EV charger ready requirements do not require the installation of the actual EV charging infrastructure; they simply require that the power capacity and conduit be set up during construction, which dramatically reduces retrofit costs at the time of charger installation, creating cost savings downstream for residents and tenants.

⁴⁹ Hawai‘i Revised Statutes (HRS) § 291-71 (2012). An earlier version of the law, enacted in 2009, required that parking lots have an EV charging port per every 100 stalls.

⁵⁰ “Electric Vehicles (EVs),” City of Vancouver, accessed June 10, 2020, <https://vancouver.ca/streets-transportation/electric-vehicles.aspx>.

⁵¹ “Electric Vehicle Charging Stations,” Hawai‘i Energy, accessed June 10, 2020, <https://hawaiienergy.com/for-businesses/incentives/electric-vehicle-charging-stations> (providing more information on Hawai‘i Energy EV charging station rebates).

⁵² “Power Your Drive,” San Diego Gas & Electric, <https://www.sdge.com/residential/electric-vehicles/power-your-drive>.

→ **ACTION 26:** Encourage the installation and aggregation of workplace and MUD charging by offering competitive grid services tariffs and programs that leverage EVs flexible power demands. As “batteries on wheels,” EVs should be put to work (and appropriately compensated for) providing a variety of services that help regulate and manage the increasing amount of clean energy on the electricity grid.

→ **ACTION 27:** Boost the effectiveness of Hawai‘i’s existing law that requires parking lots with 100 or more stalls to have EV charging. This can be done by clarifying that the counties in Hawai‘i have authority to enforce the existing requirements and clarifying that chargers must be reasonably maintained. Establishing a time-limited amnesty program can help property owners that are not currently in compliance, and stimulus funding or other funding sources can be used to help retailers comply prospectively. Those that are currently already in compliance could be prioritized for additional funding.

FINANCING THE TRANSITION FOR BUS FLEETS

In December 2017, the mayors of all four counties in Hawai‘i pledged to transform ground transportation to 100% renewable fuel by 2045, with three of those counties—Honolulu, Kaua‘i, and Maui—committing to transition their public fleets by 2035. The purpose of their action was to set a vision for clean, modern mobility options for all.

Thanks to savings on maintenance and fuel and dedicated electric charging tariffs, electric buses are cheaper to operate than their diesel equivalents, making them more economical in the long run. The upfront cost of electric buses, however, remains higher than diesel buses. To clear this capital cost hurdle, counties and other transit agencies seeking to transition their fleets to electric buses need innovative financing solutions. This is especially true given the budget constraints government agencies and businesses are facing due to the COVID pandemic.

→ **ACTION 28:** Establish a tariffed on-bill financing program for clean transportation. On-bill tariff programs have been successfully used by utilities to pay for energy efficiency upgrades in buildings, allowing the utility to recover payment for those improvements over time on a building owner’s utility bill. A similar model could be applied to reduce the upfront cost premium of procuring electric buses.⁵³ To lower the upfront cost for bus service providers, an electric utility could invest in the batteries and charging equipment of electric buses and then recover its cost for the equipment through a fixed charge on the bus service providers’ monthly bill, while ensuring that the electric bus still costs less to operate than its diesel bus equivalent. This financing structure can also create a powerful multiplier effect for resources like the state’s Volkswagen Settlement funds and Diesel Emissions Reduction Act (DERA) grants administered by the state to support the purchase of more electric buses.

⁵³ A “Pay As You Save” (PAYS®) financing model for clean transportation has been proposed and championed by Clean Energy Works. For more information, see “Tariffed On-Bill Finance to Accelerate Clean Transport,” Clean Energy Works, <https://www.cleanenergyworks.org/clean-transit>.

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Reinvigorating Public Spaces

► The quarantine brought a rare sight to Hawai‘i: empty roadways. With most cars parked at home and rental cars sequestered, the quiet and openness of typically crowded streets was palpable. Once congested highways flowed freely, and a walk down neighborhood streets became more inviting. With the decline in auto usage, Hawai‘i saw another benefit: a decrease in roadway deaths. Traffic fatalities were down by 35% for the January through May period in 2020 as compared with the same period in 2019.⁵⁴ Less cars on the road means safer streets.

⁵⁴ State of Hawai‘i Department of Transportation, accessed June 10, 2020, <https://hidot.hawaii.gov/highways/safe-communities> (showing preliminary traffic fatality statistics).

“If we want to make transport in London safe, and keep London globally competitive, then we have no choice but to rapidly repurpose London’s streets for people.”

—London Mayor Sadiq Khan

The traffic-free streets were a reminder of how much of our public spaces are devoted to private cars. Hawai‘i’s cities and communities were largely designed around the automobile. Neighborhoods and commercial areas are often built in service of moving cars and trucks, with a fraction of the space left for pedestrians and bicyclists. It is little surprise that Hawai‘i has far more registered vehicles than licensed drivers in the state.

What would happen if we took a more human- and pedestrian-centered approach to our public areas? What could we do to decrease the need for driving altogether? How might we reimagine and reprioritize some of our public areas currently devoted to cars? In doing so, could we also better meet the needs for increased safety (reduced accidents), better health (more social distancing on sidewalks, more opportunities for exercise), economic opportunity (increased space for commerce and outdoor eating areas), and decreased environmental impact?

Other cities around the globe have chosen a less car-centric approach with success. Take Copenhagen, Denmark, for instance. With ample bicycle lanes and supporting infrastructure, over 40% of commuting trips in the city are by bicycle.⁵⁵ Similarly, cities in the United States—such as Davis, California; Boulder, Colorado; and Madison, Wisconsin—have converted streets to car-free zones to support walking, biking, socializing, and commercial activities.

We have seen what our roadways can look like when we significantly reduce traffic demand. Fortunately, we can choose to create that outcome by design. State and county governments and private businesses have a number of options to reduce the need for vehicle trips and reinvigorate public spaces.

SUPPORT FOR ALTERNATIVE TRANSPORTATION OPTIONS & TELECOMMUTING

Many businesses are already considering modifications to their traditional working arrangements by providing for teleworking and telecommuting. “Work from home” may become the new norm for a large number of employees, even post-pandemic. This shifting norm in how we work could have a profound impact on our carbon emissions. Fewer daily commuters would lead to a decline in vehicle emissions and traffic congestion. In addition, fewer cars on the road can open up urban streets for use by bicycle commuters or for public transportation.

⁵⁵ “Copenhagen City of Cycling – Facts and Figures 2017,” Cycling Embassy of Denmark, <http://www.cycling-embassy.dk/2017/07/04/copenhagen-city-cyclists-facts-figures-2017>.



Reinvigorating Public Spaces



REDESIGNING OUR ROADWAYS FOR PEOPLE

After witnessing clean air and traffic-free city centers, many cities and communities around the world are deciding to make significant changes in how their road space is used. In Milan, Italy, the city core will be partly remodeled to convert over 22 miles of roadway from automobile use to bike and pedestrian use only. Other streets in the city core will have a maximum speed limit of 30 kilometers per hour (approximately 19 miles per hour). The aim is to make traffic more fluid and give pedestrians more space to spread out safely. The entire city core of Brussels, Belgium, will be a priority zone for cyclists and pedestrians. In London, England, large sections of the downtown area are to be closed to automobiles to allow people to walk and cycle safely. In the United States, the city of Seattle, Washington, has permanently closed some 20 miles of streets to most vehicular traffic as part of its “Stay Healthy Streets” initiative. Oakland, California, launched a “Slow Streets Program” and converted 10% of its roadways (74 miles) to local traffic only to allow for safer pedestrian and bicycling activities.⁵⁷ Unlike many of these locations, Hawai‘i enjoys near-perfect weather year-round that is conducive to walking and bicycling. What’s missing is the supporting infrastructure to make car-free solutions safe and welcoming.

⁵⁶ Employee Guide, Bay Area Commuter Benefits Program, December 31, 2019, <https://511.org/sites/default/files/pdfs/cbp/CBP%20Employer%20Guide%2031Dec19.pdf>.
⁵⁷ “Oakland Slow Streets,” City of Oakland, <https://www.oaklandca.gov/projects/oakland-slow-streets>.



Reinvigorating Public Spaces

→ **ACTION 32:** Convert select roadways in the core of Honolulu and other communities state-wide to car-free use only (walking, bicycling, and other personal mobility options). Other roads should be restricted to local traffic only. Kalākaua Avenue in Waikīkī is a perfect candidate for closure to car traffic. A pedestrian-, bicycle-, and transit-only corridor through Waikīkī would be a welcome change for both visitors and residents, providing space to spread out for social gatherings, exercise, fresh air, and commerce. It would also help the city adapt for inevitable sea level rise.

→ **ACTION 33:** Significantly expand sidewalks and increase the number of bike lanes—removing vehicle lanes where necessary—to encourage walking and biking and allow for social distancing.

→ **ACTION 34:** Modernize parking requirements for buildings. Current parking requirements lead to more expensive construction, scarcer housing, more driving, and increased carbon emissions. Reducing and “rightsizing” parking minimums for development can provide more flexibility for meeting parking requirements and make parking developments more “people friendly.”

→ **ACTION 35:** Allow for automated pedestrian crossing by disabling and prohibiting “press to walk” buttons. The “walk” signal for pedestrians should come on automatically without requiring a pedestrian to touch the “beg button.”

06

Deploying Low-Carbon Energy

➤ Central to Hawai'i's recovery for both climate and job growth is the deployment of clean energy. This includes solar, wind, energy storage, grid intelligence, and other technologies that support carbon-free power. Investments in low-carbon energy trade fossil fuel costs for capital and labor costs, keeping more money in-state over the long run. The clean electricity that is produced then powers our homes and businesses and increasingly fuels our transportation.

Deploying Low-Carbon Energy



Hawai'i's electric utilities have made substantial progress on renewable energy deployment, future procurement, and planning. The electric utility cooperative on Kaua'i generates over 55% of its electricity from renewable sources, and the system is routinely running on 100% renewable energy for five hours or more on sunny days. Hawaiian Electric has significantly ramped up its renewable energy generation and contracting for new utility scale solar plus energy storage projects. The company recently completed the nation's largest procurement process for new renewable energy and storage investments, and aims to have its combined electricity grids powered by over 50% renewable energy in a matter of years. The cost of electricity from recent renewable energy projects has been as low as one-half the cost of electricity generated by conventional fossil fuel powerplants in Hawai'i.

Although large-scale solar and wind projects are the most affordable forms of renewable energy, they have their share of drawbacks. Hawai'i is seeing increasing tension between developers seeking to build large energy projects and communities hosting the projects. Wildlife—particularly birds and bats—are negatively impacted by wind turbines. Large solar farms compete for flat, accessible land with agricultural operations (although examples of co-siting solar and farming exist in the islands and across the globe). These issues must be solidly addressed to enable continued progress toward large-scale carbon-free energy while also ensuring that communities are empowered in decision-making and persistent, systemic inequities do not bleed into our clean energy future.

In addition, distributed energy resources—particularly rooftop solar and decentralized energy storage—should be prioritized. Every roof in Hawai'i should be home to solar energy (either photovoltaic or solar hot water or both). Distributed energy engages more people in our clean energy future, encourages private investment in our power system, increases energy and community resilience, and creates a steady stream of well-paying jobs. To fully leverage the power of distributed energy resources (DERs), regulators and the utility should enable the creation of an energy infrastructure and rate/tariff system that allow for a healthy DERs ecosystem and properly value the contribution of DERs to the grid. This includes proper support and pricing for EV charging; distributed storage; and grid services such as demand response, frequency regulation, and voltage support.

Finally, the deployment of low-carbon energy resources—large and small—must be just, equitable, and accessible for all, and must respect community and place.

→ **ACTION 36:** Fix the current approach to siting large utility-scale energy projects to allow for earlier and more meaningful community input in the decision-making and shaping of the project; also establish a consistent program of sharing the renewable project's revenues with the hosting community, and encourage community ownership models for large energy projects. This new community hosting model should be developed and codified statutorily or administratively.

→ **ACTION 37:** Continue the state tax credit incentive for small-scale and distributed renewable energy projects (under five megawatts). With the phaseout of the federal tax credit, continued state support is critical to continue growth in the distributed residential and small-scale commercial market.

→ **ACTION 38:** Overhaul the county permitting process for distributed energy resources. The process for approving small residential and commercial renewable energy and energy storage projects needs to be streamlined and revised to enable rapid deployment of distributed energy systems.

→ **ACTION 39:** Allow for automatic variances to county height restrictions for solar energy devices. Many commercial solar projects have been denied because the host building's roof is at the county height limit and additional equipment on the roof would exceed this restriction. Height variances for solar energy equipment on rooftops that are under three feet should be automatically approved.

→ **ACTION 40:** Establish a state incentive for distributed energy storage installations. While energy storage devices installed with a new solar energy system partially qualify for the state renewable energy tax credit, energy storage retrofit projects do not. An incentive would encourage the installation of new distributed storage, which increases the grid's capacity to use renewable energy and bolsters energy resiliency in neighborhoods.

→ **ACTION 41:** Require that all new single-family homes come equipped with solar water heaters and solar photovoltaic. While Hawai'i has an existing law ostensibly requiring solar water heating, a variance process in the statute has been abused by developers who wish to install fossil gas water heaters instead. This should be further clarified, and the law should be expanded to include a requirement for photovoltaic (similar to California's building code).

→ **ACTION 42:** Establish a broad program to deploy solar water heaters on existing single-family homes statewide. Less than 40% of existing single-family homes have solar water heaters, which are the most cost-effective means of heating water in Hawai'i for the majority of homes. Such a deployment program could be part of the Hawai'i Climate Corps (see Action 11) and funded through the carbon tax (see Action 1).

→ **ACTION 43:** Adopt advanced electricity rate/tariff designs that properly charge for and value energy use and contributions to the grid that vary by time. This includes time-of-use and real-time energy pricing and advanced tariff options that pay for the value of grid services. Rate design should be structured such that the choices a customer makes to minimize their own bill are the same choices that would minimize the overall system costs.⁵⁸

→ **ACTION 44:** Expand and improve the existing community-based renewable energy program to enable clean energy options for all. Ensure that the existing tax credit and equity programs, such as the GEMS program, apply to community-based renewable energy projects to make the projects affordable to more Hawai'i residents. Improve and streamline the customer recruitment and enrollment processes for community-based projects to ensure that low- and moderate-income residents are reached.

⁵⁸ For further discussion, see the Regulatory Assistance Project's July 2015 "Smart Rate Design for a Smart Future," authored by Jim Lazar and Wilson Gonzalez.

07

Rebuilding Hawai'i

► Most individuals spend a majority of their lives inside buildings. Yet buildings are often overlooked as important levers for influencing our safety, health, and economic and environmental quality of life. Finding new opportunities to reduce monthly expenses for residents and businesses while also improving health and safety should be a core consideration as we recover from the COVID pandemic.

Rebuilding Hawai'i

The need for high efficiency equipment is particularly timely, as building owners and managers seek to increase the amount of filtration and ventilation in their buildings to reduce the potential circulation of viruses or other contagions. Not only can high-performing buildings lead to lower monthly utility bills, energy efficiency is also the cheapest, quickest, and cleanest way to accelerate Hawai'i's transition to 100% renewable energy.

BUILDING BENCHMARKING

Existing buildings and facilities in Hawai'i offer enormous opportunities for energy savings, yet the potential for savings is not readily apparent through current disclosure and information sharing requirements. Hawai'i can accelerate progress toward its goals relating to clean energy, economic security, resiliency, and carbon pollution reduction by expanding the state's building energy benchmarking and energy consumption disclosure requirements beyond residential and state buildings.

Building energy benchmarking is a useful starting point for commercial building owners and operators to target energy savings opportunities. Building energy benchmarking is the process of comparing a facility's energy usage against facilities of a similar type or function to identify opportunities for savings. Hawai'i is already a leader in driving energy transparency with the state's residential energy-use disclosure policy,⁵⁹ and Hawai'i previously adopted benchmarking policies for state facilities and buildings.⁶⁰ Between 2014 and 2016, the state benchmarked over 400 public facilities, including facilities that encompass multiple buildings, such as university campuses.⁶¹ The benchmarking project found potential for all state agencies to save more than 65 million kilowatt-hours annually, equating to \$25 million in potential savings.⁶²

Benchmarking energy use in the commercial sector with regular measurement and disclosures has clear benefits for many stakeholders. With benchmarking, building owners understand how much gas and electricity their properties use, which may encourage them to take steps to reduce wasted energy to lower energy costs and stay competitive. Benchmarking data helps to fill an information gap for commercial real estate firms and investors, providing everyone with access to the same information. For tenants, benchmarking and disclosure provide valuable data to better understand energy use and make informed decisions.

Benchmarking benefits the entire community, too. Building performance data helps communities strategically meet energy efficiency and climate change mitigation goals by targeting energy efficiency rebates and incentives for buildings that have the most potential for savings. This is one reason why several U.S. cities—including Philadelphia, Chicago, San Francisco, New York, Washington, DC, Boston,

⁵⁹ HRS § 508-10.5.

⁶⁰ HRS § 196-30.

⁶¹ "3 Ways Hawaii is Becoming More Energy Efficient," U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, July 17, 2017, <https://www.energy.gov/eere/articles/3-ways-hawaii-becoming-more-energy-efficient>.

⁶² *Ibid.*



and Columbus—have adopted energy benchmarking and disclosure ordinances that require large buildings to benchmark energy use. In Boston, for example, large commercial buildings over 35,000 square feet and residential buildings with more than 35 units are required to report and disclose energy and water usage and greenhouse gas emissions.⁶³

Benchmarking—and the energy efficiency tune-ups that it will foster—also create jobs. A robust benchmarking policy can serve as a backbone for a strong energy services market. New opportunities will emerge for building commissioning specialists, efficiency auditors, and trades workers to update building systems deemed in need of repairs. Local businesses in cities with benchmarking and transparency ordinances report hiring new employees to meet new demand driven by enhanced awareness of the value of energy efficiency.⁶⁴ The benchmarking policy recently adopted by the city of Philadelphia alone is expected to create 600 job opportunities over five years. Between 2010 and 2013, New York City calculated more than 3,100 direct jobs created by energy efficiency improvements in buildings.⁶⁵ The numbers are even higher when factoring in the follow-on efficiency improvements. In Philadelphia, for example, a study found that 77% of the city’s building stock needed upgrades, which would generate \$600 million in local spending and support 23,000 jobs.⁶⁶

⁶³ “Building Energy Reporting and Disclosure Ordinance,” City of Boston, last modified January 30, 2020, <https://www.boston.gov/departments/environment/building-energy-reporting-and-disclosure-ordinance>.

⁶⁴ The Benefits of Benchmarking for Building Performance, Institute for Market Transformation, December 2015, https://www.imt.org/wp-content/uploads/2018/02/PCC_Benefits_of_Benchmarking.pdf.

⁶⁵ Ibid.

⁶⁶ Ibid.

Rebuilding Hawai‘i

→ **ACTION 45:** Establish a robust and expanded benchmarking framework that includes point-of-sale disclosure as well as annual requirements for building benchmarking, reporting, and transparency for public and commercial buildings.

MODERNIZING BUILDING CODES

Building codes have direct and indirect impacts on our wellbeing and quality of life. By establishing and regularly updating uniform state and county building codes, Hawai‘i can ensure that building design, construction, and operation address society’s most important concerns, including public health and safety, environmental protection, and consumer protection against costly monthly utility bills. Hawai‘i develops its energy building code based upon the International Energy Conservation Code (IECC). The International Code Council produces an updated version of the IECC through a democratic and deliberative process every three years. As noted by the Environmental and Energy Study Institute, “[t]he process of updating model codes every three years is optimal to ensure new technologies, materials and methods, as well as better approaches to health and safety, can be incorporated into the next generation of buildings with sufficient time for proof of performance.”⁶⁷

Hawai‘i, however, has historically operated on a much slower timeline. The most recent version adopted by the state was the 2015 IECC, which replaced the 2006 IECC that was in place at the time of adoption. The anticipated energy savings arising from the 2015 IECC were calculated in a May 2016 report prepared for the State of Hawai‘i Department of Business, Economic Development & Tourism to total over \$1.4 billion.⁶⁸ A decade is too long to wait to put in place updated minimum energy standards and building practices that will save building owners and residents significant money.

→ **ACTION 46:** Review and streamline the process for adoption of building energy codes so that codes in Hawai‘i are more quickly updated alongside model codes adopted by the International Code Council, with amendments to reflect unique conditions in Hawai‘i and state policy goals.

→ **ACTION 47:** Adopt a “stretch code” that goes beyond the current building energy code. Buildings or communities that meet the stretch code requirements could receive special designation that qualifies them for funding to finance additional energy efficiency upgrades or renewable energy projects.

→ **ACTION 48:** Include requirements in building codes to prevent “sick building syndrome” (SBS) through improved ventilation standards. SBS describes situations when building occupants experience acute health impacts linked with spending time in a building. The COVID pandemic has highlighted the need to improve building requirements to prevent “sealed up” buildings where viruses and other pathogens or air pollutants circulate.

⁶⁷ Vaughn, Ellen and Jim Turner, The Value and Impact of Building Codes, 2013, <https://www.eesi.org/files/Value-and-Impact-of-Building-Codes.pdf>.

⁶⁸ Energy Savings Forecast for the 2015 International Energy Conservation Code with Hawai‘i Amendments, The Cadmus Group, Inc., prepared for DBEDT, May 2016, <https://energy.hawaii.gov/wp-content/uploads/2016/07/Energy-Savings-Forecast.pdf>.



BUILDING FOR ZERO CARBON

Post-COVID planning offers an opportunity to build smarter, healthier, and more resilient infrastructure going forward. As Hawai'i recovers and construction begins on new homes, buildings, and infrastructure, all of the blueprints should reflect the same goal: having the ability to fully participate in our 100% carbon-free future. This means that new buildings should be fully electric and natural gas connections or other fossil fuel infrastructure should be prohibited. The buildings and infrastructure that we invest in today will be with us for decades—it is critical that they have the capacity to be 100% powered by renewable energy and not be saddled with soon-to-be-outdated fossil systems. It is time we electrify everything.

The amount of renewable electricity produced in Hawai'i is increasing steadily (averaging 28% in 2019). The electric utilities have a legal mandate to provide 100% renewable energy by 2045, although that goal will likely be achieved ahead of schedule. What's more, electric devices and appliances have the ability to participate in the larger energy ecosystem through demand response, load shifting, and other means.

Nearly all natural gas in Hawai'i, however, is produced from fossil petroleum. Only a small fraction of the natural gas used in Hawai'i is renewable (about 3% on O'ahu), and the gas utility has no public plans to increase that amount or switch to renewable hydrogen gas. The gas utility is also not required by law to provide anything other than fossil fuel, now and into the indefinite future. A building built today with a natural gas cooking range will likely be producing carbon pollution well after our electricity system is 100% renewable. Further, gas appliances produce harmful combustion byproducts like particulate matter, carbon monoxide, and nitrogen dioxide that have negative human health impacts, and are often more expensive over their lifespans than renewable or electric systems.

This is why an increasing number of cities across the country are banning new natural gas infrastructure. Some 30 counties in California have prohibited new gas connections for buildings, and dozens of other cities, from Cambridge and Newton in Massachusetts to Seattle, are considering similar bans. In the continental U.S., natural gas is now responsible for more climate-heating emissions than coal. Globally, fossil gas is the fastest-growing source of climate change emissions, according to a study published in *Environmental Research Letters* in December 2019.⁶⁹

In addition to prohibiting natural gas connections in new buildings, no new fossil fuel infrastructure (natural gas lines, gasoline stations, petroleum delivery systems, etc.) should be built in Hawai'i—it will be either an economic liability or a climate liability or both. Similarly, the installation of devices to burn fossil fuel for purely aesthetic reasons should also be prohibited. Now is not the time to add fossil fuel infrastructure—instead, economic recovery investments should be geared toward zero-carbon buildings of the future.

⁶⁹ R B Jackson, et al. "Persistent fossil fuel growth threatens the Paris Agreement and planetary health," *Environmental Research Letters* 14, no. 12 (2019).



Finally, existing natural gas should be transitioned to 100% renewable gas or renewably produced hydrogen gas. Although renewable gas can be produced from wastewater treatment, landfills, or through local crops, the feedstock availability is limited. Renewably produced hydrogen, however, presents a perfect opportunity as a sustainable fuel—one with tremendous growth potential. Hydrogen—the most common element in the universe—will likely play a key role in our clean energy future, particularly in the transportation sector. Hydrogen can be used as a storage fuel, where hydrogen is created from geothermal, wind, or solar energy and stored (as compressed gas, in liquid form, or in an alternative chemical form) and used later in combustion or fuel cell applications.

Progressive gas companies around the globe are exploring the use of renewable hydrogen as a replacement for their natural gas sales. In Australia, Evoenergy and Canberra Institute of Technology are testing the direct conversion of natural gas infrastructure and pipelines to hydrogen.⁷⁰ In the United Kingdom, three natural gas distributors have detailed plans to convert the UK's residential gas system to a hydrogen delivery system. The UK firms Northern Gas Networks and Cadent, as well as Norwegian gas firm Equinor, suggested that an initial roll-out of the program to 3.7 million homes and 400,000 businesses in Northern England could commence as soon as 2028.⁷¹

Establishing a 100% renewable requirement for gas in Hawai'i will help foster the transition to low-carbon replacements for natural gas, and could help unlock a transformation to a hydrogen-based clean energy system for the state.

→ **ACTION 49:** Prohibit the construction of new fossil fuel infrastructure, including natural gas lines and connections in new construction, gasoline pumping stations, petroleum delivery systems, and other fossil-only infrastructure.

→ **ACTION 50:** Establish a renewable portfolio standard requiring that 100% of gas sold by gas utility companies in the state be renewable (bio-gas or renewable hydrogen) by 2045. Encourage and incentivize the creation of a hydrogen-based clean energy system for energy storage and fuel.

⁷⁰ "Nation's first hydrogen test station at CIT Fyshwick," Canberra Institute of Technology, December 4, 2018 https://cit.edu.au/news/hydrogen_test_station.
⁷¹ "Natural gas firms have a proposal to convert home heating to hydrogen," *Ars Technica*, November 25, 2018, <https://arstechnica.com/science/2018/11/natural-gas-distributors-outline-proposal-to-convert-home-heating-to-hydrogen>.



ACTION SUMMARY

Charting Our Course

Shifting Our Economy

- 1 Adopt a meaningful price on carbon with a climate dividend directed to local residents and families most in need
- 2 Integrate the commitment to "Clean Energy Islands" throughout visitor industry actions and messaging for Hawai'i
- 3 Develop a Hawai'i-specific program to offset 100% of visitor air travel carbon emissions through local clean energy and other projects
- 4 Establish a "Carbon-Free by 2030" pledge and incentives for hospitality sector
- 5 Dedicate at least half of the Hawai'i Tourism Authority's marketing budget to support and showcase low-carbon initiatives
- 6 Require electric vehicle rental car fleets and tour buses
- 7 Electrify all ground operations at Hawai'i's airports, including taxiing and airplane air conditioning
- 8 Develop clean energy experiences and tours for visitors
- 9 Update past research on relative carbon emissions from residents versus visitors
- 10 Develop a carbon transparency tool to help visitors make informed choices

Building Career Ladders

- 11 Establish the Hawai'i Climate Corps
- 12 Expand community college offerings for clean energy jobs and career development training
- 13 Offer opportunity grants and financial aid to support clean energy job training, particularly for those in the hospitality workforce

Ensuring Access & Affordability

- 14 Greatly expand GEMS program to provide affordable access to clean energy for low- to moderate-income residents
- 15 Establish an on-bill repayment program for energy efficiency upgrades for residential and commercial customers
- 16 Require the disclosure of energy costs in rental agreements
- 17 Require energy efficiency upgrades for rental units before being leased to a new tenant
- 18 Require Hawai'i-specific energy use labeling for large household appliances

Repowering Mobility

- 19 Establish a "feebate" program to equitably shift the vehicle fleet in Hawai'i from polluting gas cars to zero emission vehicles
- 20 Preferential EV rebates for first responders and teachers
- 21 Require that future autonomous vehicles be zero emission and properly integrated in a shared mobility ecosystem



- 22 Require that all new parking stalls be wired to enable EV chargers
- 23 Conduct an electrical service capacity analysis of large existing buildings to determine ability to provide EV charging
- 24 Incentivize new EV charger installation in existing buildings
- 25 Support workplace and MUD charging with "make ready" infrastructure and TOU rates
- 26 Encourage EV charger installation and aggregation through grid services contracts
- 27 Boost effectiveness of existing EV charger requirement for large public parking lots
- 28 Establish a program for on-bill financing for EV buses

Reinvigorating Public Spaces

- 29 Mandate the implementation of commuter benefits programs
- 30 Establish telecommuting guidelines for government agencies
- 31 Require government agencies to stagger work hours where possible and encourage commercial businesses to do the same
- 32 Convert select roadways to car-free use only
- 33 Significantly expand sidewalks and increase the number of bike lanes
- 34 Modernize parking requirements for buildings
- 35 Allow for automated pedestrian crossing

Deploying Low-carbon Energy

- 36 Revamp utility-scale renewable energy siting process through community empowerment
- 37 Continue state tax credit for renewable energy systems below 5 megawatts
- 38 Overhaul the county permitting process for distributed energy resources
- 39 Allow for automatic variances to county height restrictions for solar energy devices below three feet
- 40 Establish a state incentive for distributed energy storage installations
- 41 Require that all new single-family homes come equipped with solar water heaters and solar photovoltaic
- 42 Establish a program to deploy solar water heaters on existing single-family homes statewide
- 43 Adopt advanced electricity rate/tariff designs that properly charge for and value energy use and contributions to the grid that vary by time
- 44 Expand and improve the existing community-based renewable energy program

Rebuilding Hawai'i

- 45 Establish a robust and expanded benchmarking framework
- 46 Review and streamline the process for timely adoption of building energy codes
- 47 Adopt a "stretch code" that goes beyond the current building energy code
- 48 Include requirements in building codes to prevent "sick building syndrome" through improved ventilation standards
- 49 Prohibit the construction of new fossil fuel infrastructure, including the use of natural gas in new construction
- 50 Establish a standard requiring that 100% of gas sold by gas utility companies in the state be renewable or clean hydrogen



Systemic change can be difficult, complex, and elusive. Yet there are moments in history that mark turning points. Blue Planet believes we are in the midst of such a moment. Although we are living through an extremely challenging time of economic hardship, human health upheaval, increasing climatic changes, and systemic injustice, we also see an unparalleled opportunity to reshape and revitalize our collective future.

Through the waypoints outlined here, Blue Planet seeks to contribute to charting a course for regrowth in Hawai'i through a climate, resilience, and equity lens. The pull to return to “business as usual” will be strong in the coming months and years. But there is another path—one in which we can shift our economy, build career ladders, ensure access and affordability, repower our mobility, reinvigorate public places, deploy low-carbon energy, and rebuild smarter.



These action pathways are not intended to be a comprehensive solution set for rebuilding the economy of Hawai'i. Rather, we offer a menu of actionable policy and programmatic options that Hawai'i policymakers and communities can explore both near-term and long-term in COVID recovery efforts while necessarily keeping the urgency of climate change top of mind.

This document marks a starting point for collective conversation. We propose these waypoints with humility to contribute to the critical conversation about Hawai'i's sustainable future. We welcome the opportunity for dialogue and critique. To share your feedback and thoughts please visit waypointshawaii.org or send an email to waypoints@blueplanetfoundation.org.

Climate change, like COVID, is a global challenge. Just as Hawai'i's first-in-the-nation 100% renewable energy law inspired other states to set bold clean energy targets, a low-carbon recovery in Hawai'i can catalyze innovative recovery efforts that empower communities to thrive.

What we are doing together in Hawai'i matters. COVID has underscored our interdependence. Let's show the world the path forward.



**“We are now faced with the fact
that tomorrow is today.”**



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