

# **Hawaii Public Utilities Commission**

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**Factors Affecting Hawaii Electricity Rates**

**&**

**Historical Trends and Future Perspectives**

Informational Briefing: Senate Committees on  
Commerce & Consumer Protection and Energy & Environment

**January 29, 2013**

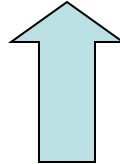
# Why Are Electric Utilities Regulated?

## The Regulatory Compact

The regulated company is protected from competition within a designated service territory, and in return, the regulated company is required to provide service to all who need it within reason. The services provided by the regulated company are to be of good quality, safe, and reasonably priced, and in return, the regulated company is allowed the opportunity (not a guarantee) to earn a “fair” rate of return for its investors.

# Why Are Electricity Rates Going Up?

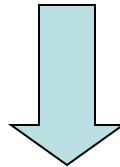
**Cost of Utility Service**



Fuel, O & M Expenses,  
Taxes, Depreciation,  
Return on Investment

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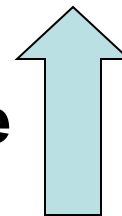
**Electricity Sales**



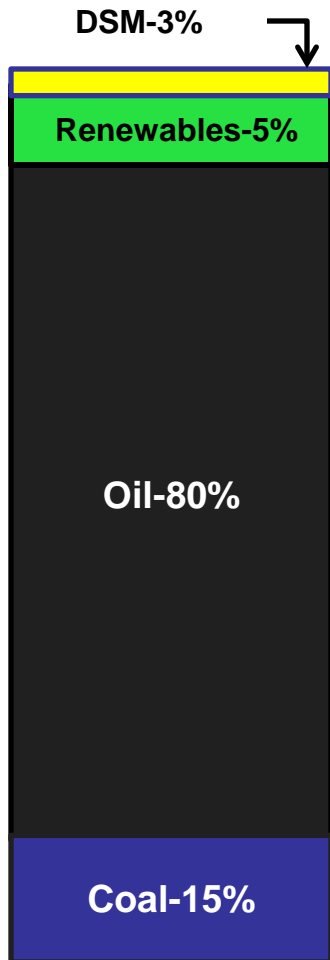
Efficiency Programs,  
Customer Sited  
Generation, No or  
Minimal Growth in  
Customer Base,  
Recessionary  
Conditions

**Results in**

**Average Electricity Customer Rate**



# The Evolution of Hawaii's Energy Policy and Energy Resource Mix



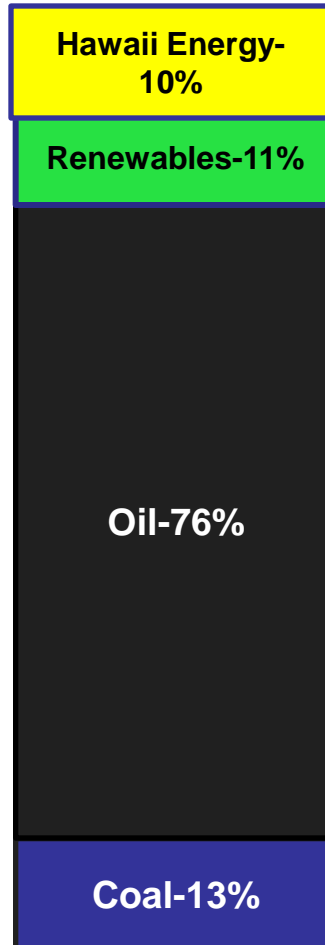
2002

## Chapter 1

**Key Policy Drivers:**  
RPS, PBF, NEM

### Key Lessons:

- Early adoption of technology
- Grow RE and EE sectors
- RE integration is possible



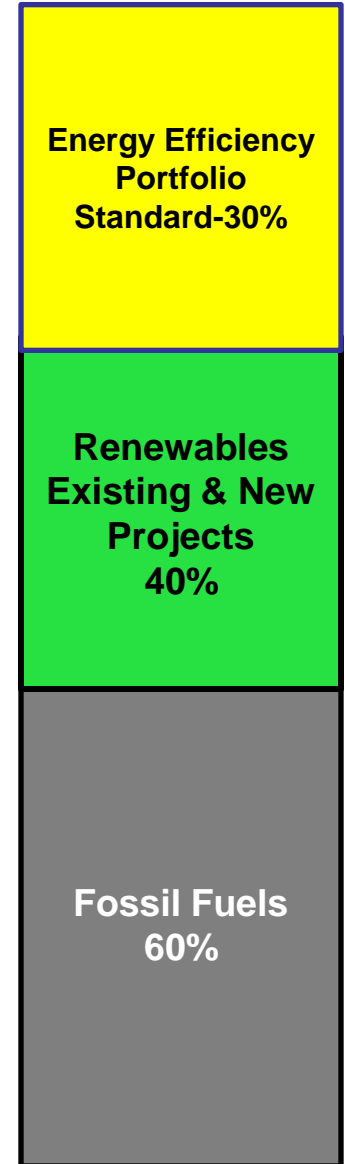
2011

## Chapter 2

**Additional Policy Drivers:**  
EEPS, EPA and GHG rules

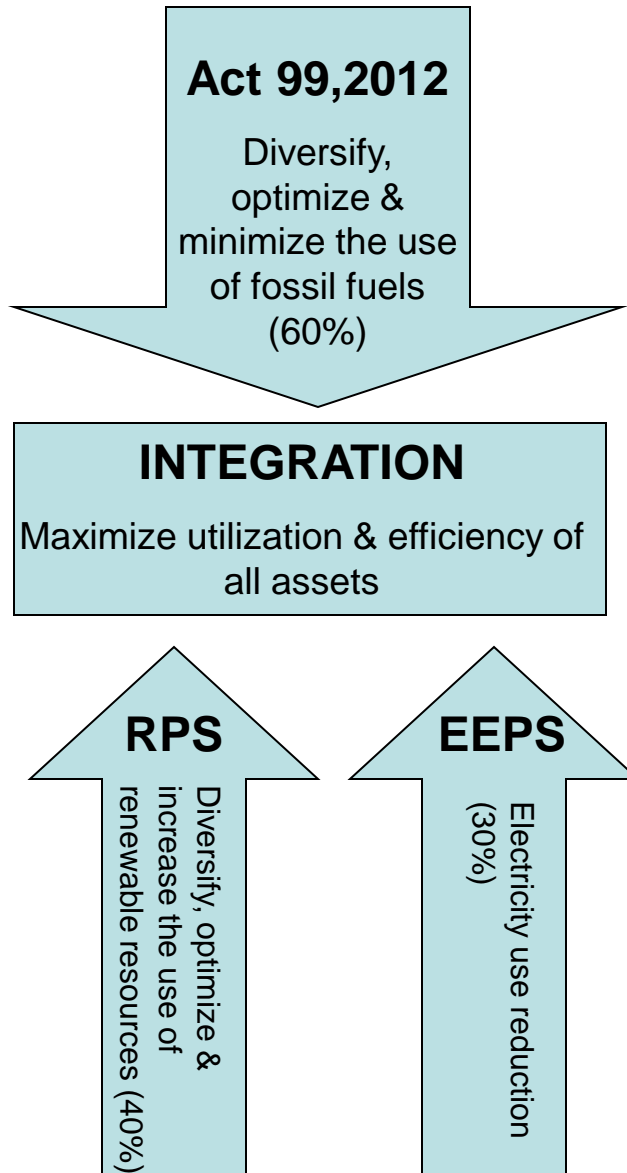
### Key Goals:

- Reduce/stabilize cost of electricity
- Diversify fossil fuel mix to meet emissions rules
- Continue RE and EE growth
- Expand tools to integrate RE & increase EE



2030 <sup>4</sup>

# Driving & Implementing Energy Policy



# **Hawaii's Electricity Rates**

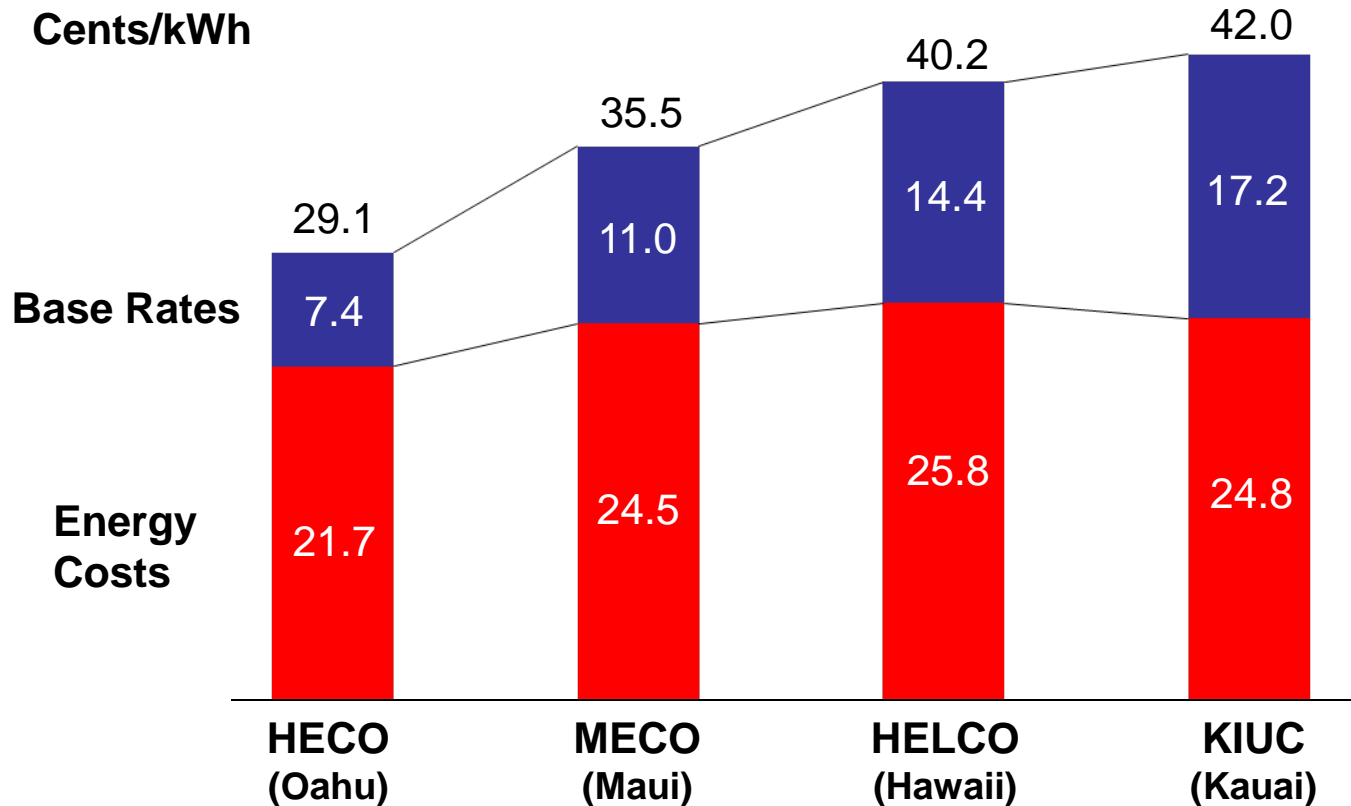
**Historical Trends and Future Perspectives**

# Discussion Topics

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- Historical Electric Rate Trends
- Key Reasons for Recent Electric Rate Increases
- Customer Impacts
- Utility Financial Impacts
- Factors Affecting Future Electric Rate Levels

# Average Electric Rate Level by County: 2011

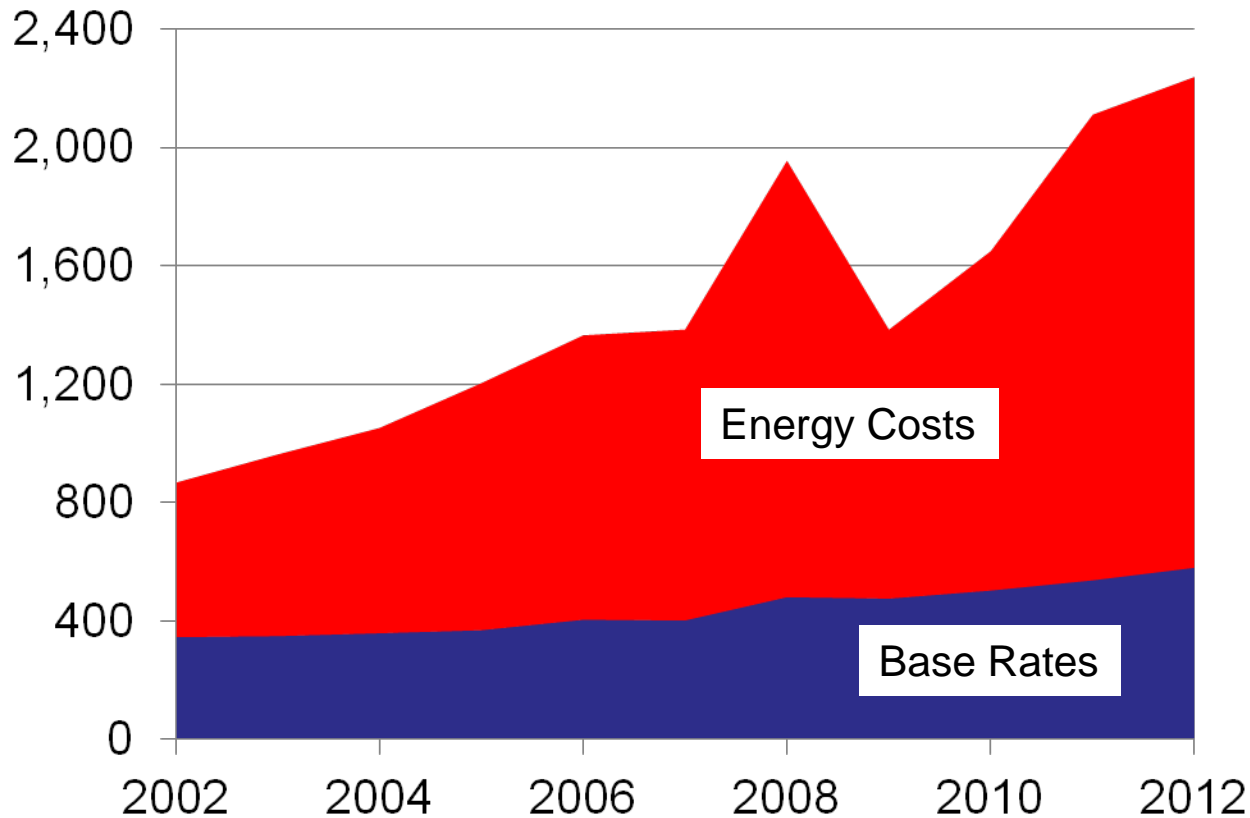


<b>Customers</b>	297,000	68,000	81,000	36,000
<b>Sales (GWh)</b>	7,242	1,181	1,104	435
<b>Capacity (MW)</b>	1,786	290	287	122
<b>Avg Use/Customer (kWh)</b>	23,564	17,369	13,771	11,995
<b>Distribution Lines (Miles)</b>	2,294	1,500	3,212	781

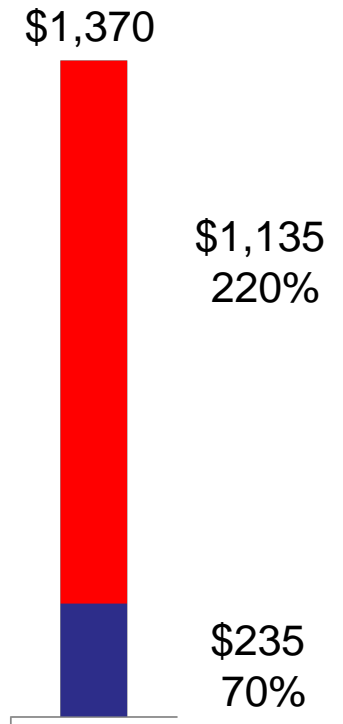


# HECO (Oahu) Electric Revenues: 2002 – September 2012

\$ Millions

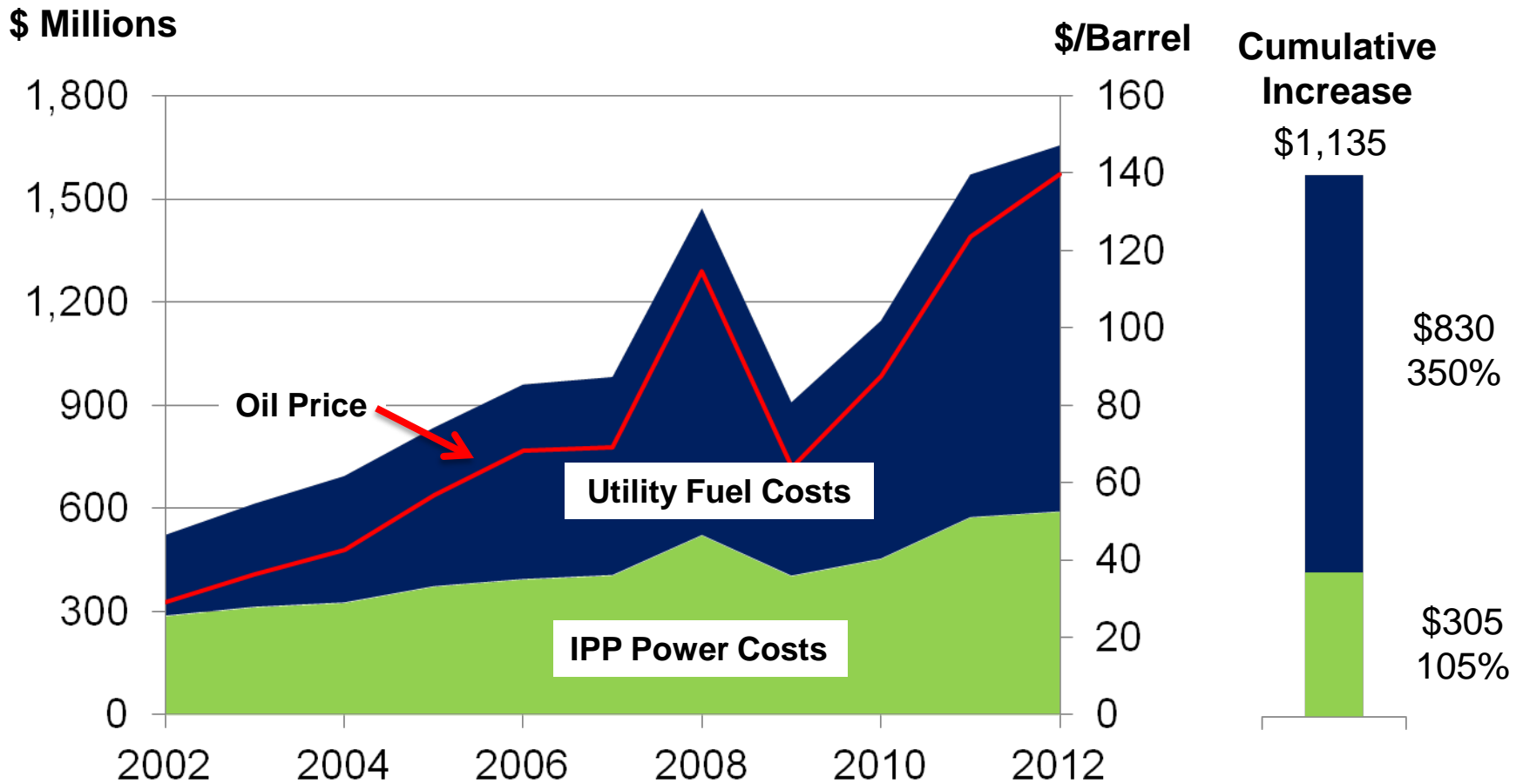


Cumulative Increase



Electric sales declined 5% over 10-year period. Thus, all of the cumulative revenue increase is due to rate increases.

# HECO (Oahu) Energy Cost Revenues: 2002 – September 2012



Utility and IPP generation output remained essentially unchanged over 10 years at a 60%/40% mix, respectively.

# Average Power Supply Costs: HECO Companies vs Independent Power Producers (Cents/kWh)

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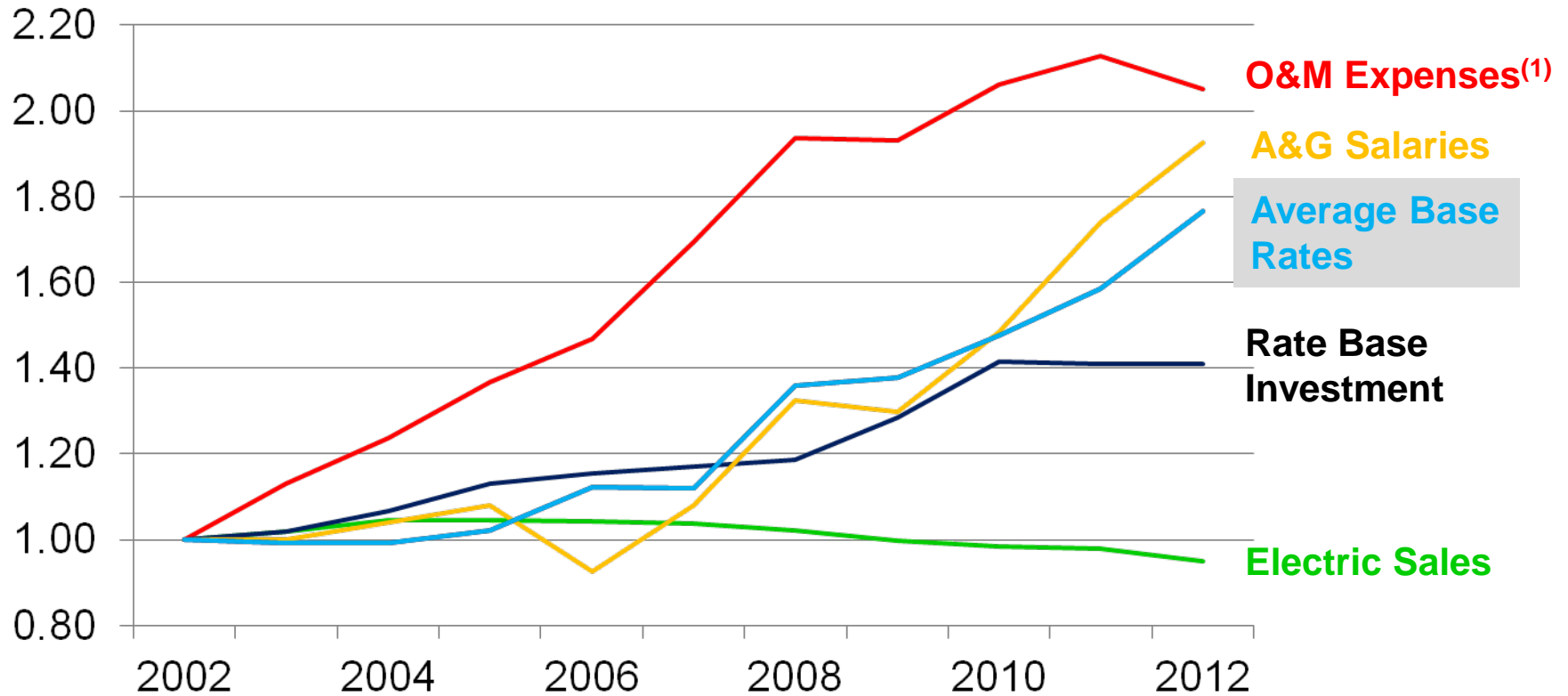
Power Supply Provider	HECO	MECO	HELCO
Utility Generation <sup>(1)</sup>	24.8	28.1	32.1
IPP Generation <sup>(2)</sup>	18.0	17.1	23.9

1) Cost estimate based upon actual 2011 fuel cost, generation operation and maintenance expense, generation-related annual depreciation expense, proration of utility net operating income related to generation net plant investment and fuel inventory plus applicable income and revenue taxes divided by total utility generation output. Excludes any allocation of utility A&G expenses such as power plant employee pension and benefits or property insurance expenses, etc.

2) Cost estimate based upon 2011 actual purchased power capacity and energy expense plus revenue taxes divided by total electricity sold to utility.

# HECO (Oahu) Base Rate Cost Drivers: 2002 – September 2012

Index  
(2002 = 1.00)



1) Additional amounts of O&M expenses were capitalized, rather than expensed, in 2011 and 2012 due to accounting changes. Otherwise, O&M expense levels would have been higher in those two years.

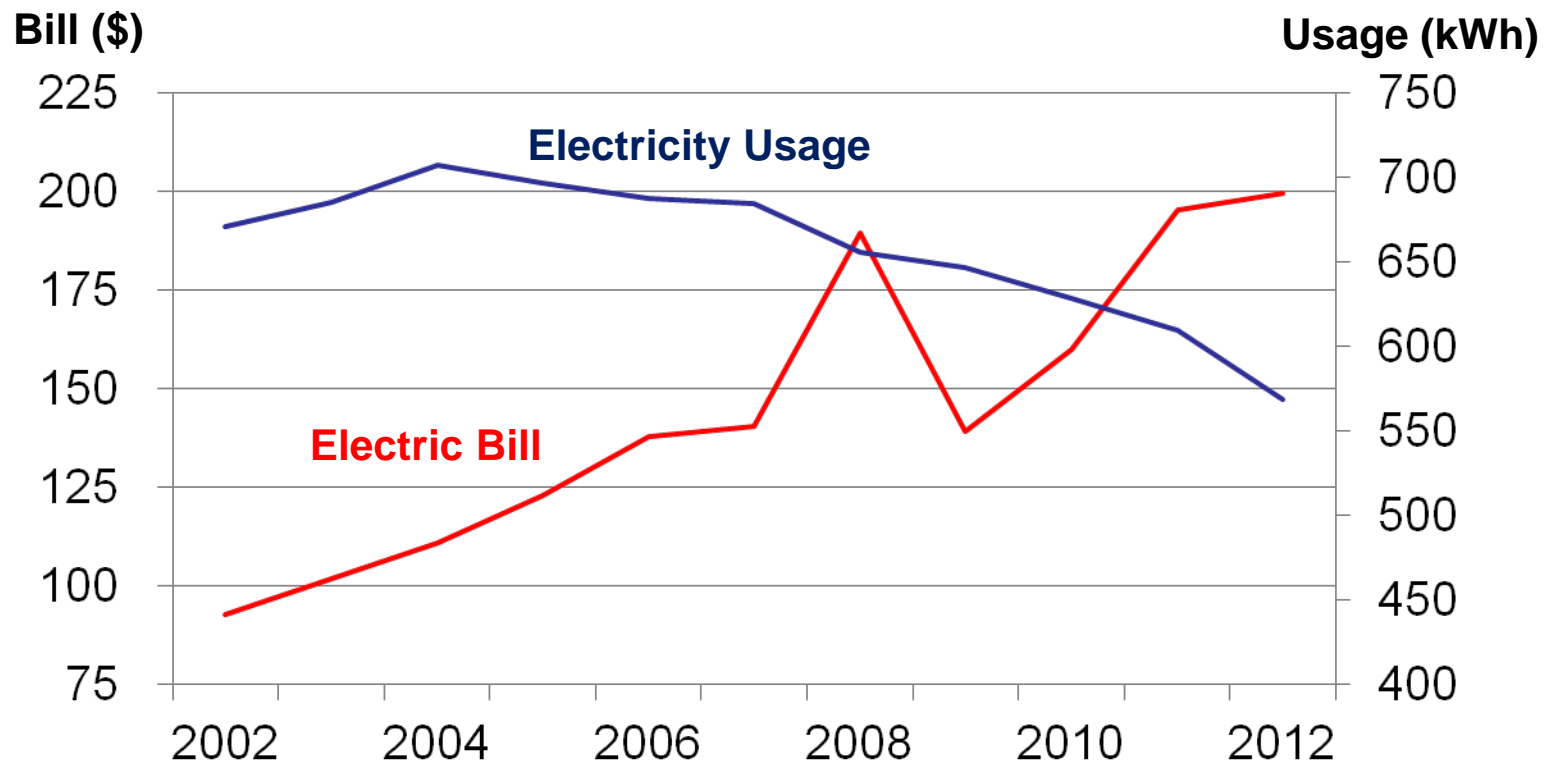
## Electric Utility Rate Cases and Awards: 2005 – 2012

	HECO	MECO	HELCO	Total	KIUC
Number of Rate Cases	4	3	2	9	1
Cumulative Rate Increases Requested (\$ millions)	409	75	71	554	13
Cumulative Rate Increases Granted (\$ millions)	247	31	29	307	3
Increases Granted As Percent of Request <sup>(1)</sup>	60%	41%	41%	55%	24%
Avg. Rate Case Duration <sup>(2)</sup> (Months)	38	39	43	39	15

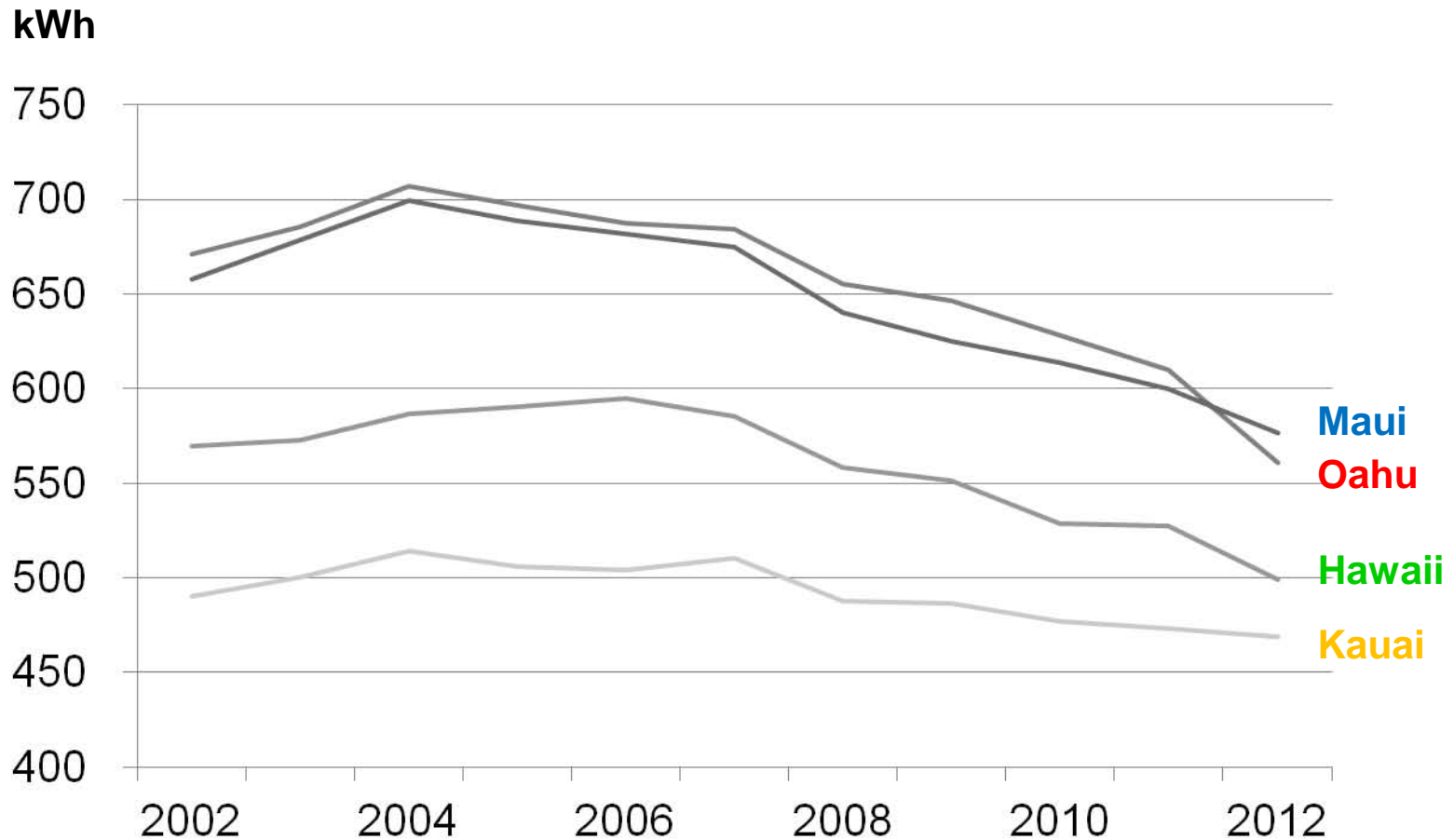
- 1) HECO Companies reached stipulated settlement with the Consumer Advocate in all cases, and, in the case of HECO (Oahu), the Department of Defense. Settlements were approved by Public Utilities Commission as stipulated with minor adjustments on occasion.
- 2) Indicates the duration between filing date and date of final Commission order. Interim orders were issued the within statutory time requirement.

# Impact of Rate Increases on Average HECO (Oahu) Residential Customer: 2002 – September 2012

## Average Monthly Bill vs Average Monthly Usage

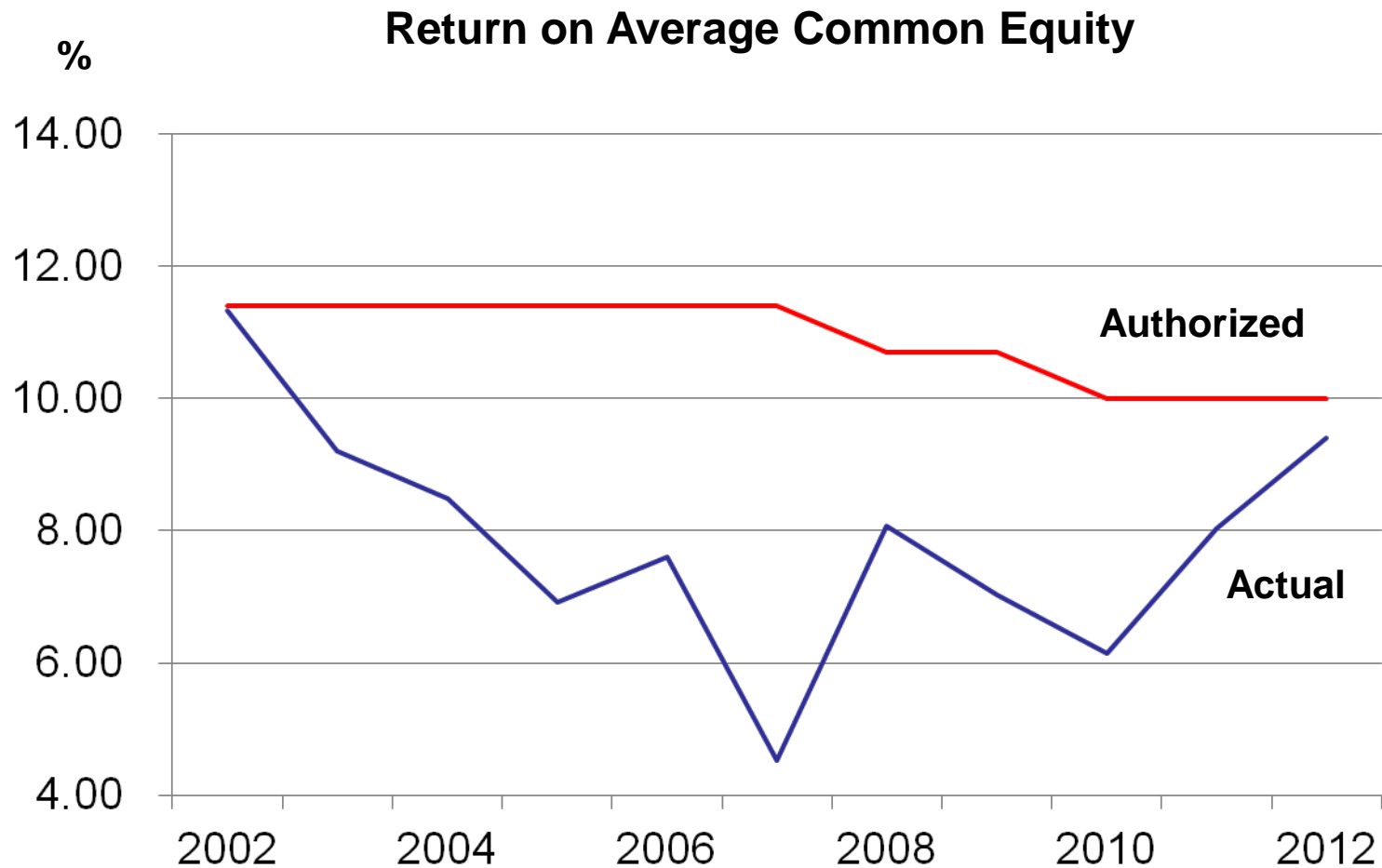


## Average Monthly Residential Energy Use By County: 2002 – 2012



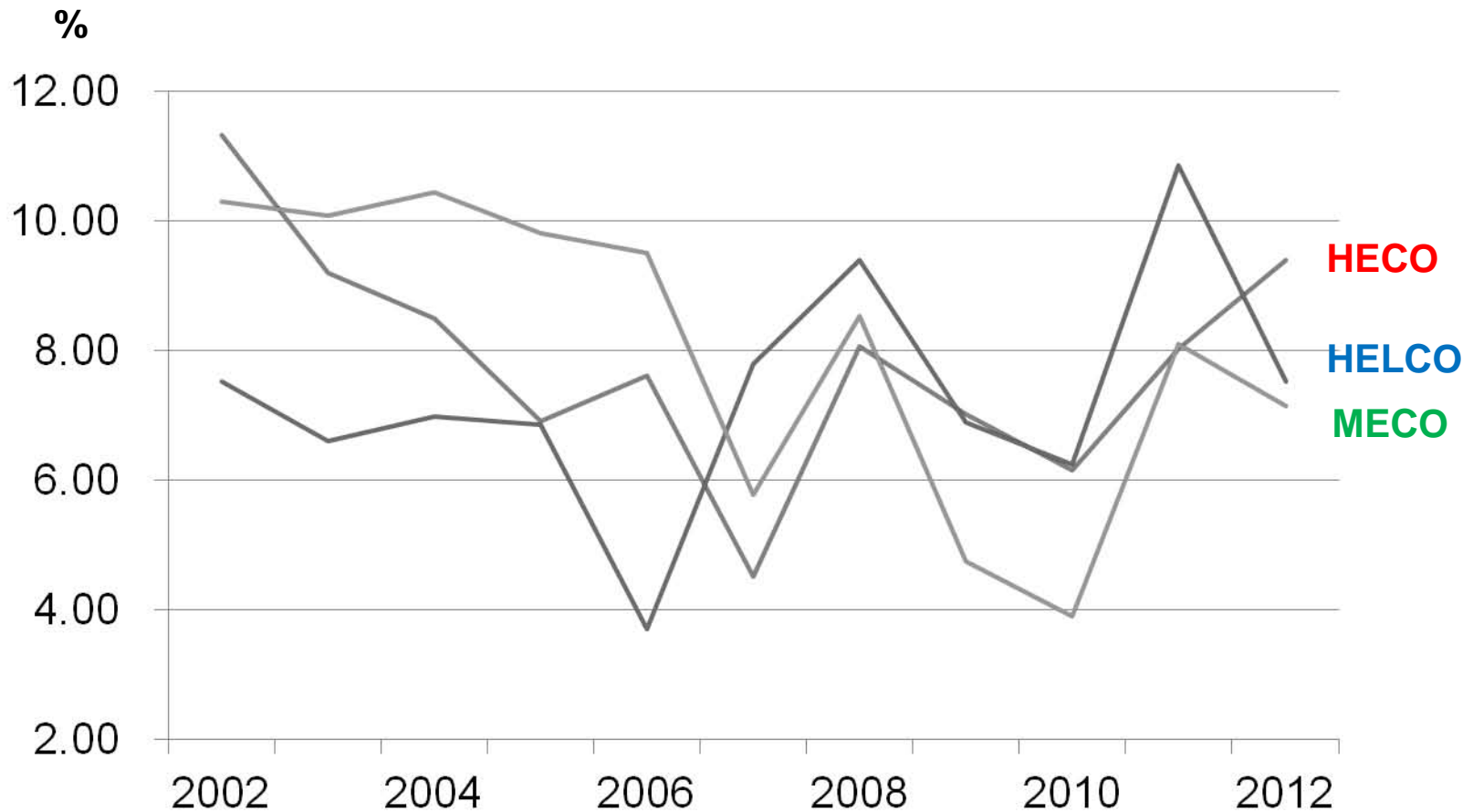
# Authorized vs Actual Rate of Return on Common Equity for HECO (Oahu): 2002 – September 2012

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## Actual Rate of Return on Common Equity: 2002 – September 2012



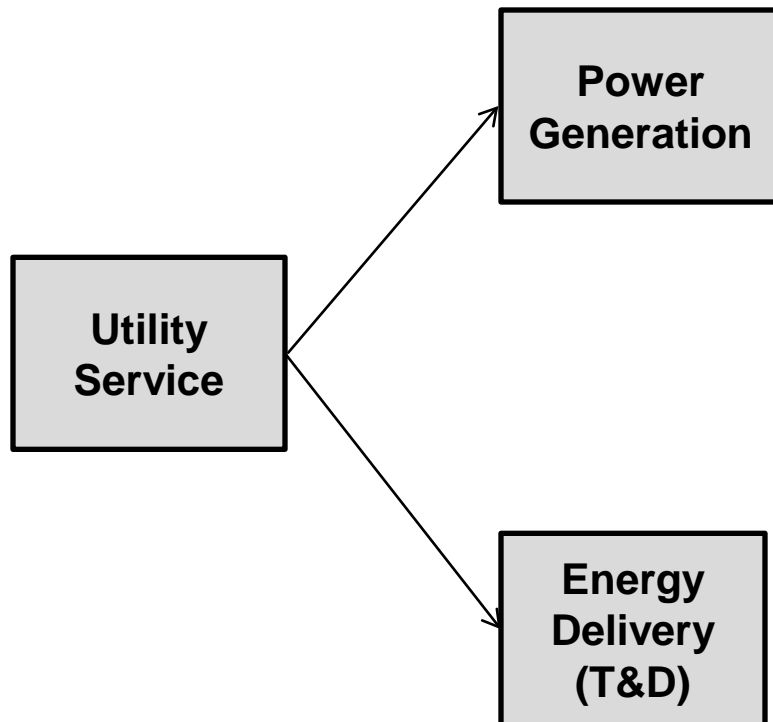
# Potential Drivers of Future Rate Changes

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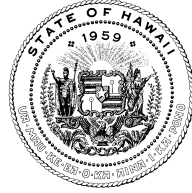
- **Annual decoupling and RAM rate adjustments; 3-year rate case cycle for HECO Companies (Base Rates):**
  - Will HECO Companies implement their 5-year capital expenditure forecast of \$2.6 – 3.0 billion which represents a “7-9% rate base growth” per year?
  - Will substantial increase in utility operation and maintenance expense during past decade continue?
  - Will electrical sales reductions due to energy efficiency, conservation, solar hot water and PV continue?
  - Will HECO Companies restructure utility operations and implement significant cost improvements?
- **Oil commodity prices (ECAC)**
  - Near-term changes in Asian LSFO market; potential restart of Japanese nuclear plants
  - Hawaii refinery situation
  - Existing curtailment of renewable energy resources on neighbor islands
  - Ability to add new, cost competitive renewable energy resources
- **Environmental compliance for existing utility fossil generation plants** – either plant retrofits or fuel switching to Ultra Low Sulfur Diesel (ULSD) would drive rate increases
- **Utilization of LNG in remaining 60% of electric generation** – potential opportunity for meaningful fuel and environmental compliance cost reductions

# Electric Utility Major Functions: Future Policy and Rate Implications

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- Represents  $\approx 75 - 80\%$  of HECO Companies' total cost of service
  - HECO Companies' generation investment  $\approx 30\%$  of its total rate base investment; hence only  $\approx 30\%$  of HECO Companies' profits tied to generation
  - Existing IPP generation is less expensive than HECO Companies' full generation costs
  - Retirements of utility generation to accommodate lower cost renewable energy and fossil resources
- 
- Represents  $\approx 20 - 25\%$  of HECO Companies' total cost of service
  - HECO Companies' T&D investment  $\approx 70\%$  of its total rate base investment and hence  $\approx 70\%$  of HECO Companies' profits
  - Function where many technological advances are occurring – smart meters, smart grid, storage, DC cables, etc.
  - Modernization of grid infrastructure is critical to Hawaii's ability to integrate greater amounts of renewable energy



NEIL ABERCROMBIE  
GOVERNOR

SHAN S. TSUTSUI  
LT. GOVERNOR

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JO ANN UCHIDA TAKEUCHI  
DEPUTY DIRECTOR

TO THE SENATE COMMITTEES ON  
COMMERCE AND CONSUMER PROTECTION  
AND  
ENERGY AND ENVIRONMENT

THE TWENTY-SEVENTH LEGISLATURE  
REGULAR SESSION OF 2013

TUESDAY, JANUARY 29, 2013  
8:30 A.M.

TESTIMONY OF JEFFREY T. ONO, EXECUTIVE DIRECTOR,  
DIVISION OF CONSUMER ADVOCACY,  
DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS,  
TO THE HONORABLE ROSALYN H. BAKER  
AND THE HONORABLE MIKE GABBARD, CHAIRS,  
AND MEMBERS OF THE COMMITTEE

**INFORMATIONAL BRIEFING**

My name is Jeffrey T. Ono. I am the Executive Director for the Division of Consumer Advocacy ("Consumer Advocate") from the Department of Commerce and Consumer Affairs. The following is my testimony for this informational briefing.

Hawaii consumers pay some of the highest electricity prices in the nation. The State's policymakers search for solutions, which are difficult to find, because so much of the cost of electricity is driven by Hawaii's dependence on imported foreign oil as the primary source of electricity generation. The Consumer Advocate is committed to renewable energy generation and energy efficiency as the principal means to move our State toward a clean, sustainable energy future that isn't reliant on foreign oil. In 2012, when oil prices were once again on the rise with no end in sight, the argument for the

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Senate Committee on Energy and Environment  
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adoption of more and more renewable energy was not difficult. Today with stable oil prices, the Consumer Advocate is concerned that the state will lose its momentum and its commitment to all forms of renewable energy.

In the last quarter of 2012, Hawaii saw electricity rates decrease for all islands. In January, 2013, rates on Oahu and Hawaii Island rose by approximately one cent per kwh, but fell on Maui and Kaua'i. This overall slight decline in rates over the last four months is due to the drop in oil prices.

In an interview with a Honolulu Star-Advertiser reporter, energy consultant Professor Fereidun Fesharaki stated that his long-term price forecast for oil is \$30 per barrel less than it is today. He indicated that oil prices will start to decline by around 2015, going down to \$80 per barrel, then staying at that level for a number of years. He went so far as to say that oil prices may go even lower than that. Professor Fesharaki offered similar opinions in his report on liquefied natural gas ("LNG") that was commissioned by Hawaii Natural Energy Institute ("HNEI").

If oil prices decline as Dr. Fesharaki predicts, will State policymakers lose the momentum toward renewable energy resources that may be priced higher than the cost of generating electricity using oil? Will our concern for current electricity prices delay or kill the adoption of renewable energy projects? Do we wait out the next five years and stay the course using oil to generate electricity in the hope that oil prices will decline as Dr. Fesharaki predicts?

We need to keep in mind that not every oil price forecaster is thinking that oil prices will be declining. The Department of Energy in its Annual Energy Outlook ("AEO") predicts a steady rise in oil prices over the next 30 years. We cannot risk our future by staying on what has been rising and volatile oil prices. We need to push toward the state's Renewable Portfolio Standards ("RPS") and Energy Efficiency Portfolio Standards ("EEPS") goals.

The Consumer Advocate is not oblivious to the current economic hardships Hawaii's citizens are facing with the high cost of electricity. So what is the Consumer Advocate doing to keep electricity prices down?

First, in every electric utility rate case, the Consumer Advocate scrutinizes every expense item, every new employee, every pay raise. We retain one of the most well respected consultants in the country – Utilitech, Inc.. We scrutinize each of the electric utilities investments to determine if the utilities have sustained their burden of proving that there is a net benefit to ratepayers in making the investment.

Second, we will continue our fight to drive Power Purchase Agreement (“PPA”) prices down. It has been a mystery as to why wind and solar PPA prices have not dropped significantly as they have on the mainland. Why are Hawaii’s wind and solar PPAs consistently priced at 20 cents per kwh when on the mainland we see prices that are below 10 cents per kwh?

Third, we argue against indexed pricing for fuel supply contracts. For example, in a recently approved biodiesel supply contract we expressed our concern over the pricing term of the contract that was indexed to mainland biodiesel prices, because mainland biodiesel prices tend to follow petroleum prices. Ultimately, for that particular contract, we did not object to the pricing terms, because the term of the contract was for a relatively short three years. We will continue our commitment to see PPA pricing at fixed prices.

Fourth, we push for on-bill financing as a means of providing moderate to low income households and renters access to the benefits of solar photovoltaic (“PV”) systems that would lower monthly electricity bills and save on the amount of electricity that has to be generated by the utility using oil. Energy efficiency should not be for the wealthy only. There are too many homeowners in Hawaii who do not have the necessary up front cash to pay for a PV system. A well-designed on-bill financing program that allows consumers to pay for the installation of a solar pv system through the electricity cost savings achieved by such a system is key to moving the state toward greater distributed renewable energy generation by allowing greater public participation.

Fifth, although the Consumer Advocate understands the importance of renewable energy projects, the Consumer Advocate will not ignore the potential cost savings that might be achieved if the state moves toward LNG as a fuel source for electricity generation. Thus far, the studies done by HNEI, HECO, and Hawaii Gas indicate that LNG offers Hawaii consumers a very real opportunity to see lower electricity rates. The technical, regulatory, and infrastructure challenges of LNG importation to Hawaii are extremely difficult to assess. The Consumer Advocate will take an active role in the regulatory assessment of LNG.

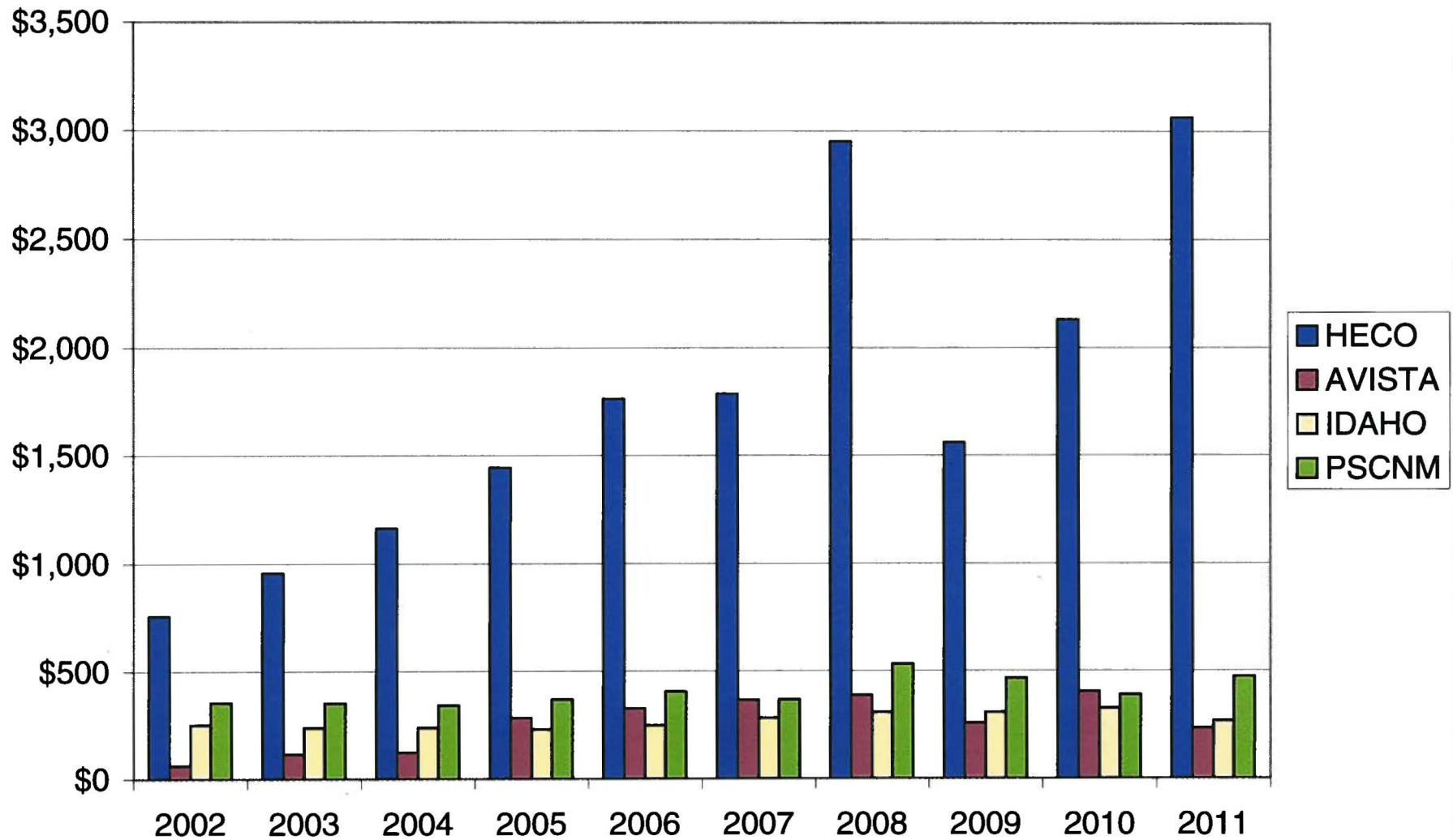
As a final point on the high cost of electricity in Hawaii, we cannot lose sight of what the future holds for Hawaii’s consumers. We have to consider the long-term effects of what we do and which projects are approved. We cannot reject renewable energy projects simply because they cause an increase electricity bills today, if those projects will result in stable prices that are lower than the Department of Energy’s forecasted price of oil in the future. Furthermore, costs need to be balanced against the

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State's goal of energy sustainability and independence; the electric utilities need to provide reliable and safe service; the State's need to create jobs and stimulate the economy; the desire to have community acceptance over all projects; and the need to maintain a clean and healthy environment.

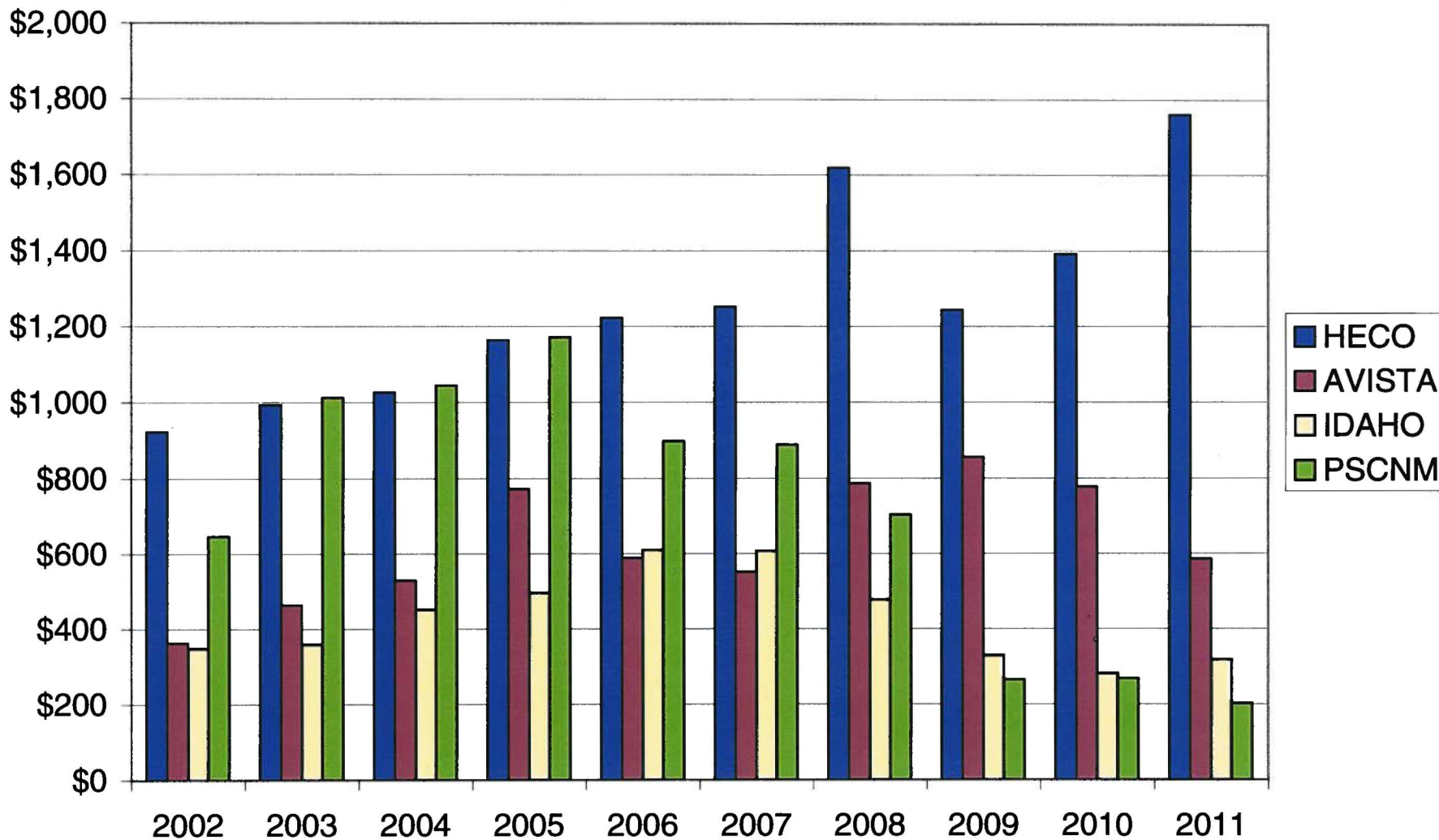
Thank you for this opportunity to testify.

## Fuel Expense Per Customer

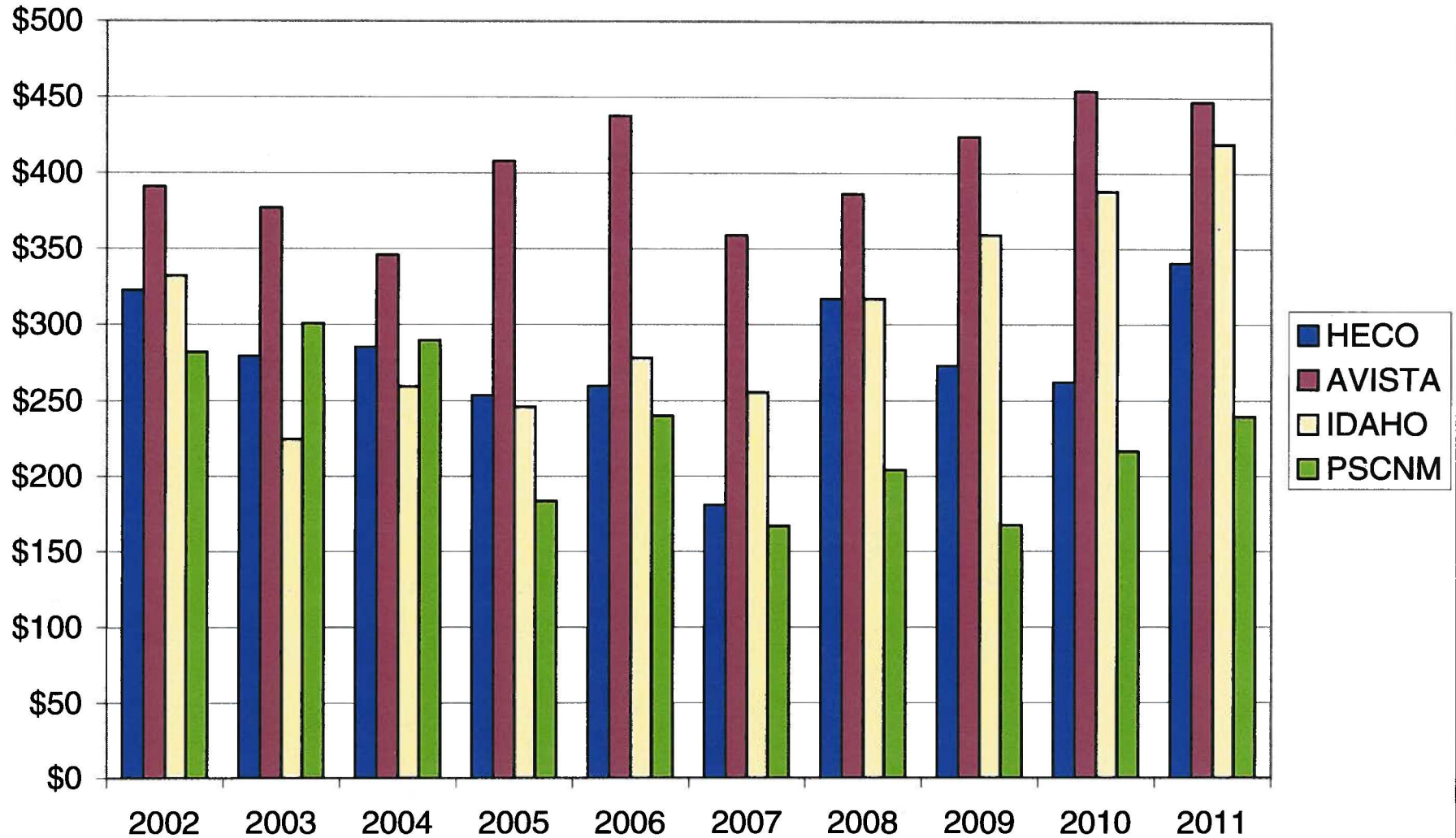




## Purchased Power Expense Per Customer



## Net Income Per Customer



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Senate Committee on  
Commerce and Consumer Protection  
Senate Committee on  
Energy and Environment**

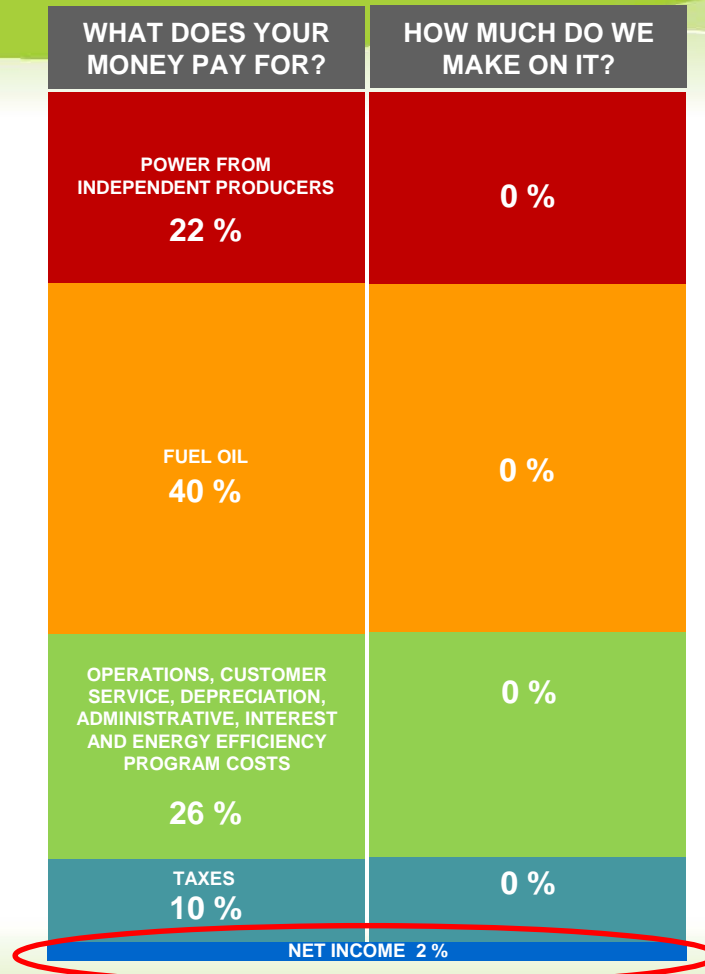
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Tuesday  
January 29, 2013



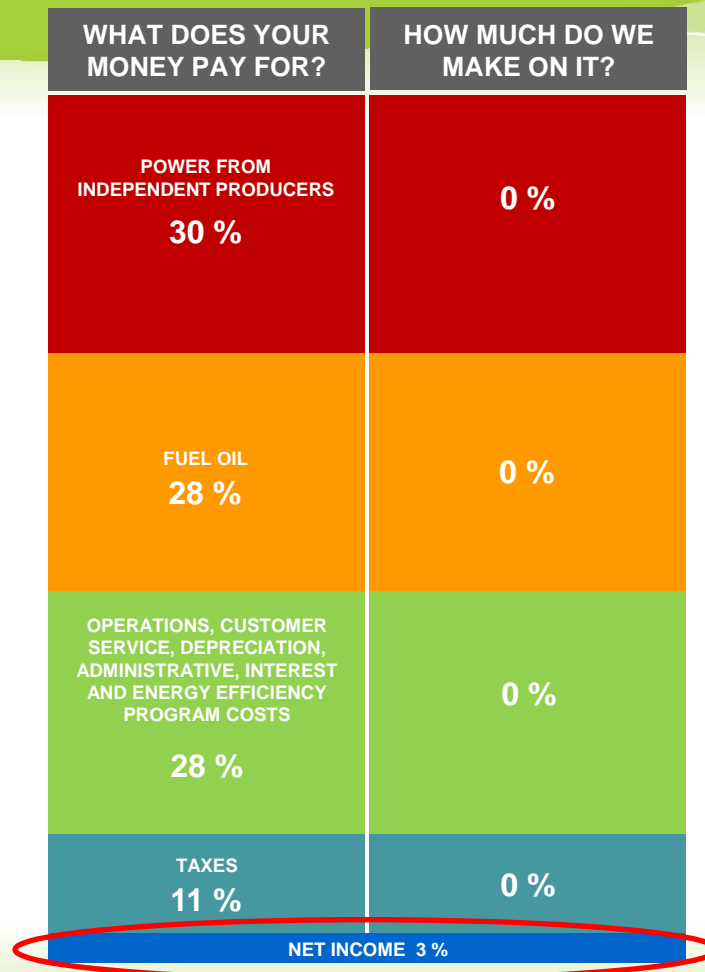
Hawaiian Electric Company  
Maui Electric Company  
Hawaii Electric Light Company

# Oahu electric bill (as of 1/2013)



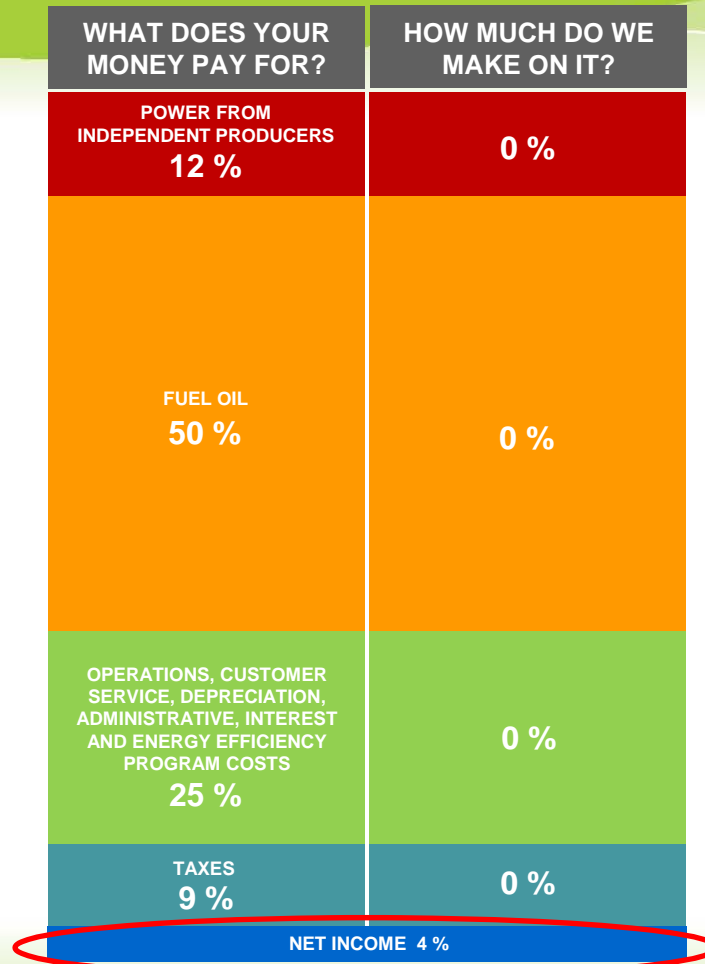
Hawaiian Electric Company  
Maui Electric Company  
Hawaii Electric Light Company

# Hawaii Island electric bill (as of 1/2013)



Hawaiian Electric Company  
Maui Electric Company  
Hawaii Electric Light Company

# Maui electric bill (as of 1/2013)



Hawaiian Electric Company  
Maui Electric Company  
Hawaii Electric Light Company

ACCOUNT SUMMARY (See Bill Detail section for more information)	
Service Period	03/02/12 - 04/02/12
Previous Balance	\$218.43
Payments	\$218.43-
<b>OUTSTANDING BALANCE</b>	<b>\$0.00</b>
Current Charges	\$203.76
Adjustments	\$0.00
Current Charges	\$203.76
<b>TOTAL AMOUNT DUE 04/23/2012</b>	<b>\$203.76</b>

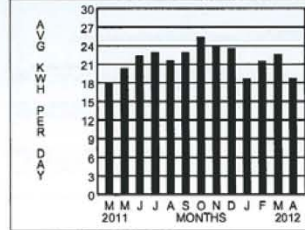
**MESSAGES**

Celebrate Earth Day and plant a native tree. Trees absorb CO2 which can help in the fight against global warming.  
 Celebrate Earth Day and plant a native tree. Trees absorb CO2 which can help in the fight against global warming.

Fuel and Purchased Power make up \$126.50 of this \$203.76 bill example.

BILL PERIOD					
METER#	REGISTER	CURRENT READING	PREVIOUS READING	DIFFERENCE	MULTIPLIER
MPX000432675	KWH	28,456.00	27,856.00	600.00	1

USAGE PROFILE	
ELECTRIC USAGE PROFILE FOR METER MPX000432675	



**Hawaiian Electric Company**  
 PO Box 3978  
 Honolulu, HI 96812-3978

Account Number:  
 202004062933  
 Invoice Number:  
 600001780

Service Address Page 2 of 2  
 1234 OAHU ST  
 Contract:  
 32427071

BILL DETAIL		
DESCRIPTION	AMOUNT	TOTALS
<b>PREVIOUS BALANCE</b>	\$218.43	
Incoming Payment Thank You	\$218.43-	
<b>Outstanding Balance</b>		<b>\$0.00</b>
<b>CURRENT CHARGES</b>		
Electric Service R Residential Service		
Customer Charge	\$8.00	
Base Fuel Energy	\$54.42	
Non Fuel Energy	\$47.88	
Energy Cost Adjustment	\$69.21	
IRP Cost Recovery	\$0.21	
PBF Surcharge	\$4.06	
Purchased Power Adjustment	\$15.20	
Interim Increase 2011	\$4.78	
<b>Total for Current Charges</b>		<b>\$203.76</b>
<b>Total Amount Due</b>		<b>\$203.76</b>

Contact Information

When a Bill is Estimated

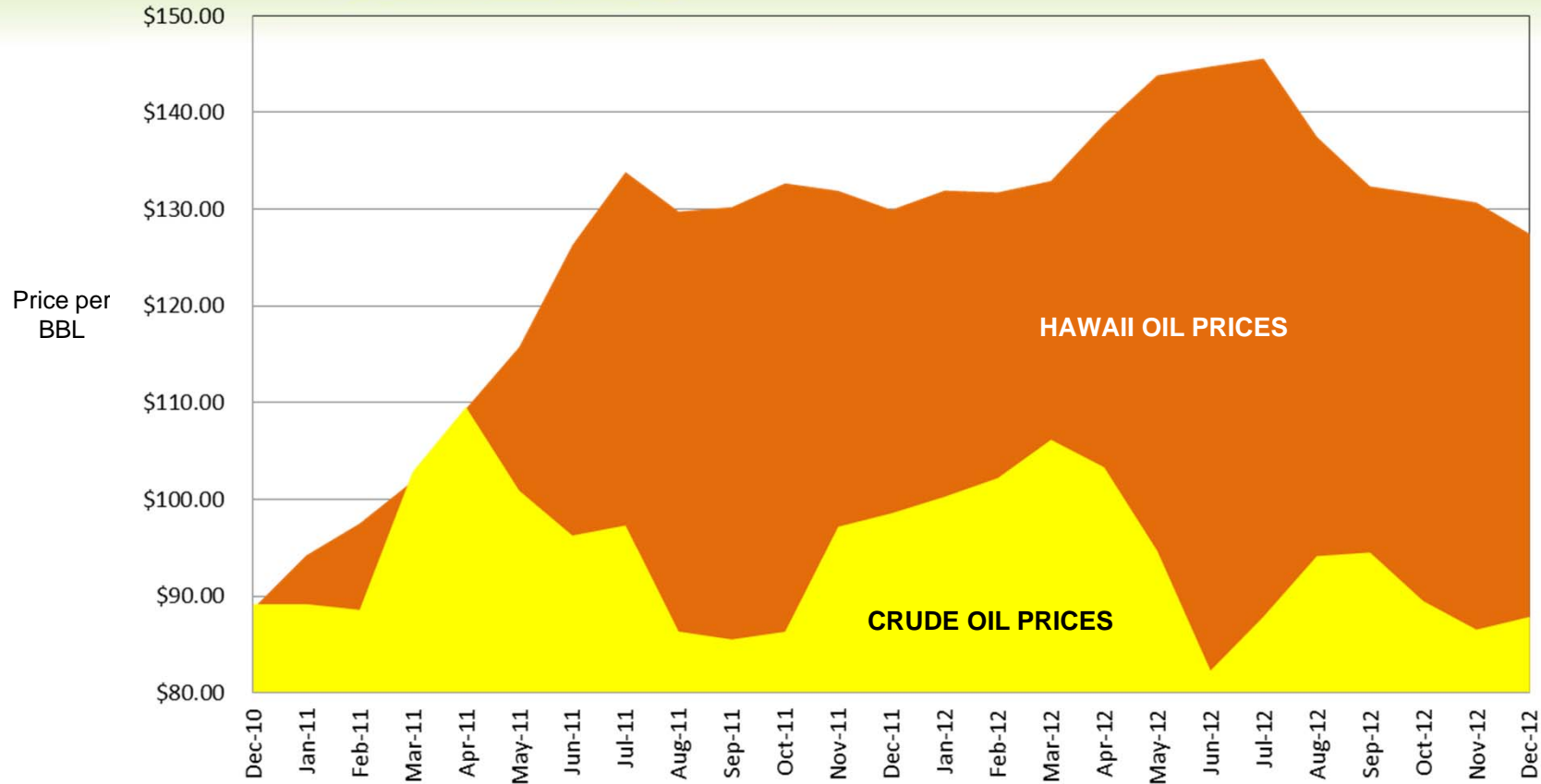


**Hawaiian Electric Company**  
**Maui Electric Company**  
**Hawaii Electric Light Company**

# Historical Fuel Prices

## Low Sulfur Fuel Oil vs. Crude Oil

### December 2010 to December 2012



Hawaii oil prices based on Hawaiian Electric low sulfur fuel oil inventory prices

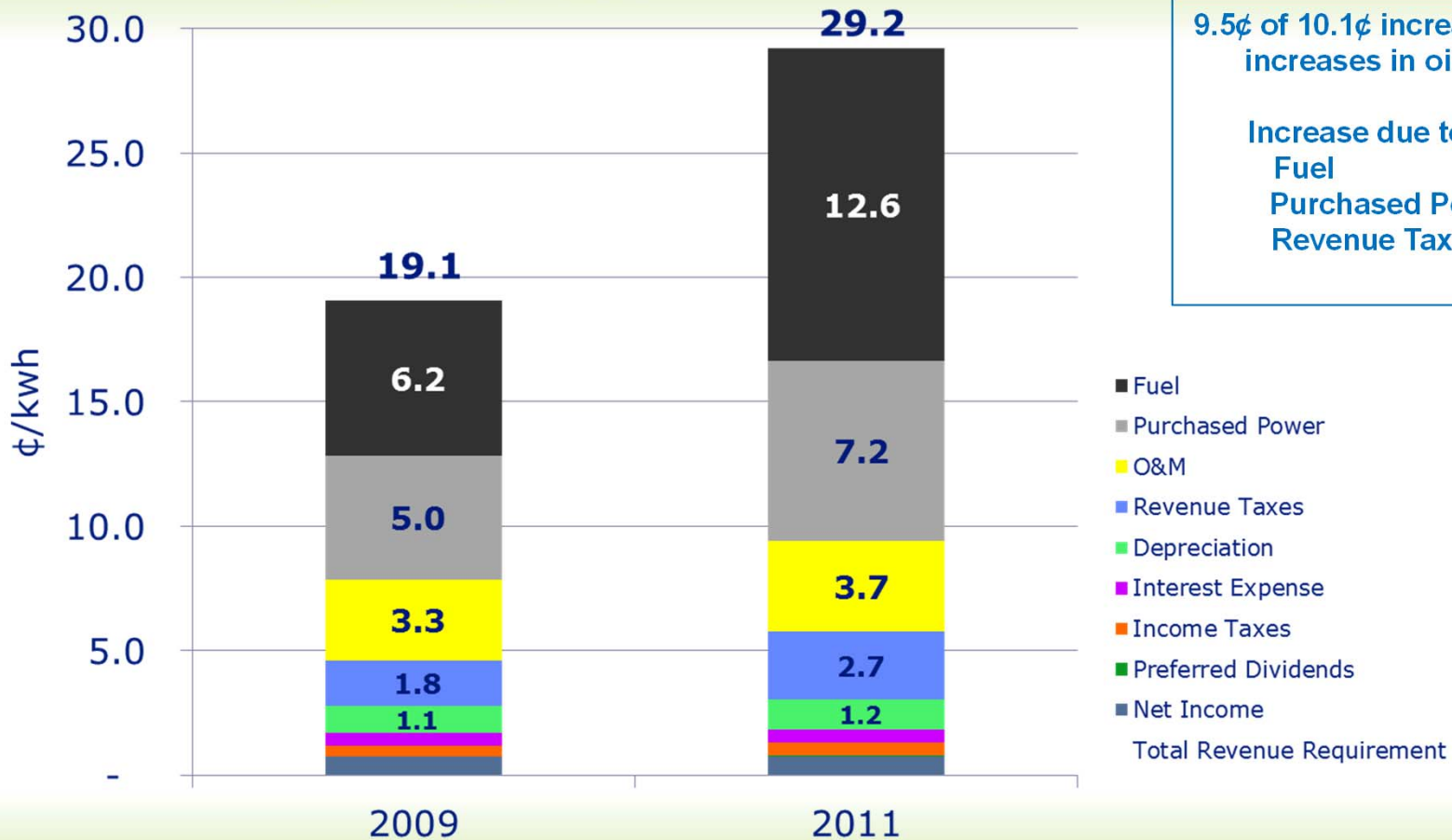


**Hawaiian Electric Company**  
**Maui Electric Company**  
**Hawaii Electric Light Company**



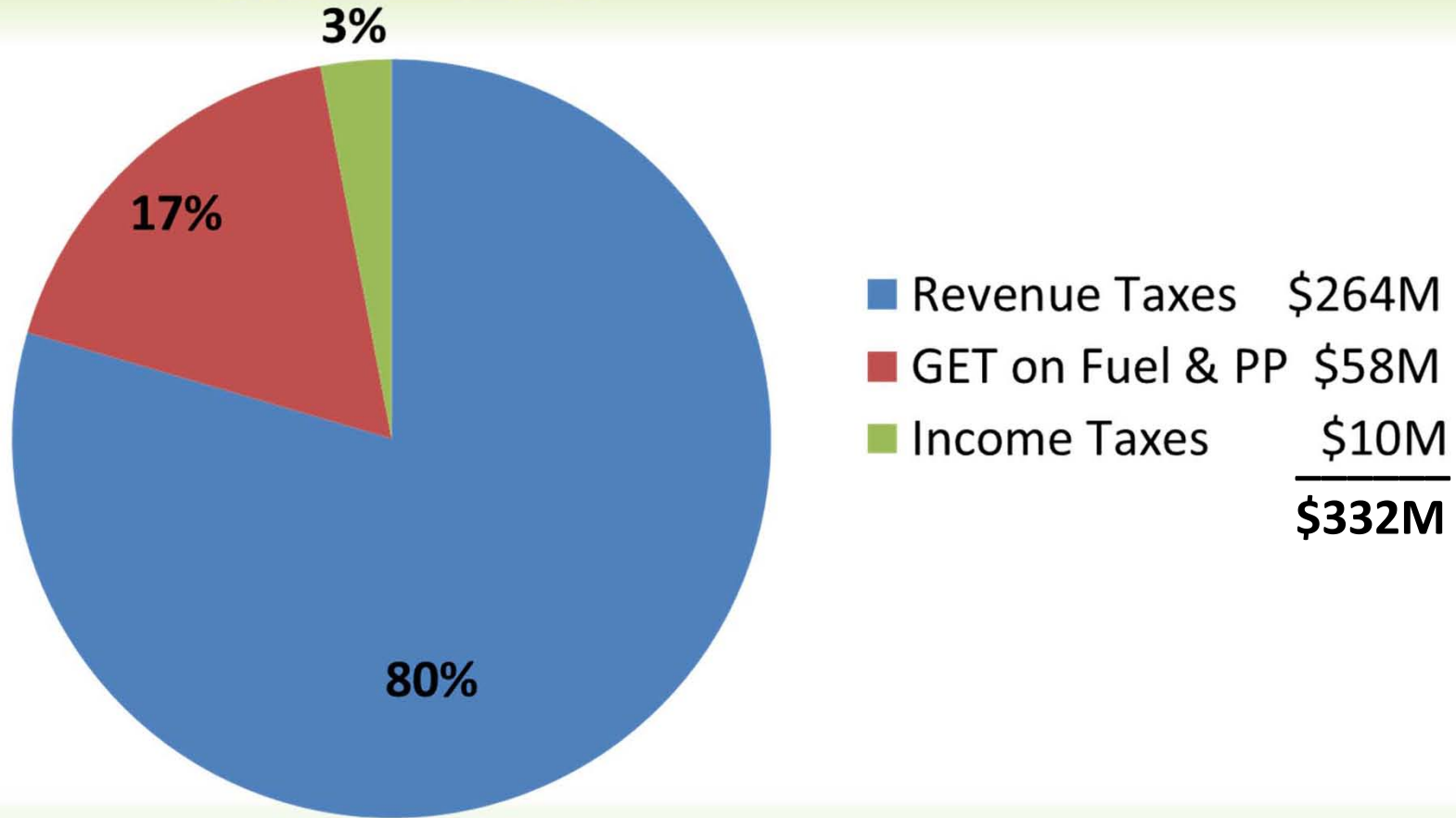
# Customers are paying more, due to increases in oil prices

2009 vs. 2011 ¢/kwh



Hawaiian Electric Company  
 Maui Electric Company  
 Hawaii Electric Light Company

# 2011 Consolidated Taxes to State and County



Hawaiian Electric Company  
Maui Electric Company  
Hawaii Electric Light Company

# Ratemaking Formula

$$RR = O + T + D + r (RB)$$

Where:

RR = Revenue Requirements

O = Operations & Maintenance Expense

T = Tax Expense

D = Depreciation Expense

r = Rate of Return on Rate Base

RB = Rate Base



Hawaiian Electric Company  
Maui Electric Company  
Hawaii Electric Light Company

# Lowering customer bills

(2008 Clean Energy Agreement)

	Short Term	Long Term
ALL CUSTOMERS	Feed-inTariff to replace net metering Avoided cost contract renegotiation	Renewable Energy esp. larger scale projects esp. wind  Inter-island cable  Energy Efficiency Portfolio Standard
SELF-SELECTING CUSTOMERS	Energy Efficiency Demand Response/Load Management Solar Water Heating PV/NEM Time-of-use Rates Lifeline Rates Electric Vehicle (EV) Tariff	EVs on a large scale

# Lowering customer bills

## (New Day Plan)

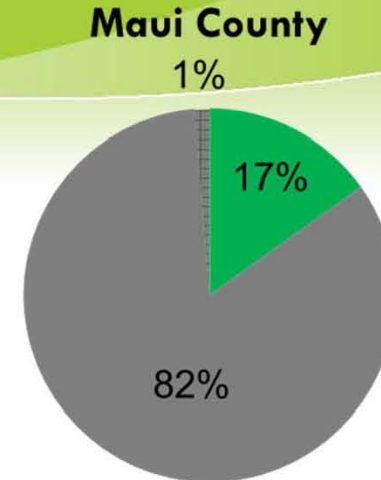
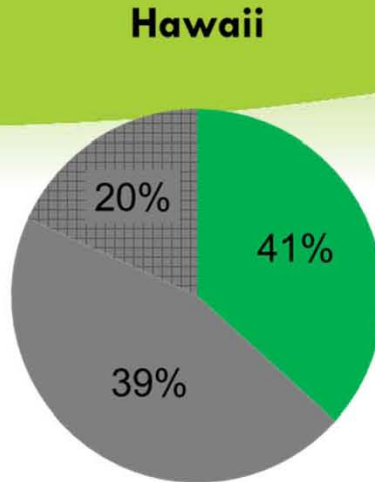
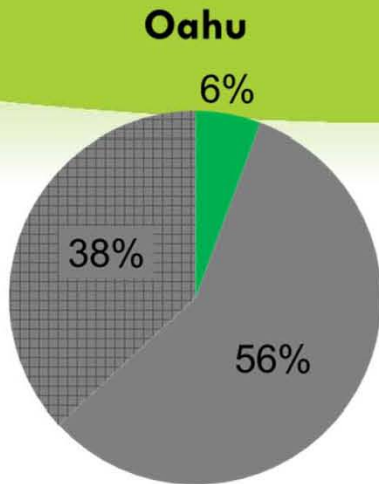
	Short Term	Long Term
ALL CUSTOMERS	<p>Avoided cost contract renegotiation</p>	<p>Renewable Energy esp. larger scale projects esp. wind, <b>geothermal</b>, <b>biofuels</b>, <b>biomass</b>, and <b>OTEC</b></p> <p>Inter-island cable</p> <p>Energy Efficiency Portfolio Standard</p> <p><b>Statewide Rates (for Neighbor Islands)</b></p>
SELF-SELECTING CUSTOMERS	<p>Energy Efficiency</p> <p>Demand Response/Load Management</p> <p><b>On-Bill financing of solar water heating</b></p> <p>PV/NEM</p> <p>Time-of-use Rates</p> <p>Lifeline Rates</p> <p>Electric Vehicle (EV) Tariff</p>	<p>EVs on a large scale</p>

# Lowering customer bills

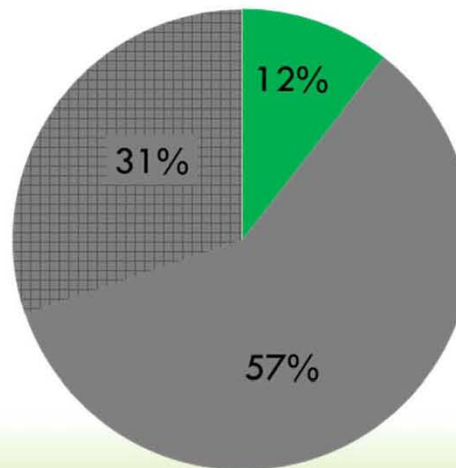
(2012 and onwards)

	Short Term	Long Term
ALL CUSTOMERS	<p> <span style="background-color: #f4a460;">Rethink bidding process</span> ←  <span style="background-color: #f4a460;">Waivers from bidding by price</span>  <span style="background-color: #f4a460;">Direct investment on renewables</span>  <span style="background-color: #f4a460;">Black pellets</span>  <span style="background-color: #f4a460;">LNG to selected units in ISO containers</span> ←  <span style="background-color: #f4a460;">Consolidation of companies</span>  <span style="background-color: #f4a460;">Unit retirements</span>  <span style="background-color: #f4a460;">Review of FIT rates</span> </p> <p>           Avoided cost contract renegotiation  <span style="background-color: #f4a460;">Refinancing debt</span>  <span style="background-color: #f4a460;">O&amp;M to capital</span>  <span style="background-color: #f4a460;">Operational efficiencies</span> </p>	<p> <span style="background-color: #ffff00;">Renewable Energy</span>            esp. larger scale projects            esp. wind, geothermal, biofuels, biomass, and OTEC  <span style="background-color: #ffff00;">LNG</span>  <span style="background-color: #ffff00;">Inter-island cable</span>  <span style="background-color: #ffff00;">Energy Efficiency Portfolio Standard</span>  <span style="background-color: #ffff00;">Statewide Rates (for Neighbor Islands)</span> </p>
SELF-SELECTING CUSTOMERS	<p> <span style="background-color: #ffff00;">Energy Efficiency</span>  <span style="background-color: #ffff00;">Demand Response/Load Management</span>  <span style="background-color: #ffff00;">On-Bill financing of solar water heating</span>  <span style="background-color: #ffff00;">PV/NEM</span>  <span style="background-color: #ffff00;">Time-of-use Rates</span>  <span style="background-color: #ffff00;">Lifeline Rates</span>  <span style="background-color: #ffff00;">Electric Vehicle (EV) Tariff</span>  <span style="background-color: #f4a460;">Bill payment options</span>  <span style="background-color: #f4a460;">Pre-paid meters</span> </p>	<p> <span style="background-color: #add8e6;">EVs on a large scale</span> </p>

# Percent Renewable Generation - 2012



## Consolidated



- RE Generation
- Fossil Generation (Utility)
- Fossil Generation (Non-Utility - hatched)

*This is based on system net generation and the RE does not include self-generation.*



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Hawaii Electric Light Company

# Hawaii's Renewable Energy Story

Chapter	Hawaii Electric Light	Maui Electric	Hawaiian Electric
The Plantation Chapter	[HCPC]	[HC&S]	
The PURPA Chapter (Avoided Cost Contracts)	Wailuku River Hydro PGV Tawhiri HRD	HC&S Makila Hydro  KWP I	H-Power
The Competitive Bidding Chapter	<i>"Grandfathered Projects"</i>		CIP CT1
	----- Avoided Cost Ends -----		Honua Kahuku Wind (OTEC International)
	<i>"Exempt/Waivered"</i> PGV+8 (Hu Honua)	La Ola	H-Power + 27
	<i>"2008 Oahu Bid"</i>		Sunpower Kawailoa (Lanai)
	<i>"2010 Biofuels Bid"</i> (AKP)		(HBE)
	← 50MW Geothermal Bid	30MW Firm Bid	→ 200MW Oahu 200MW Firm Bid

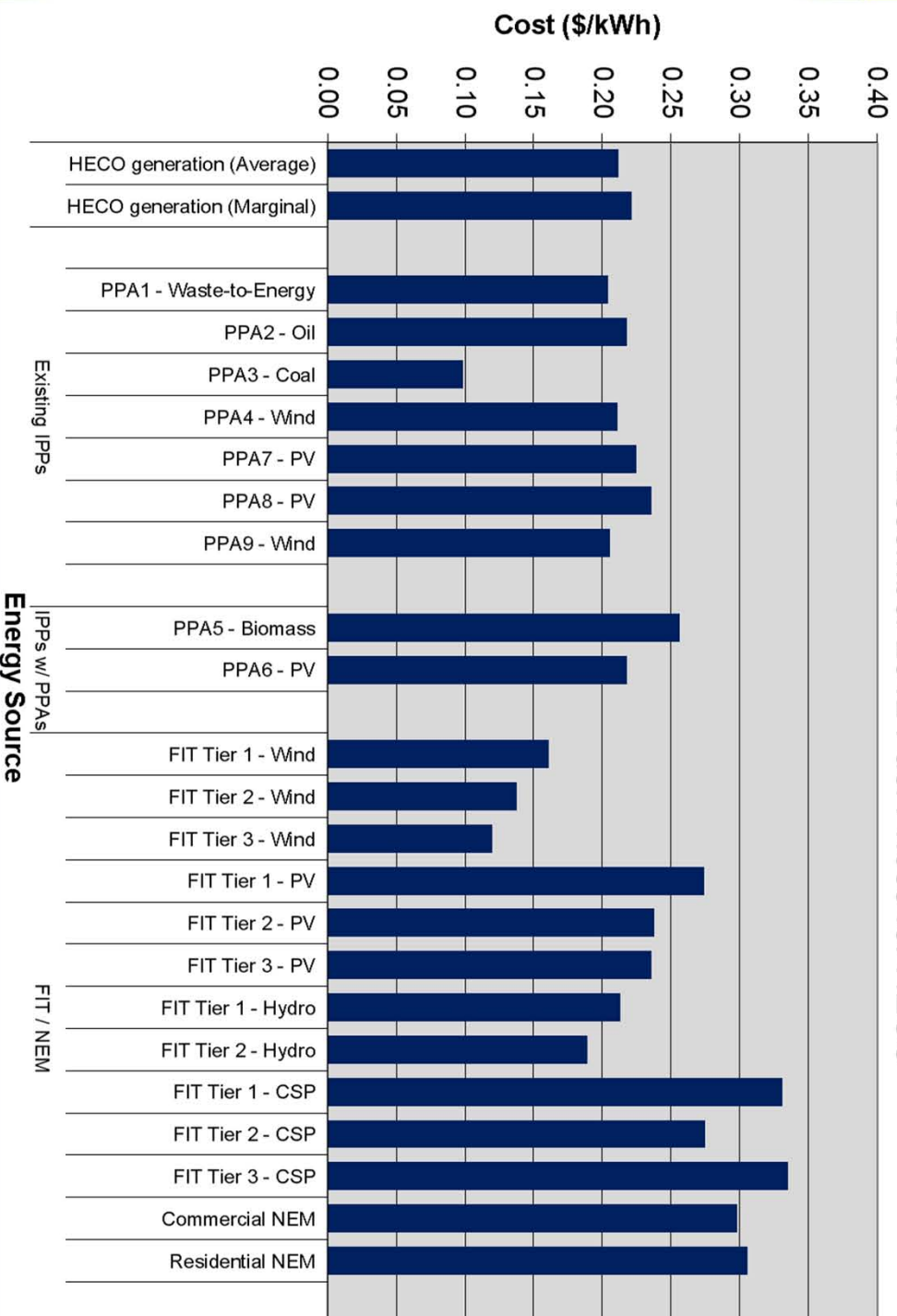


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# Cost of Generation - Oahu

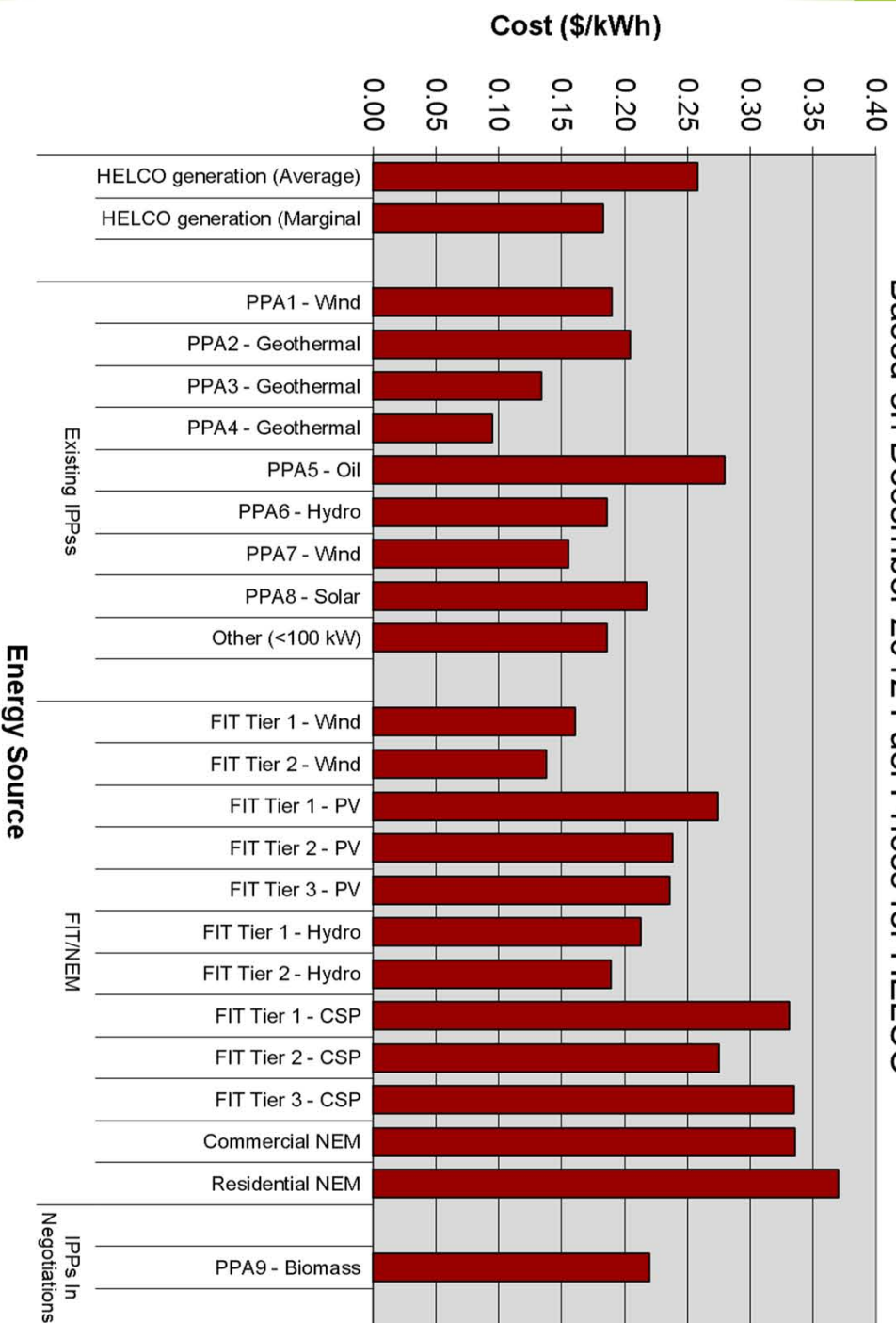
Based on December 2012 Fuel Prices for HECO



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# Cost of Generation – Hawaii Island

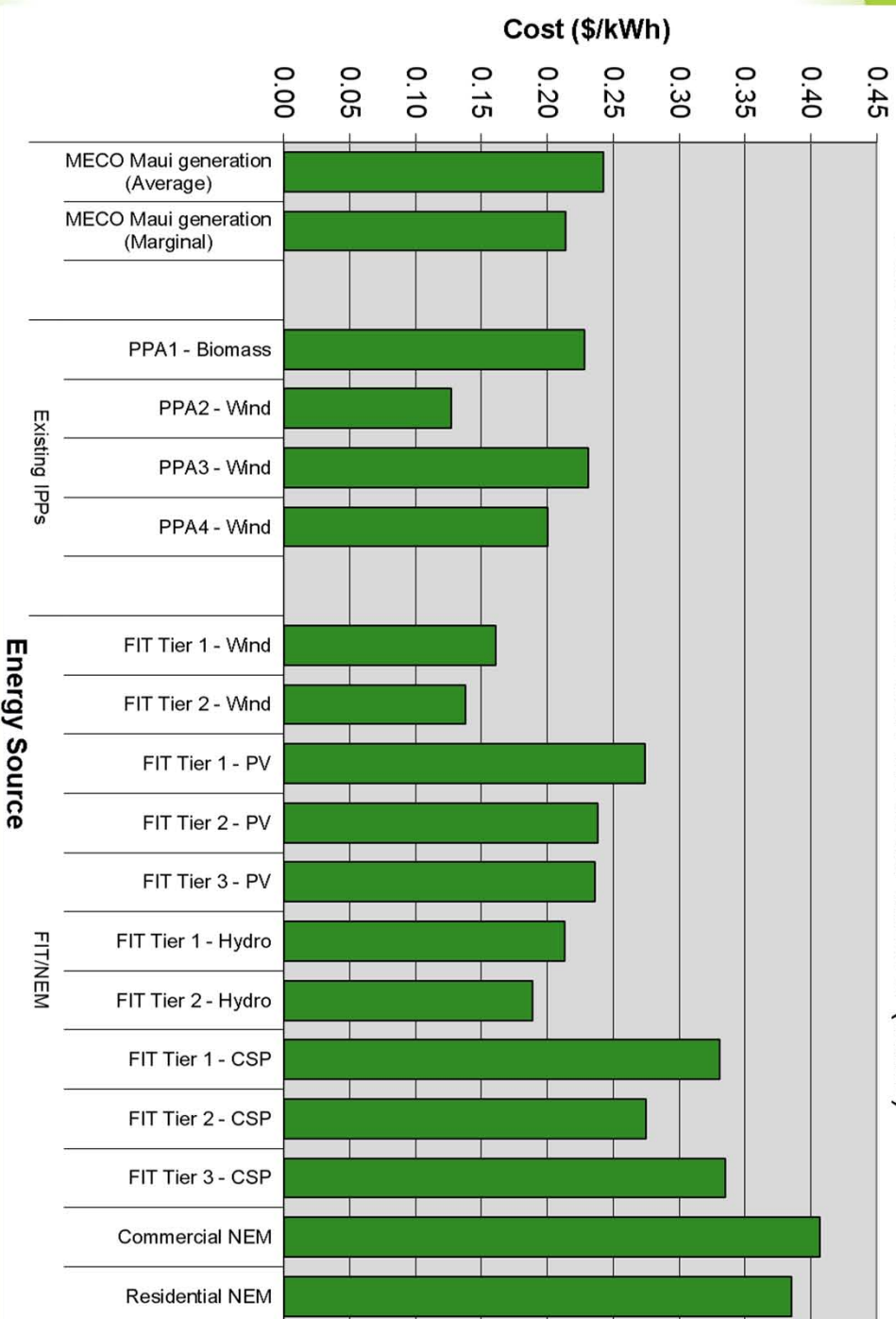
Based on December 2012 Fuel Prices for HELCO



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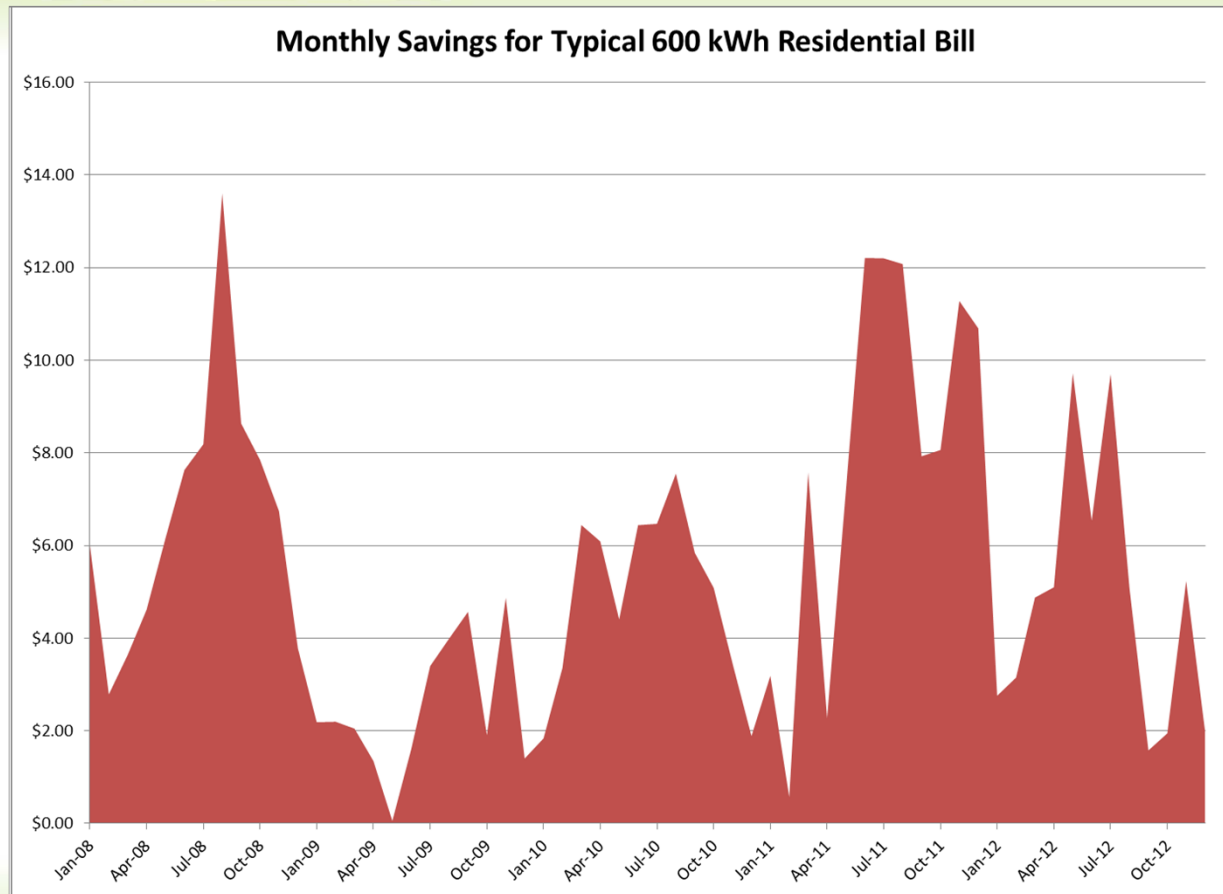
# Cost of Generation - Maui

Based on December 2012 Fuel Prices for MECO (Maui)



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# Monthly Savings with Wind - Maui Residential



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# Hawaiian Electric Consolidated Cumulative PV Capacity Addition



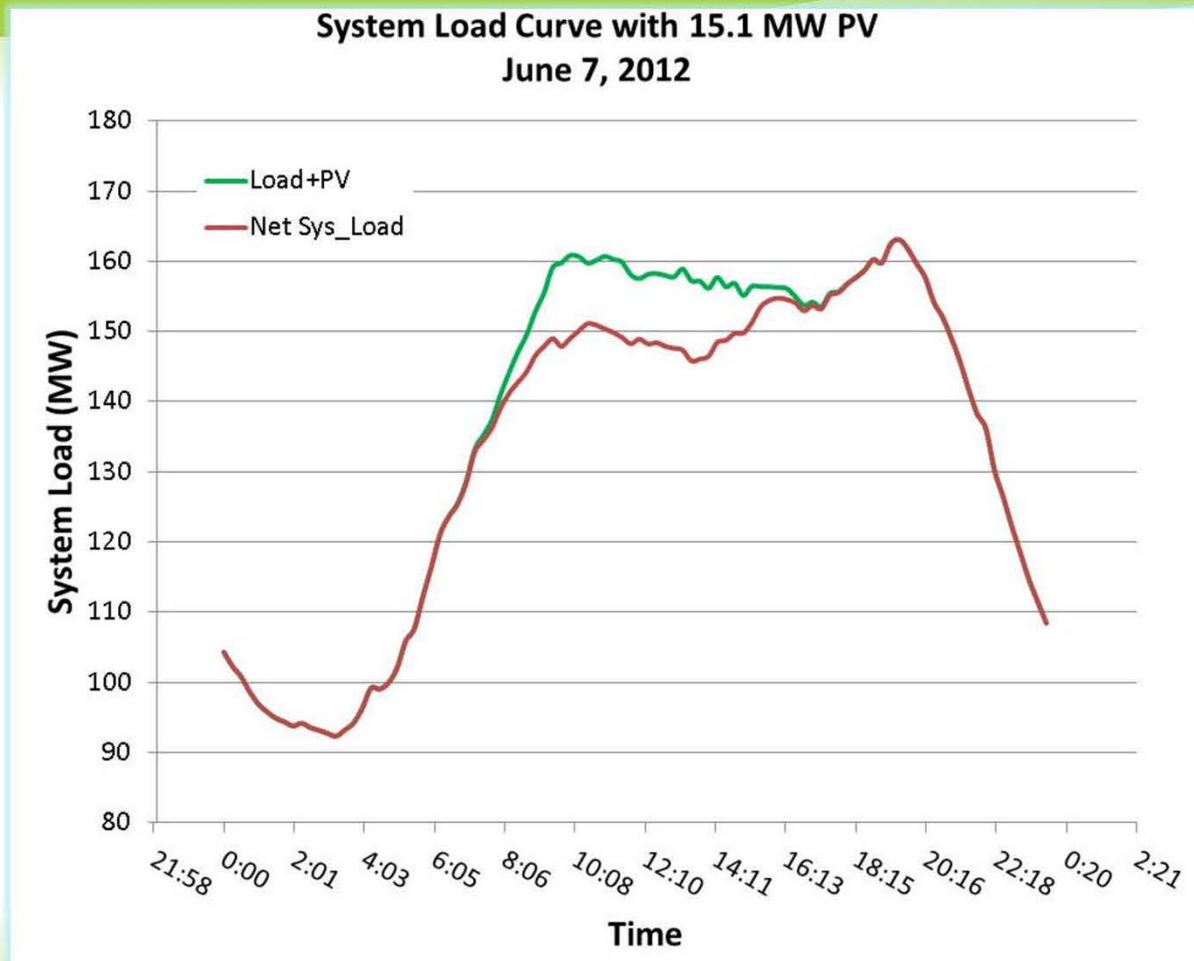
\* 2012 total is preliminary



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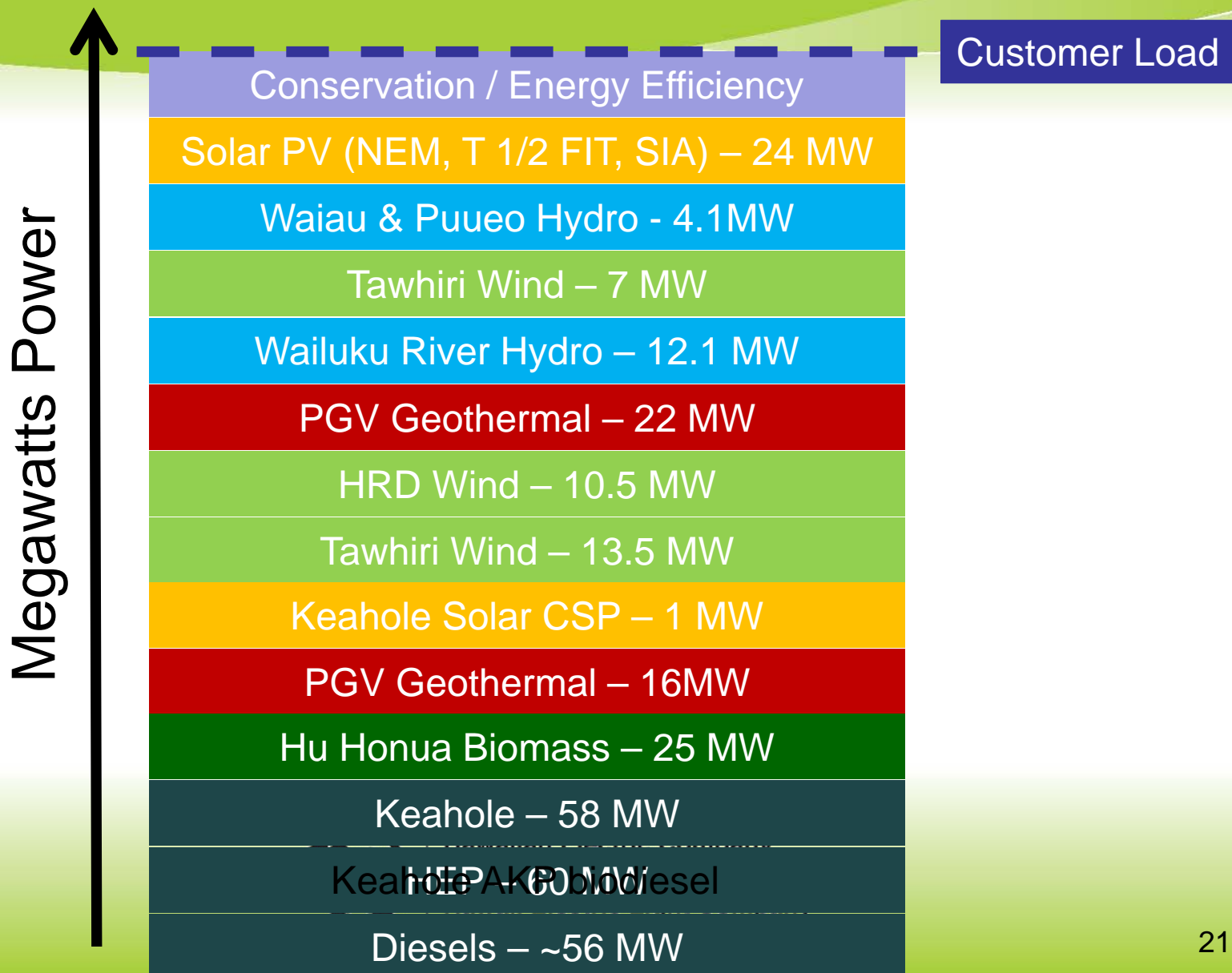
# Impact of Solar on Grid Load

## Hawaii Electric Light Load Curve

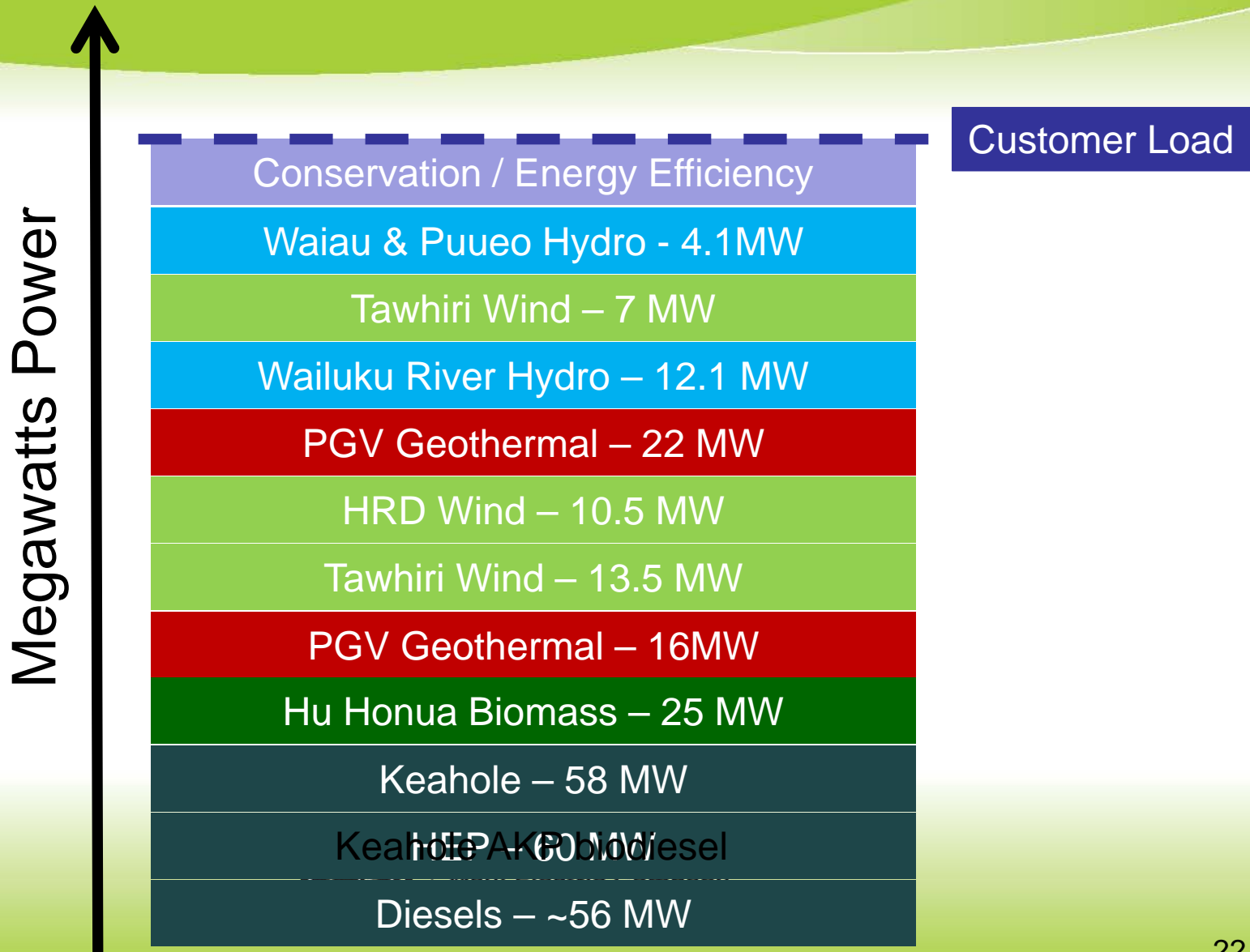


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# HELCO's "Loading Order" - Day

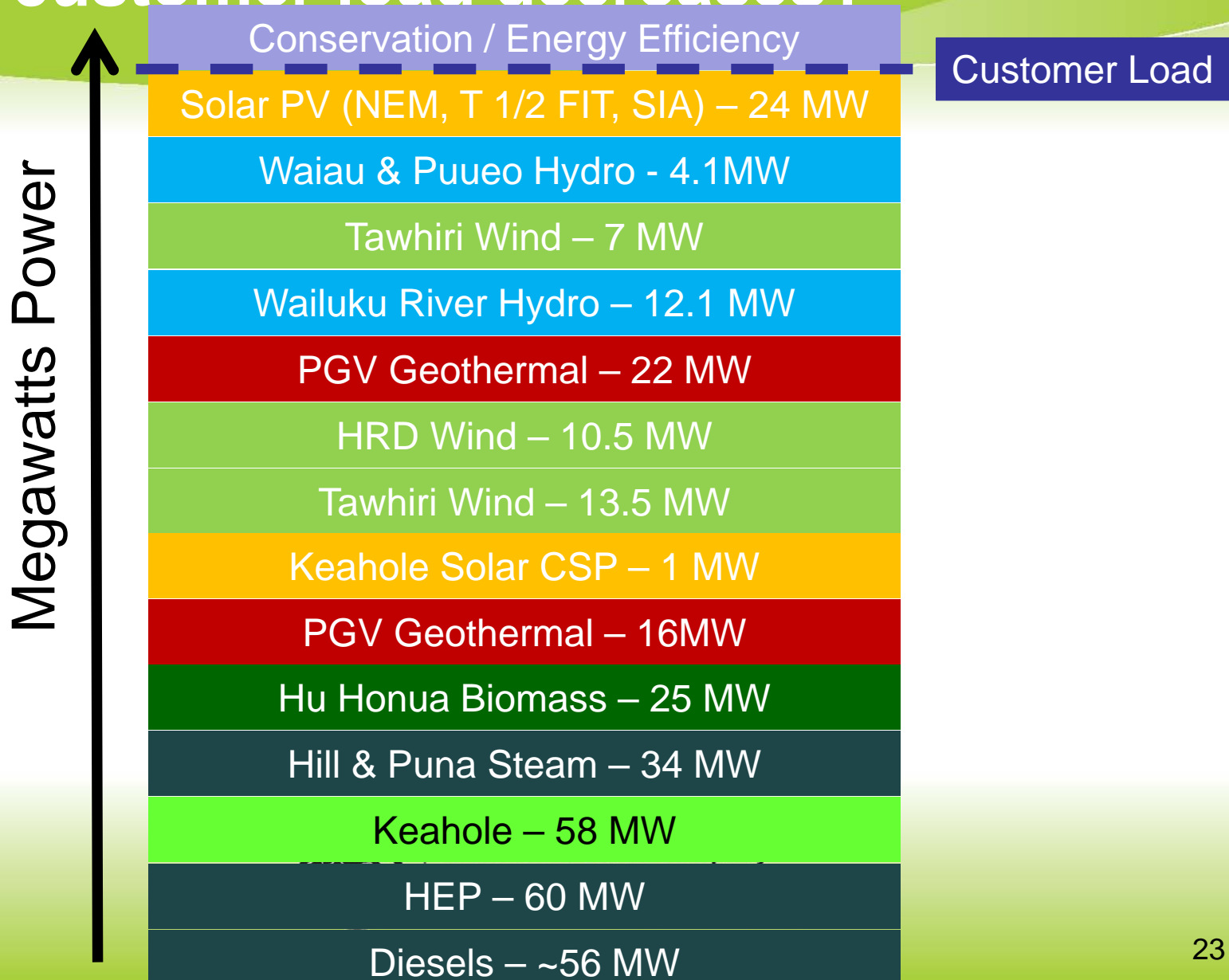


# HELCO's "Loading Order" - Night



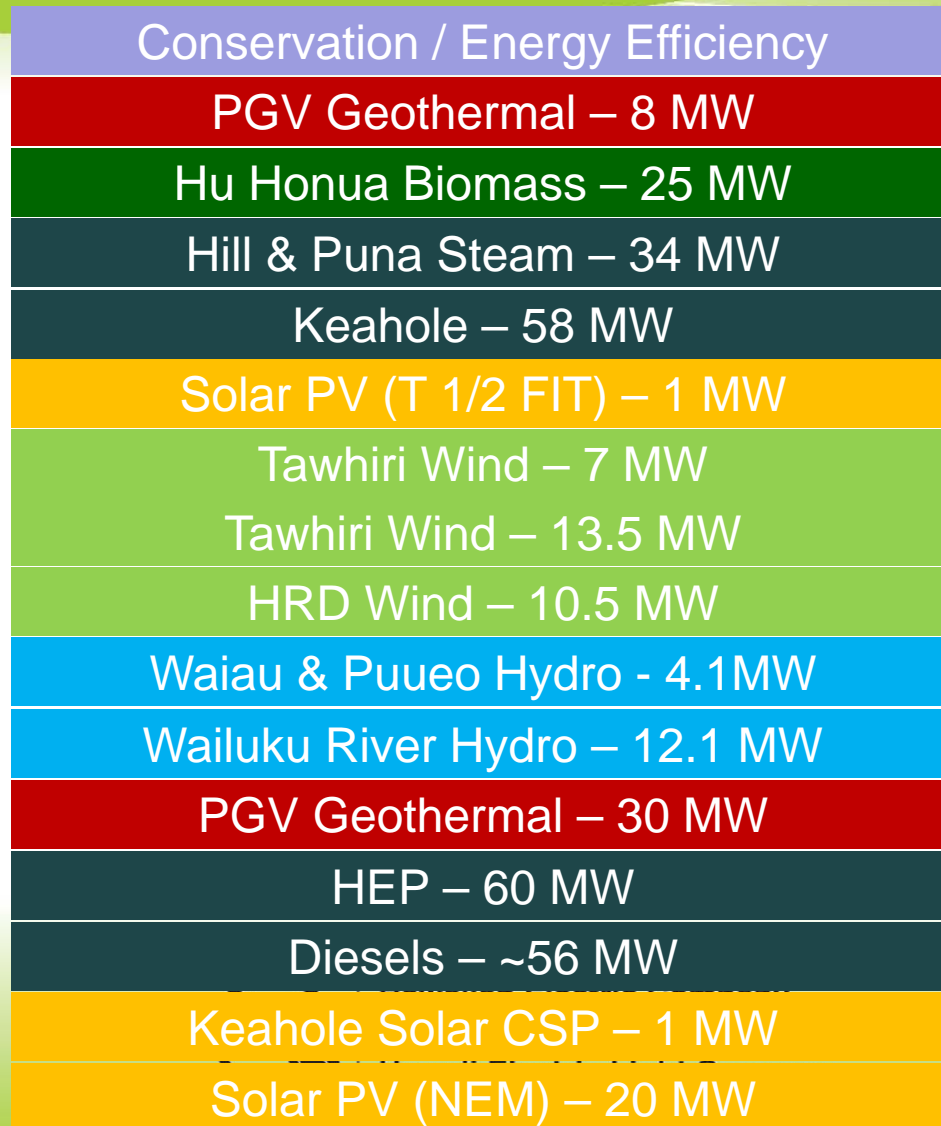


# How does the Loading Order work as customer load decreases?



# HELCO's "Cost Order" (Jan 2013)

Cost of Each Resource  
(highest to lowest cost)



Avoided Cost Rates

# Traditional Utility Model

- (Still in place in many jurisdictions)
- Utility makes money by increasing electricity sales
- Discourages promotion of energy conservation and energy efficiency initiatives
- Discourages customer self-generation, such as NEM PV



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# Vision for Hawaii's Energy Future

- Increase energy efficiency for homes and businesses
- Promote energy conservation to the fullest
- Support for cost-effective renewables:  
geothermal, hydro, PV, wind, ocean thermal, wave  
energy, concentrated solar, waste-to-energy, biomass
- LNG replaces oil



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# Challenges of Old Utility Model vs Hawaii's Energy Future

- Vision of Hawaii's energy future does not reduce the utility's workload. If anything, it increases it.
  - Two-way power will require new sophisticated systems as well as upgrades to the existing system
  - Operational issues become much more complex and increase costs
  - Demand for a smarter grid
  - Legacy assets must be maintained or modified for new use
  - Increased customer demand for information and services



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# Decoupling

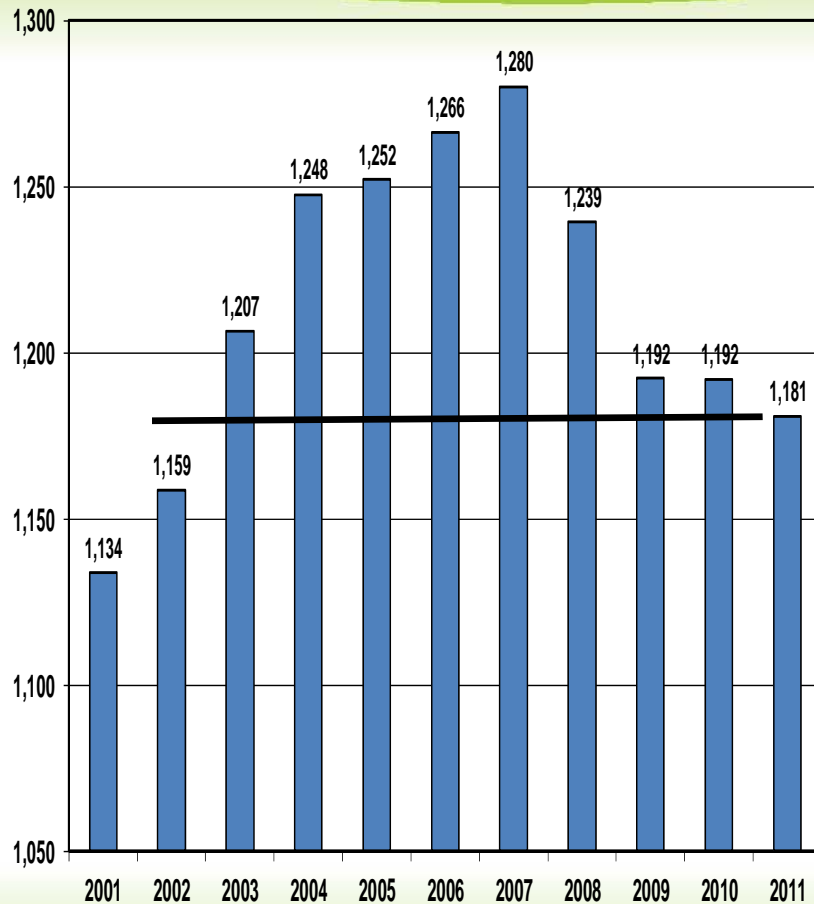
- Decoupling bridges the gap between the old utility model with the new Hawaii model
- Overall system costs should decline
  - Use less oil and substitute it with cheaper renewable energy and LNG, and reduce company generation (60% of customer bills is fuel and purchased power related)
- In the short term
  - Hawaiian Electric's operating costs will increase as we transition to this new operating environment
  - Decoupling assists in bridging declining sales and operating costs
  - Overall decoupling should reduce customer bills



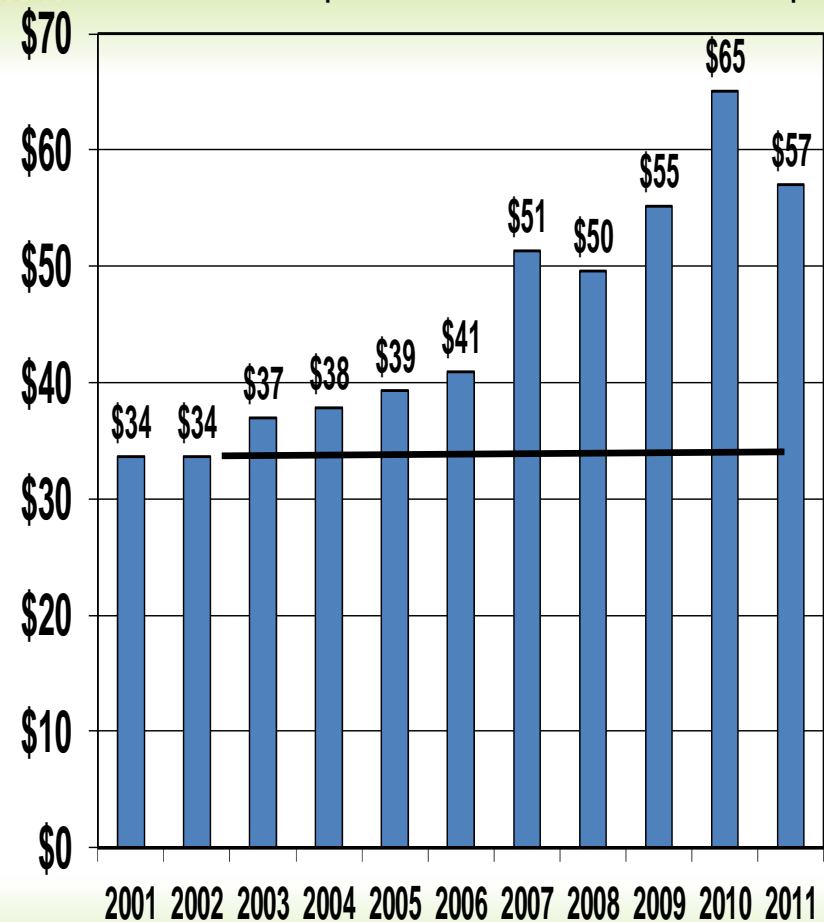
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# Maui Electric costs have increased while sales base has fallen to 2002 levels

GWH Sales

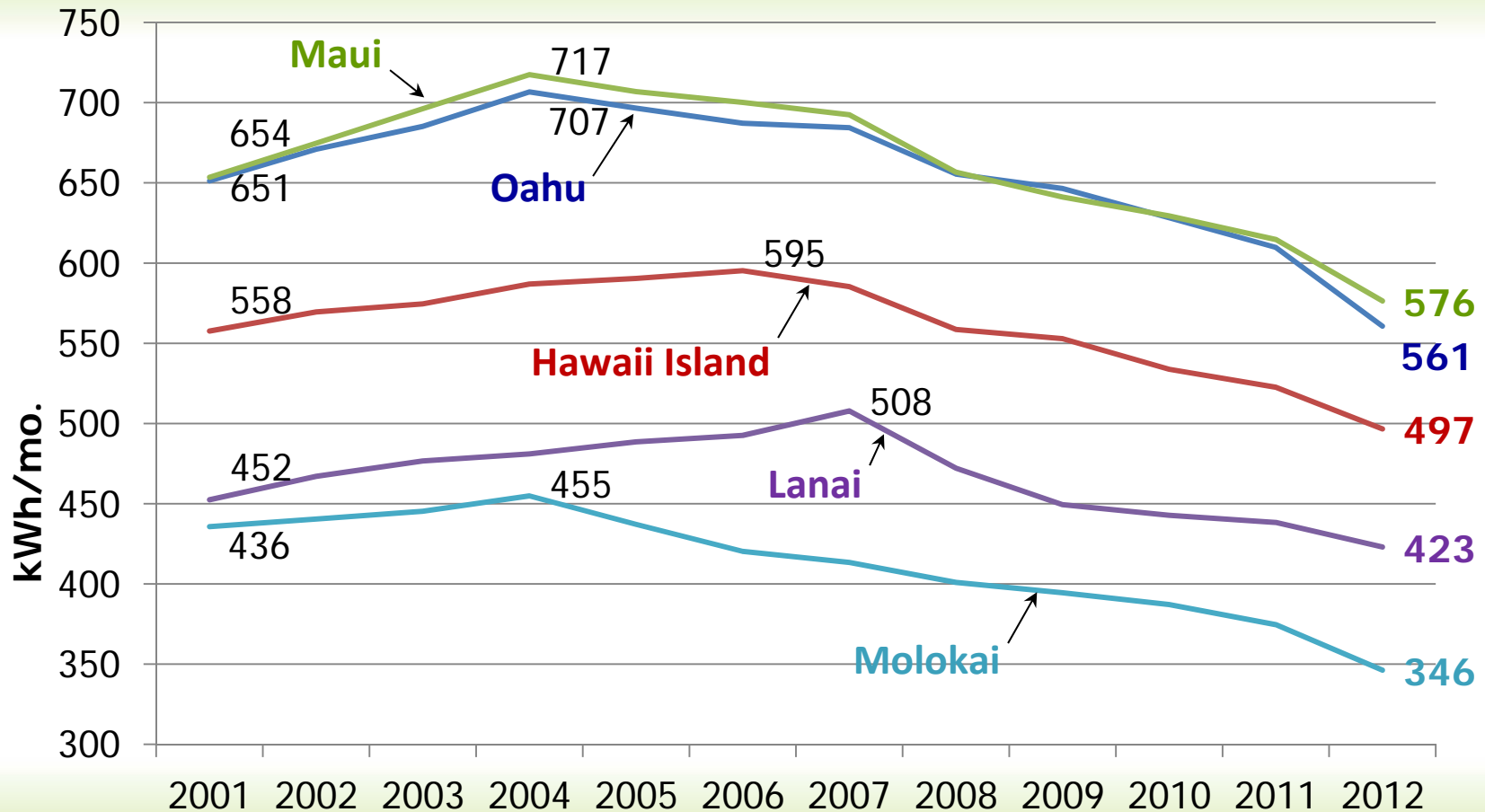


Non-Fuel Operations & Maintenance Expense



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# Residential customers' average monthly consumption of electricity



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# Mahalo



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# Progress on renewables

Over the next three years, nearly 37 megawatts of power generated by renewable resources will come on line on Kaua'i. That's in addition to 14 megawatts already in production from hydroelectric generation and customers' photovoltaic systems.

By 2015, half of Kaua'i's daytime energy needs will be met by solar PV, the highest percentage of solar PV on an electrical grid of any utility in the U.S.

## Details of projects in 2013:

At Anahola, KIUC, in partnership with the Department of Hawai'ian Home Lands and the Homestead Community Development Corp., is building a 12-megawatt, \$50 million solar energy park. This project will also include a service center and baseyard. **150 construction jobs**

KIUC will build a 12-megawatt solar project near the old Koloa Mill on land leased from Grove Farm. This \$40 million project will produce nearly 6 percent of Kaua'i's energy needs. **125 construction jobs**

Green Energy Team of Kaua'i is building a \$90-million power plant that will burn woodchips from locally grown trees. The plant will replace nearly 3.7 million gallons of oil now imported by KIUC. **200 construction jobs, 39 permanent jobs**

## About hydro:

We're talking to residents, water-users and state agencies on a variety of projects. Even if only half of our proposed sites are built, they represent another 15 megawatts of firm, clean power.

## Kaua'i renewables scorecard

Existing resources	MW	2012 sales%	
KIUC Waiahi Hydro	1.3	1.8	
McBryde, Wainiha & Kalaheo Hydro	4.8	5.0	
Gay & Robinson Olokele Hydro	1.0	1.2	
ADC/KAA Waimea, Kekaha Hydro	1.5	1.3	
Kapaa Solar	1.0	0.4	
Customer solar	4.0	1.6	
<b>Total</b>	<b>13.6</b>	<b>11.3</b>	
<b>Under construction/development</b>			
Alexander & Baldwin Solar	6.0	2.7	On line by December 2012
KIUC/Grove Farm, Koloa	12.0	5.0	Set for completion 2014
KIUC/HCDC/DHHL Solar, Anahola	12.0	5.1	Set for completion 2014
Green Energy biomass, Koloa	6.7	11.0	Set for completion 2014
<b>Total by end of 2014</b>	<b>36.7</b>	<b>23.8%</b>	