

# HCEI Transportation Energy Analysis Stakeholder Meeting – June 17, 2015

## **AGENDA**

- Welcome Remarks
- Overview: HCEI Transportation Energy Analysis Draft Report
- Stakeholder Questions
- Break
- Facilitating and Measuring Progress
- Stakeholder Support, Participation and Coordination
- Concluding Remarks

**Draft report comments are being accepted through  
Monday, June 22<sup>nd</sup> on the HCEI Website**

**[http://www.hawaiicleanenergyinitiative.org/charrettes/  
transportation-charrette/](http://www.hawaiicleanenergyinitiative.org/charrettes/transportation-charrette/)**



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# HCEI Transportation Energy Analysis Stakeholder Meeting

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# Draft Report Overview of ICCT's Transportation Energy Analysis

**Presentation:** *Joshua D. Miller, Researcher, ICCT*

**Discussion:** *Alan C. Lloyd, President Emeritus, ICCT*

**June 17, 2015**

**International Trade Resource  
Conference Center, Honolulu**



# Outline

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- Objectives
- Timeline
- Process
- Current energy situation
- Master list of tactics
- Framework for evaluation
- Criteria for recommendation
- Example of each recommendation category
- Impact of targeted tactics in 2030
- Considerations for transitioning to implementation

# Mission and activities

## International Council on Clean Transportation (ICCT)

The mission of ICCT is to dramatically improve the environmental performance and efficiency of vehicles and transportation systems in order to protect and improve public health, the environment, and quality of life.

- Non-profit research Institute
- Air pollution and climate impacts
- Focus on regulatory policies and fiscal incentives
- All modes including aviation and marine
- Global outreach, with special focus on largest markets

# Transportation energy analysis objectives

- Hawaii State Energy Office contract with the ICCT
  - Analysis, recommendations, and stakeholder engagement
  - Support development of a revised clean transportation plan
  - Progress to date following the *HCEI Road Map 2011 Edition*
  - Assess impacts of fuel-saving tactics in 2030
- “Transportation Charrette”: Stakeholder consultations between November 2014 and June 2015
- Set of feasible, cost-effective tactics, enabling actions
- Reduce use of petroleum-based fuels in aviation, marine, ground transportation

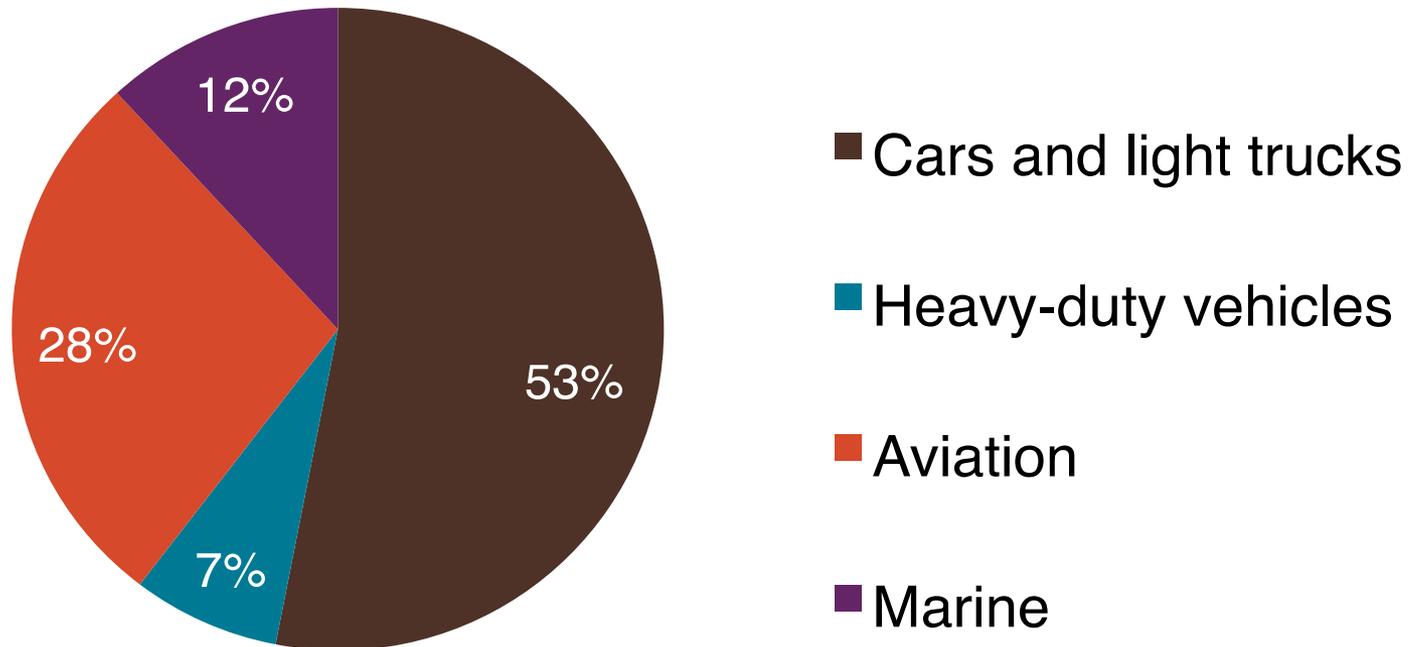
# Project timeline for transportation energy analysis (Section I)

Action	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15
Conduct survey and stakeholder interviews											
Review of progress since <i>HCEI Road Map 2011 Edition</i>											
Transportation Sector Stakeholder Workshop, November 13, 2014											
Hydrogen Fuel Cell & Battery Electric Vehicle Stakeholder Charrette, January 13-14, 2015											
Hawaii Transportation Energy Analysis Webinars											
Develop master list of tactics											
Narrow down strategies and tactics											
Qualitative and quantitative evaluation of tactics											
Assess complementarity with existing Hawaii policies, plans and budgets											
Draft report submitted to the State Energy Office											
HCEI Transportation Analysis Stakeholder Meeting, June 17, 2015											
Incorporate stakeholder feedback in revised report											
Final report											

# Current energy situation

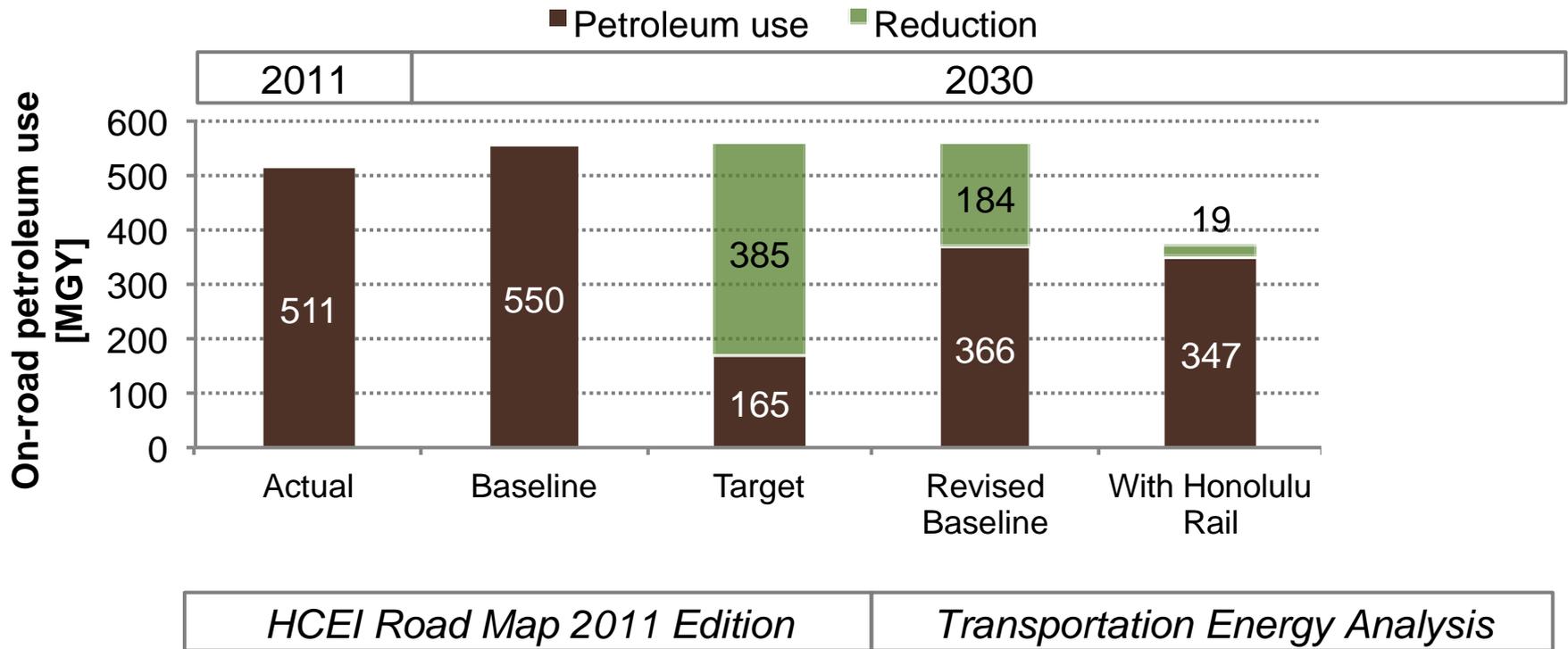
Road vehicles account for 60% of transportation energy demand

2014 transportation energy use ~863 million gallons



# Outlook for on-road vehicles with recent progress

## (Section V.D)



### ICCT's Revised Baseline

- New vehicles sold in Hawaii meet adopted federal fuel economy standards for LDVs and HDVs
- Sales of EVs increase to account for 1 in 10 vehicles sold in 2030 (43,000 EVs on the road)
- VMT increases with population from 11.57 billion in 2014 to 13.40 billion in 2030
- Continuation of existing biofuel production and imports (including 3 MGY waste fat biodiesel)

# Master list of tactics

## (Section III)

<b>Tactic</b>	<b>Evaluated</b>	<b>Existing / Pending</b>	<b>Enabling Action</b>	<b>Not Evaluated</b>
<b>General</b>	0	0	7	0
<b>Vehicle efficiency</b>	8	2	0	5
<b>Vehicle-miles traveled</b>	12	9	8	14
<b>Electric-drive vehicles</b>	4	6	10	7
<b>Alternative fuels</b>	4	1	1	2
<b>Aviation</b>	6	0	0	0
<b>Marine</b>	4	1	0	2
<b>TOTAL</b>	<b>38</b>	<b>19</b>	<b>26</b>	<b>30</b>

- Based on a broad survey of the literature and consultations with stakeholders
- Includes all tactics and enabling actions considered, organized by sub-sector
- Selected for evaluation based on availability of baseline data, likely impact on fossil fuel use statewide, and clear link between policy and energy impacts
- Existing or pending actions should be coordinated with recommendations
- Enabling actions can support the implementation of fuel-saving tactics

# Framework for evaluation of tactics

## (Section IV)

- **Tactic:** Specific policy or action, part of a broader strategy
- **Context:** Background, examples of actions implemented elsewhere, current status in Hawaii
- **Approach:** Specific actions that Hawaii could take to reduce petroleum use in the transportation sector
- **Assumptions:** Key policy assumptions and data inputs used to evaluate benefits and costs
- **Benefits:** Petroleum reduction in 2030, measured in MGY
- **Costs:** Most important costs to consumers, taxpayers, and the government. Where applicable, includes who stands to pay or benefit

# Framework for evaluation of tactics (continued)

- **Local economy:** Qualitative impacts on local jobs and investments. Actions could create jobs, utilize local energy resources, or improve Hawaii's balance of trade
- **Social acceptability:** Extent to which the public or stakeholder groups may support or oppose
- **Lifecycle emissions benefits:** Extent to which GHGs will be reduced
- **Schedule:** Implementation timing, rated near-term (1-2 years), medium-term (3-5 years), or long-term (> 6 years)
- **Likelihood of implementation:** Likelihood of success in Hawaii if supported by relevant public, private, and other stakeholders. May be affected by policy design and stringency

# Criteria for ranking petroleum reduction tactics

## (Section V.A)

Criterion	PRIMARY TARGET	SECONDARY TARGET	MONITOR FOR CHANGES	CONDUCT ADDITIONAL RESEARCH
Petroleum reduction benefits	Greater than or equal to 1 MGY in 2030 <b>and</b>	Less than 1 MGY in 2030 <b>and</b>	No petroleum benefit <b>or</b>	<i>Requires one or more of the following in order to make a determination:</i> <ul style="list-style-type: none"> <li>- More data on the current baseline and/or potential policy impacts</li> <li>- Additional cost data</li> <li>- Public engagement or surveys</li> <li>- Additional evidence to gain support from key agencies</li> </ul>
Cost effectiveness	Societal benefits exceed costs <b>and</b>	Societal benefits likely exceed costs <b>and</b>	Societal costs likely exceed benefits <b>or</b>	
Social acceptability	Medium or better <b>and</b>	Medium or better <b>and</b>	Low social acceptability <b>or</b>	
Likelihood of implementation	Medium or better	Medium or better	Low likelihood of implementation	

# Primary and Secondary Targets

## (Section V.B)

Sub-sector Tactic	Recommendation / Potential petroleum reduction in 2030 (MGY)
<b>Vehicle Efficiency</b>	<b>~24 MGY</b>
Federal vehicle fuel economy standards, High efficiency taxis, Procure EVs and efficient vehicles for public fleets, Green freight, Vehicle retirement incentives for low-income groups, Rental car efficiency program	
<b>Vehicle-Miles Traveled</b>	<b>57 to 62 MGY</b>
Transit-oriented development, Infrastructure for alternative transportation modes, Gasoline and diesel taxation, Carsharing for public fleets, Dedicated parking for carsharing, Commuter benefits legislation, Support of TDM by large employers, Telecommuting by public employees and large employers, Flexible scheduling for work and classes	
<b>Electric-Drive Vehicles</b>	<b>Not Yet Quantified</b>
State rebates for electric-drive vehicles, EV rental prioritization for state and county employees, Time-of-use and EV charging rates	
<b>Alternative Fuels</b>	<b>–</b>
<b>Aviation</b>	<b>7 MGY</b>
Financial support for winglet retrofits, Airport infrastructure support	
<b>Marine</b>	<b>2 to 7 MGY</b>
Slow steaming, Propeller polishing and hull cleaning	
<b>Total recommended (22 tactics)</b>	<b>90 to 100 MGY</b>

# Primary Target

## High efficiency taxis

- Taxis are driven much more than private vehicles on an annual basis
- One taxi company in Hawaii, EcoCab, operates a fully hybrid fleet
- As of 2013, Hawaii's Senate Resolution 144 requests that HDOT adopt rules promoting efficient hybrid taxis at Honolulu International Airport
- **Approach:** Offer financial incentives (e.g. \$2,000 per vehicle) to replace inefficient taxis with efficient hybrids.
- **Benefits:** Assuming Hawaii improves the efficiency of its taxi fleet to a similar extent as in San Francisco, such a program could save 3.6 MGY
- **Costs:** Program cost up to \$3.6 million; annual fuel savings could reach up to \$15 million once the program is fully implemented. San Francisco program funded by slightly higher fees for taxi drivers to take out a vehicle; taxi drivers and companies benefit from fuel costs that are roughly half that of non-hybrids, as well as reduced costs for brake repairs

# Primary Target

## High efficiency taxis

- **Local economy:** Medium; taxi operators could see net increases in daily income.
- **Social acceptability:** Medium; depends on successful coordination with taxi owners and operations.
- **Lifecycle emissions benefits:** Medium; depends on how many taxis are already hybrids and annual vehicle mileage.
- **Schedule:** Medium-term; while successful policies have already been implemented elsewhere, implementation of a voluntary program in Hawaii would require coordination with taxi owners and operators to determine appropriate incentives and ensure a high participation rate.
- **Likelihood of implementation:** Moderately high. Higher likelihood if replacement incentives and fares align with industry interests.

# Criteria for ranking petroleum reduction tactics

## High efficiency taxis

Criterion	PRIMARY TARGET	SECONDARY TARGET	MONITOR FOR CHANGES	CONDUCT ADDITIONAL RESEARCH
Petroleum reduction benefits	Greater than or equal to 1 MGY in 2030 <b>and</b> ✓	Less than 1 MGY in 2030 <b>and</b>	No petroleum benefit <b>or</b>	<i>Requires one or more of the following in order to make a determination:</i> <ul style="list-style-type: none"> <li>- More data on the current baseline and/or potential policy impacts</li> <li>- Additional cost data</li> <li>- Public engagement or surveys</li> <li>- Additional evidence to gain support from key agencies</li> </ul>
Cost effectiveness	Societal benefits exceed costs <b>and</b> ✓	Societal benefits likely exceed costs <b>and</b>	Societal costs likely exceed benefits <b>or</b>	
Social acceptability	Medium or better <b>and</b> ✓	Medium or better <b>and</b>	Low social acceptability <b>or</b>	
Likelihood of implementation	Medium or better ✓	Medium or better	Low likelihood of implementation	

# Secondary Target

## Procure EVs and efficient vehicles for public fleets

- Hawaii's vehicle procurement guidelines require State and County agencies to follow a strict hierarchy when leasing or purchasing light-duty motor vehicles that are not covered by federal procurement rules.
- **Approach:** Revise guidelines to strengthen requirements for when agencies should choose electric-drive options, ensure alternative or conventional fuel vehicles are the most energy-efficient option
  - Provide a total cost of ownership calculator that compares fuel and other costs
  - Encourage agencies to choose an EV (or FCEV) if lifetime cost difference is below an established threshold (e.g. \$5,000)
  - If above cost threshold, choose the most efficient option in class
- **Benefits:** 0.7 MGY. Range from 0.4-1.0 MGY depending on efficiency levels
- **Costs:** Potential reduction in lifetime vehicle costs due to fuel savings
- Procurement of EVs and efficient vehicles would combine well with car-sharing for public fleets, since mileage could be consolidated on more efficient vehicles
- EVs would be used for most trips within a normal operating range
- **Schedule:** Near-term. The choices of new vehicles purchased or leased by public agencies could be influenced shortly after procurement guidelines are updated.

# Criteria for ranking petroleum reduction tactics

## Procure EVs and efficient vehicles for public fleets

Criterion	PRIMARY TARGET	SECONDARY TARGET	MONITOR FOR CHANGES	CONDUCT ADDITIONAL RESEARCH
Petroleum reduction benefits	Greater than or equal to 1 MGY in 2030 <b>and</b>	Less than 1 MGY in 2030 <b>and</b> ✓	No petroleum benefit <b>or</b>	<i>Requires one or more of the following in order to make a determination:</i> <ul style="list-style-type: none"> <li>- More data on the current baseline and/or potential policy impacts</li> <li>- Additional cost data</li> <li>- Public engagement or surveys</li> <li>- Additional evidence to gain support from key agencies</li> </ul>
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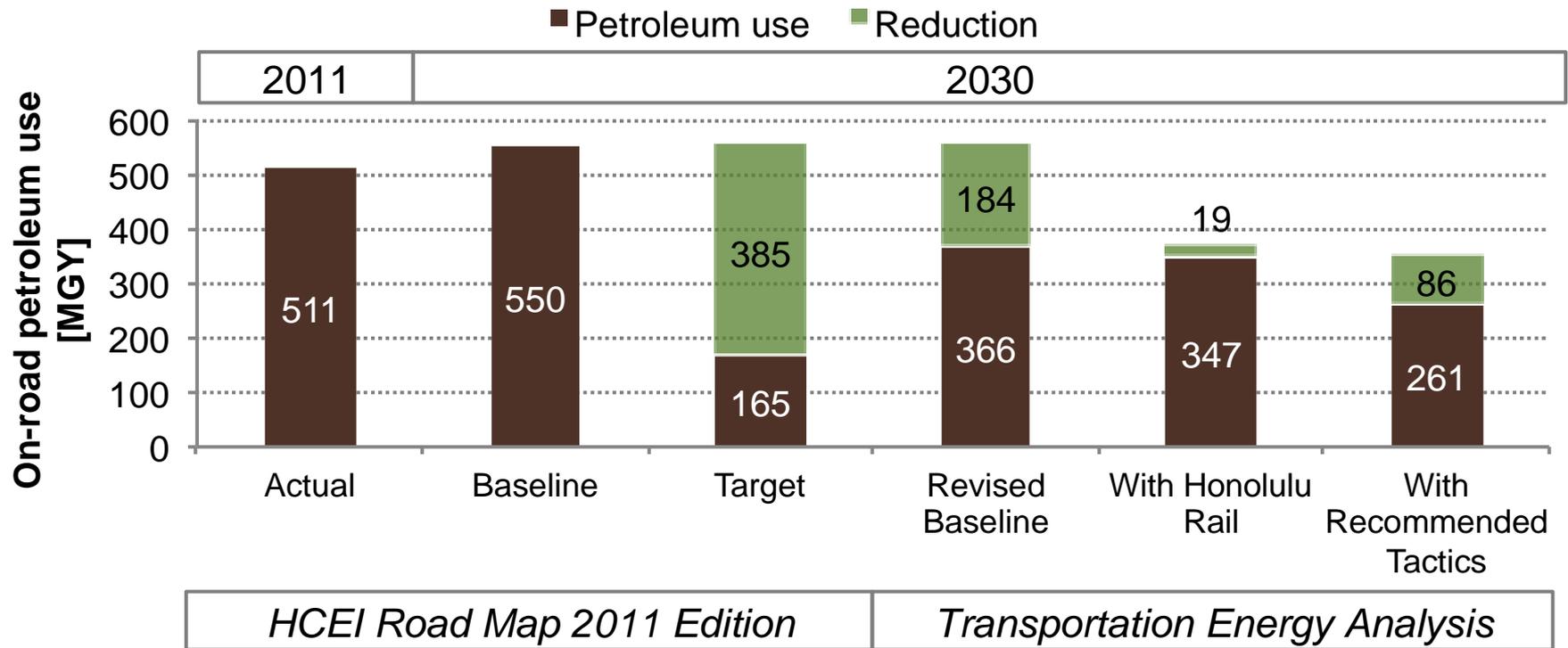
# Enabling Actions

## (Section V.C)

- Support implementation, enhance impact of targeted tactics
- Considered in addition to evaluated tactics
- Such actions facilitate collection of data, encourage agencies to collaborate/take ownership of implementation
- **Example: VMT Reduction Target**
  - Legislative target to reduce statewide VMT
  - Coupled with island-specific targets to increase the share of trips taken by bicycling, walking, transit
  - Coordinate agencies and NGOs to finance and plan infrastructure for transportation alternatives
  - VMT reduction targets adopted in five U.S. states\*

# Impact of targeted on-road tactics in 2030

(Section V.D)



## ICCT's Revised Baseline

- New vehicles sold in Hawaii meet adopted federal fuel economy standards for LDVs and HDVs
- Sales of EVs increase to account for 1 in 10 vehicles sold in 2030 (43,000 EVs on the road)
- VMT increases with population from 11.57 billion in 2014 to 13.40 billion in 2030
- Continuation of existing biofuel production and imports (including 3 MGY waste fat biodiesel)

# Impact of targeted aviation and marine tactics

## (Section V.D)

Recommendation Category Sub-sector Tactic	Potential petroleum reduction in 2030 (MGY)
<b>PRIMARY TARGET (2 TACTICS)</b>	<b>7 MGY</b>
<i>AVIATION</i> <ul style="list-style-type: none"> <li>Financial support for <i>winglet retrofits</i></li> <li><i>Airport infrastructure</i> support</li> </ul>	4 MGY 3 MGY
<b>SECONDARY TARGET (2 TACTICS)</b>	<b>2 - 7 MGY</b>
<i>MARINE</i> <ul style="list-style-type: none"> <li><i>Slow steaming</i></li> <li><i>Propeller polishing</i> and hull cleaning</li> </ul>	0.8 MGY 1.5 - 6 MGY
<b>Total recommended tactics for aviation and marine</b>	<b>9 - 14 MGY</b>

- Recent EPA endangerment finding will enable administration to implement regulations to improve aircraft efficiency
- Impact on fleet-wide efficiency will take time
- Offset some growth in fuel demand expected with increasing activity

# Monitor for Changes in Conditions

## VMT Pricing Program

- **Approach:** Replace vehicle registration taxes and fees (\$125.9 million in 2014\*) with a mileage-based road user charge (1.1 cents per mile)
  - Collected at annual vehicle registration, measured by the change in odometer reading from the previous year
  - Per-mile rate could vary based on vehicle weight, since heavier vehicles tend to cause more wear and tear to roads
- **Benefits:** 5.6 MGY ✓
- **Costs:** No net impacts to State tax revenues. Vehicle registration taxes and fees averaged \$94 per vehicle in 2014. Road users who drive less than average would pay less than this amount, while those who drive more than average would pay more ✓

# Monitor for Changes in Conditions

## VMT Pricing Program (continued)

- **Local economy:** Could keep more dollars in the State's economy as a result of reduced petroleum imports ✓
- **Social acceptability:** Medium. Rewards users who drive less; negative impacts on rural residents could be mitigated by providing a fixed rebate or applying a lower per-mile rate to vehicles registered in counties with less traffic congestion ✓
- **Lifecycle emissions benefits:** Scale with reduced VMT and fuel use ✓
- **Schedule:** Medium-term. Oregon has conducted pilot programs; carrying out a successful pilot in Hawaii could lay the groundwork for implementation of a mandatory program ✓
- **Likelihood of implementation:** **Low to Medium**. Since VMT pricing has not yet been piloted in Hawaii or implemented at full-scale within the U.S., implementing such a charge would require strong support from Hawaii DOT and other stakeholders. If the State does not increase gasoline and diesel fuel taxes, such a development would make road user charging more likely to be implemented.

# Criteria for ranking petroleum reduction tactics

## VMT Pricing Program

Criterion	PRIMARY TARGET	SECONDARY TARGET	MONITOR FOR CHANGES	CONDUCT ADDITIONAL RESEARCH
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Social acceptability	Medium or better <b>and</b> ✓	Medium or better <b>and</b>	Low social acceptability <b>or</b>	
Likelihood of implementation	Medium or better  ✓ ←	Medium or better  Support from key agencies	Low likelihood of implementation  ✓	

# Conduct Additional Research

## Hydrogen fueling infrastructure

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- Explore public-private partnership models for constructing/operating hydrogen production and fueling facilities on Oahu and the Big Island
- Cost competitiveness of hydrogen fuel dependent on:
  - Efficiency of FCEV and comparison vehicle
  - Prices of electricity for electrolysis and gasoline/diesel
  - Scale of production and utilization rate
- Actions to improve cost competitiveness:
  - Reduce cost of electricity for hydrogen production
  - Streamline permitting and safe operation
  - Increase taxation level for gasoline/diesel fuels
  - Partner with private sector to deploy FCEVs

# Conduct Additional Research

## Hydrogen fueling infrastructure (continued)

- **Enabling Action:** Pilot demand-responsive technologies in hydrogen production facilities
  - Coordinate with utilities to establish low or negative rate for demand-responsive hydrogen production
  - Use renewable electricity that would otherwise be curtailed
  - Provide energy storage to reduce cost of meeting RPS
  - Assess impact on cost of hydrogen production
  - Evaluate costs and benefits to utilities and customers
- **Complementary Tactic:** Leverage federal/state funding to support introduction of hydrogen fuel cell vehicles

# Incorporate additional tactics into evaluation

## Statewide implementation of bike share programs

- **Source:** Provided by Bike Share Hawaii, based on study by City & County of Honolulu
- **Approach:** Statewide implementation of bike share programs with support from public and private partners. Encourage use of bicycles for short trips to support multi-modal transportation, ease traffic, promote fitness, create business for retailers, reduce VMT and fuel use.
- **Benefits:** Initial deployment of 1,676 bicycles and 183 stations in urban Honolulu:
  - 4.3 million annual VMT reduction; ICCT estimates 0.14 MGY in 2030 based on 30 mpg for cars
  - Health benefits from increased physical activity
- **Costs:** Capital cost of \$9.2-11.8 million; \$3.2 million annually covered by user fees and sponsorship support; \$2.5 million annual savings from reduced driving and fuel use
- **Local Economy:** 33-36 new jobs created directly by bike share operations, at least \$195,000-\$255,000 net increase in retail spending near stations
- **Social acceptability:** High. Existing support from public agencies, private, non-profit and general public
- **Lifecycle emission benefits:** 3.9-4.3 million pounds of CO<sub>2</sub> saved annually
- **Schedule:** Launch in 2016 contingent upon funding
- **Likelihood of Implementation:** High if funding is secured

# Criteria for ranking petroleum reduction tactics

## Statewide implementation of bike share programs

Criterion	PRIMARY TARGET	SECONDARY TARGET	MONITOR FOR CHANGES	CONDUCT ADDITIONAL RESEARCH
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Likelihood of implementation	Medium or better	Medium or better ✓	Low likelihood of implementation	

# Funding for implementation

## (Section V.E)

- Identified funding needs of targeted tactics
- **Government funding required:** not all require funding, and some are revenue-raising
- **Budgeted:** included in State/County plans
- **Relevant plans:** list plans that include at least partial budget
- **Potential funding:** for tactics that require government funding, but are not fully budgeted

TACTIC	GOVERNMENT FUNDING REQUIRED	BUDGETED	RELEVANT PLANS	POTENTIAL FUNDING
High efficiency taxis	\$2,000 per taxi	No	–	- Daily taxi fees* - <a href="#">Congestion Mitigation and Air Quality Improvement (CMAQ) Program (FHWA)</a> - <a href="#">Clean Cities (DOE)</a>

\*Potential funding sources do not currently exist or may need to be expanded.

# Implementation of the overall plan

(Section V.F)

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1. Top priority to identify the responsible persons and Agency for implementation of the plan
2. Recommendations must have the backing of the Governor and the legislature. One approach is creation of an Action Plan to be submitted to the Governor and the Legislature
3. Proceed with implementation of targeted tactics and enabling actions identified thus far

# Implementation plan for each tactic

- Designate lead agency and coordinator responsible for implementation
- Critical functions of this role:
  - Detailed implementation plan
  - Collect baseline data to support evaluation
  - Commission research as needed to support policy development
  - Engage with all stakeholders whose support is needed for implementation
  - Education and outreach necessary to ensure social acceptability
  - Monitor performance to demonstrate impacts following implementation
- Implementation plan should include:
  - Refined policy design
  - Implementation schedule
  - Explanation of costs and benefits
  - Funding considerations
- Implement any enabling actions
  - Designate lead agency and implementation plan for enabling actions
  - For example, binding VMT reduction goals align objectives across agencies

# Transportation Energy Plan should be a living document

- Targeted tactics are not a definitive plan for the next 15 years
- Recommendations do not include all potentially beneficial actions
- Set of cost-effective, feasible actions that could advance Hawaii's clean energy goals for transportation
- Need for additional research and collection of baseline data
  - Enable the evaluation of tactics that could not be considered in ICCT's analysis
  - Refine analysis of targeted tactics
- Monitor for changes in conditions, especially cost-effectiveness and likelihood of implementation
- Track overall progress, targeted tactics/enabling actions
- Incorporate new policy options as needed
- Some of tactics and enabling may already include details necessary to support implementation
- Other tactics require more data, research, refinement of policy design

# Next steps

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- ICCT's analysis concluded with draft report
- Receiving stakeholder comments until June 22<sup>nd</sup>
- Final report to be submitted by June 30<sup>th</sup>
- HSEO will own the transportation energy plan, work with stakeholders in the coming months to develop implementation steps
- HSEO access to calculations and models enables updates to analysis and targeted tactics as needed

Thank You!

# HCEI Transportation Energy Analysis Stakeholder Meeting

## AGENDA

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# Facilitating and Measuring Progress

**Chris Yunker**

Energy Systems & Transportation  
Program Manager

HCEI Transportation Energy Analysis Stakeholder Meeting  
June 17, 2015

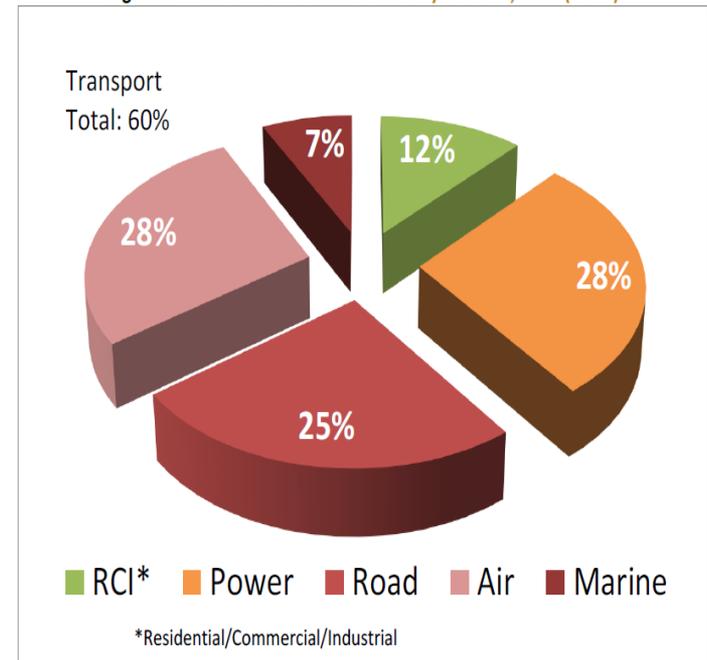


# Ige Administration Energy Policy

## Energy Vision

Our vision for Hawaii's energy Landscape is a Hawaii that is energy independent, environmental and culturally sound, and adds value to Hawaii's people and businesses.

Figure 9: Hawaii Oil-Product Demand by End-Use, 2011 (vol %)



Energy independence means **breaking our addiction on imported fossil fuels.**

- In the electricity sector, that means we're committed to **a future that is 100% renewable,** with energy sources that come from our own islands.
- Our Administration is bringing **transportation to the forefront.**

# The Road to Transportation Targets

## Near Term

6/30: ICCT will finalize the report

Month of June: HSEO will solicit input on lead implementation agency, leads for individual tactics and supporting stakeholders

End of July:

HSEO will reconvene stakeholders to:

- Formalize agency to lead implementation
- Formalize leads and working group for each tactic
- Formalize process by which new tactics are introduced and existing tactics are updated



August: Kick-off individual tactic working groups

4<sup>th</sup> Quarter 2015:

HSEO will issue a draft comprehensive energy roadmap

# Tactic Lead Responsibilities

**Critical functions of the Tactic Lead include developing a detailed implementation plan per individual tactic:**



- Collect baseline data to support evaluation of impacts;
  - Commission research as needed to support policy development;
  - Engage with all stakeholders whose support is needed for implementation;
- 
- Develop implementation plan to include: refined policy design, implementation schedule, explanation of costs and benefits, and funding considerations (if applicable);
  - Implement any enabling actions that are necessary for the success of the tactic
  - Conduct education and public outreach to ensure social acceptability;
  - Monitor performance to demonstrate impacts once the tactic has been implemented

# Hawaii State Energy Office

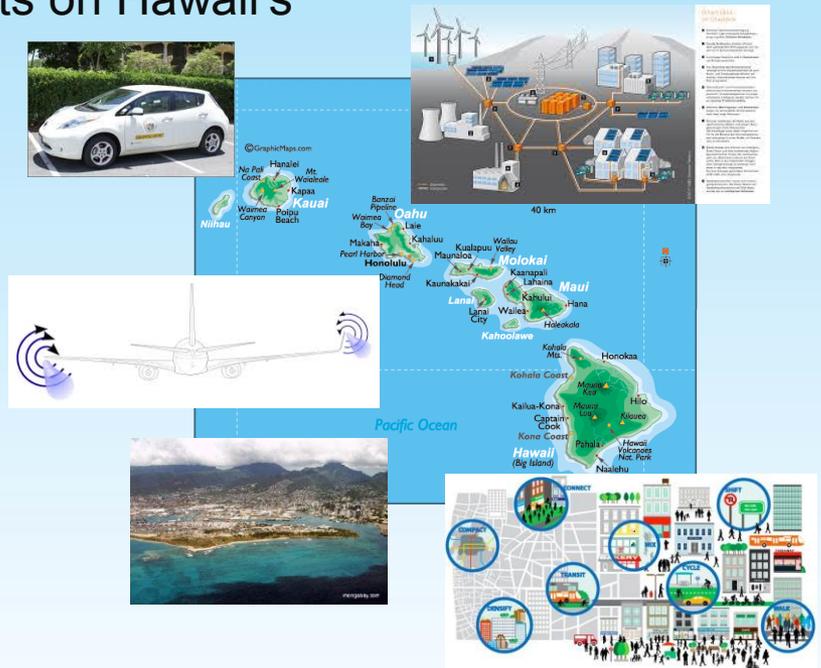
## Energy Systems & Transportation Branch

### Comprehensive Energy Eco-System Roadmap:

*Our goal is to put the whole energy eco-system into perspective*

In order to prioritize high impact, cost effective activities EST assess' and reports the impact of existing and potential energy policies and projects on Hawaii's energy eco-system.

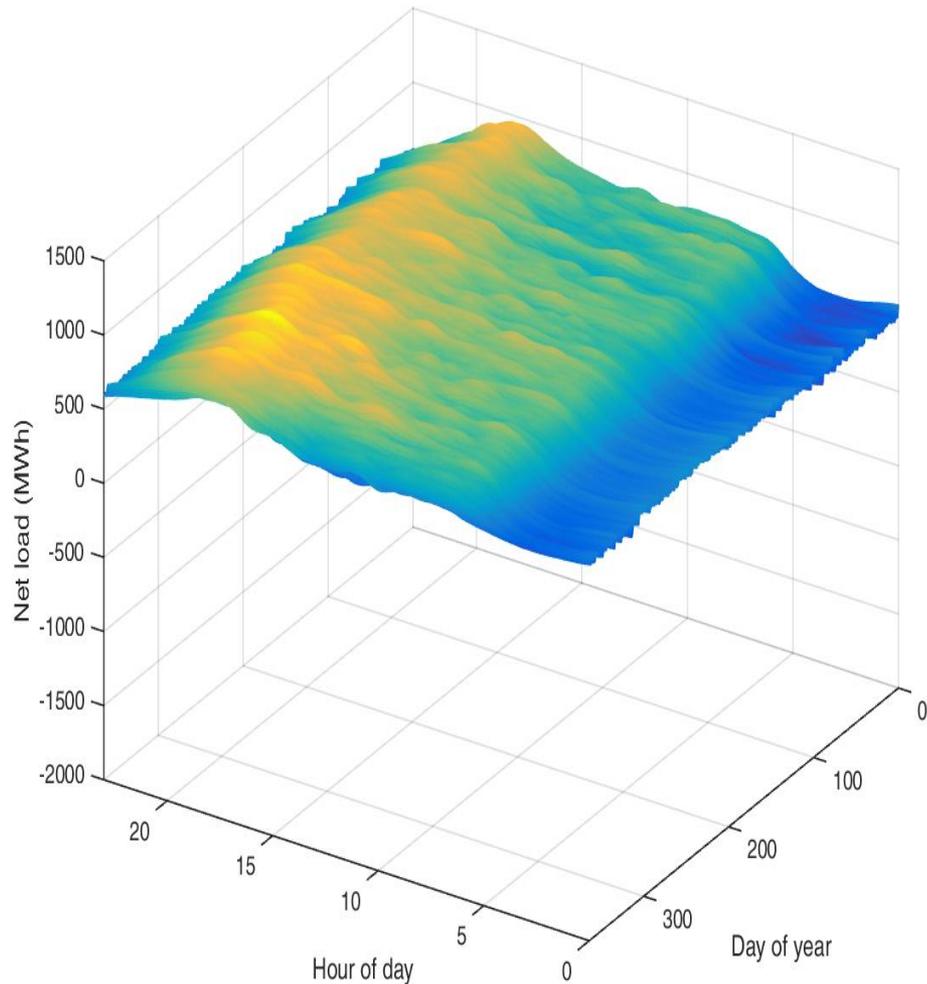
We then look to enable those activities through demonstrations and programs, legislation and regulatory proceedings.



# Developing a Comprehensive Energy Roadmap

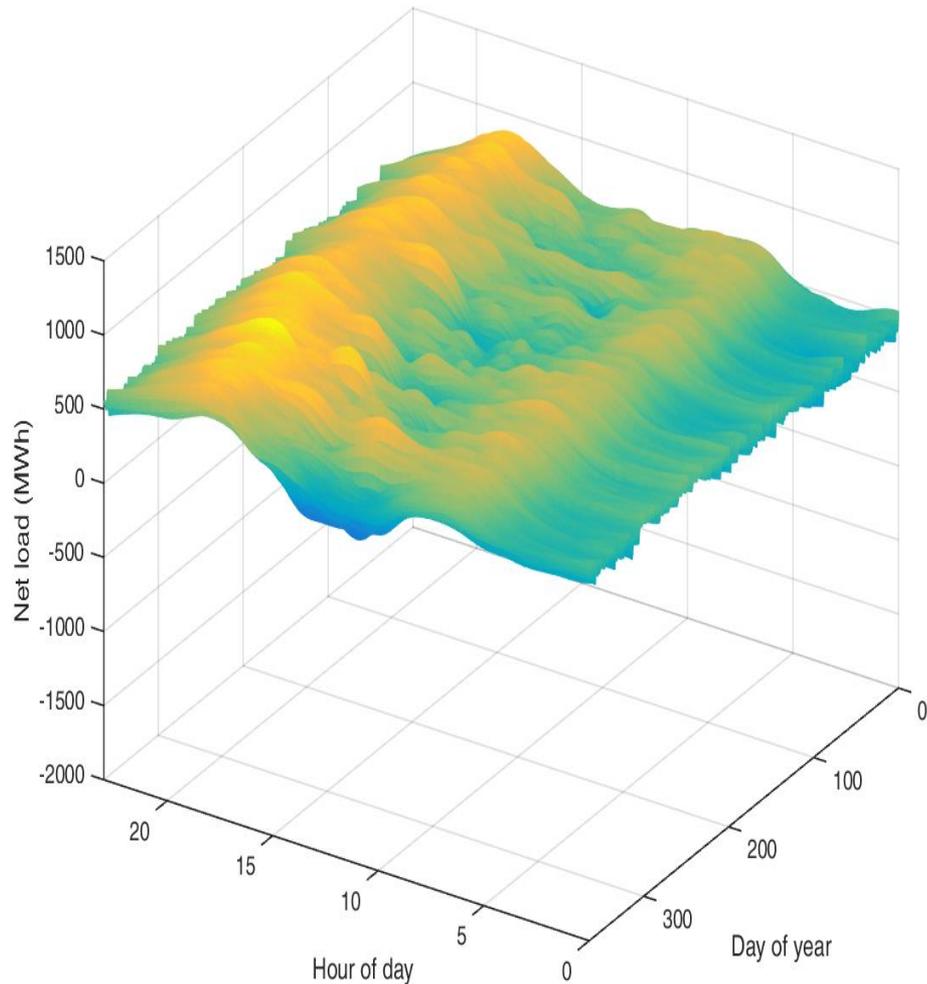
- Electric vehicles provides a good example to explain the interdependency between the transportation sector and the electric sector
- Other interdependencies between the electric sector and Transit Oriented Development, VMT reduction, and Multi Modal transportation also have impacts on the electric sector – these impacts may be less obvious
- A comprehensive energy road map will seek to identify and quantify the inter-relationships between petroleum reduction tactics and sectors

# Developing a Comprehensive Energy Roadmap



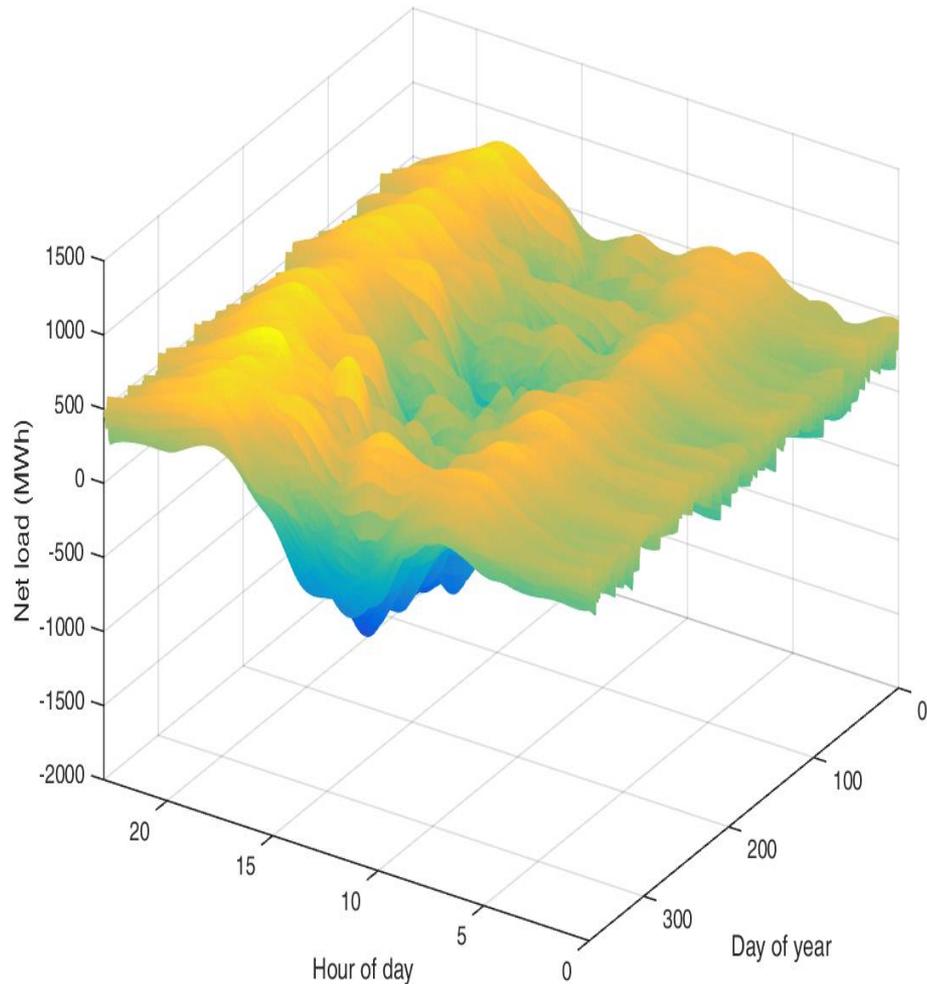
	2015
RPS	18%
Peak Load	1,091 MW
System Storage Needs	Negligible
MGY Reduction	Baseline

# Developing a Comprehensive Energy Roadmap



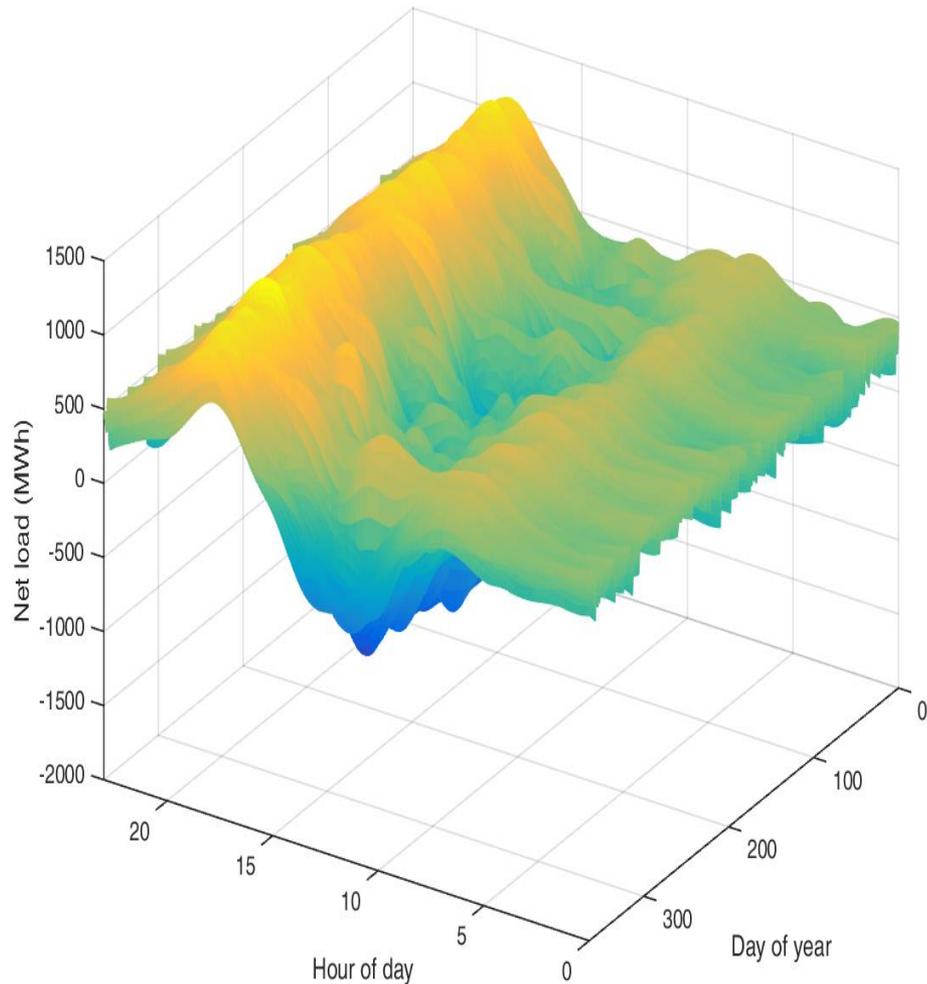
	2030
RPS	40%
Peak Load	1,040 MW
System Storage Needs	< 1 MW / 153 MWh
MGY Reduction	153

# Developing a Comprehensive Energy Roadmap



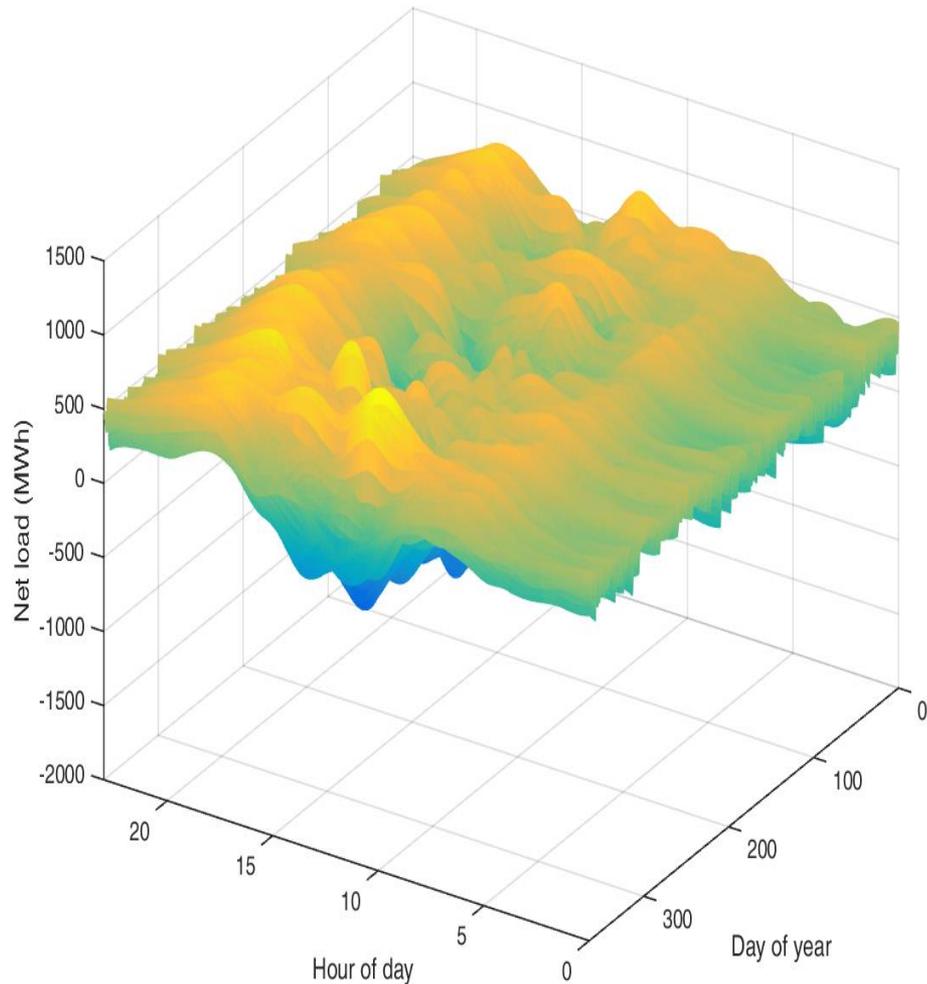
	2040
RPS	70%
Peak Load	970 MW
System Storage Needs	837 MW / 3,675 MWh
MGY Reduction	362

# Developing a Comprehensive Energy Roadmap



	2040	Change due to EVs
RPS	70%	
Peak Load	1,190 MW	+20%
System Storage Needs	935 MW / 4,173 MWh	+ 10%
MGY Reduction	362	NA
Electric Vehicles	120K	On-peak Charging
MGY Reduction	400	38

# Developing a Comprehensive Energy Roadmap



	2040	Change due to EVs
RPS	70%	
Peak Load	962 MW	- 1%
System Storage Needs	740 MW / 3,408 MWh	-10%
MGY Reduction	362	NA
Electric Vehicles	120K	Off-peak Charging
MGY Reduction	400	38

# HCEI Transportation Energy Analysis Stakeholder Meeting

## AGENDA

- Welcome Remarks
- Overview: HCEI Transportation Energy Analysis Draft Report
- Stakeholder Questions
- Break
- Facilitating and Measuring Progress
- **Stakeholder Support, Participation and Coordination**
- Concluding Remarks

# List of Primary Targets, Secondary Targets, and Enabling Actions

<b>Primary and Secondary Targets</b>
<b>Vehicle Efficiency</b>
Federal Vehicle Fuel Economy Standards
High Efficiency Taxes
Procure Evs and Efficient Vehicles for Public Fleets
Green Freight
Vehicle Retirement Incentives
Rental Car Efficiency program
<b>Vehicle-Miles Traveled</b>
Transit Oriented Development
Infrastructure for Alternative Transportation Modes
Gasoline and Diesel Taxation
Carsharing for Public Fleets
Dedicated Parking for Carsharing
Commuter Benefits Legislation
Support of TDM by Large Employers
Telecommuting by Public Employees and Large Employers
Flexible Scheduling for work and classes
<b>Electric-Drive Vehicles</b>
State Rebates for Electric-Drive Vehicles
EV Rental Prioritization for State and County Employees
Time-of-Use and EV Charging Rates
<b>Aviation</b>
Financial Support for Winglet Retrofits
Airport Infrastructure support
<b>Marine</b>
Slow Steaming
Propeller Polishing and Hull Cleaning

<b>Enabling Actions</b>
<b>General</b>
Increase Barrel Tax to Fund Government Programs
Leverage Rental Car Fees to Fund Transportation Programs
Leverage Federal Grants for Clean Surface Transportation Agencies
Baseline Projections for Transportation Energy Demand
Public Environmental Education
Performance Metrics for Agencies to Measure and Report Progress
<b>Vehicle-Miles Traveled</b>
Multimodal Public Safety Campaign
Promote Intelligent Transportation Systems
Island-Specific Mode Share Goals for Bicycling, Walking, and Transit
Support an Inter-Departmental Group to Coordinate
Incorporate Health-Sector Goals for Active Transportation
<b>Electric-Drive Vehicles</b>
Regulatory Definition of Hydrogen FCEVs as Electric-Drive Vehicles
Designate a Lead Authority for State Hydrogen Programs
Standardization to Ensure Safe Operation of Hydrogen Facilities
Pilot Demand-Response Systems for Hydrogen Electrolysis
Conduct Targeted Outreach to Utility Customers on Benefits of Evs
Deploy Demand-Responsive EV Charging Technologies
Promote Charging Stations in Multi-Unit Dwellings and Workplaces
Enforce or Penalize Non-Compliance with EV Parking Requirements
Leverage Federal Grants for FCEVs
<b>Alternative Fuels</b>
Create a Statewide Inventory of Waste-to-Fuels Resources

# HCEI Transportation Energy Analysis Stakeholder Meeting

## AGENDA

- Welcome Remarks
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# Mahalo

**Thank you for your participation.**

**Draft report comments are being accepted through Monday, June 22<sup>nd</sup> on the HCEI Website**

<http://www.hawaiicleanenergyinitiative.org/charrettes/transportation-charrette/>