

WEATHER

Is a reference case assumption of a warming trend in average temperature reasonable?

Agree	Neutral	Disagree	Comments
7	0	0	Commendable that the utility is examining this

If yes, is an assumption of +1°F by 2050 (i.e., 0.5°F every 20 years) reasonable?

Agree	Neutral	Disagree	Comments
0	6	1	More data? Use new assessment if/when available Tend - # of years enough?

If not +1°F by 2050, what should it be?

	Yes	No	Comments
Higher than +1°F	1		1.5°F by 2050
Lower than +1°F			

What else could be considered?

Trade wind days? Other variables? Changes over decades vs year to year

Extreme weather days considered?

Loss of wind → reduced wind generation over time

Losing one tradewind day/year

Likely having non-linear effects, but not easily picked up in models due to slow rate of change

ELECTRIFICATION OF TRANSPORTATION (EoT)

The State of Hawaii is committed to reducing our islands' dependence on fossil fuels and the mayors of Honolulu, Maui, Hawaii, and Kauai counties jointly committed to transition to 100% renewable fuels in transportation by 2045.

What are the drivers that are needed to support these goals by increasing EV adoption and reaching higher saturations of total light duty vehicles?

Rank in order of 1=most influential to 8=least influential

No.	Driver	Ranking (1 to 8)
1	Cost parity of an EV with a comparable conventional vehicle	2,2,4,1,1,3,1 = 14 Rank = 1
2	Automakers developing more suitable models	4,4,2,3,5,7,3 = 28 Rank = T3
3	Increased charging opportunities	1,7,1,2,2,1,2 = 16 Rank = 2
4	Higher level awareness and understanding of EVs	6,5,7,7,6,6,5 = 42 Rank = 7
5	Lower cost of owning and maintaining	3,3,6,5,3,2,6 = 28 Rank = T3
6	Financial or other incentives	5,6,5,4,4,4,4 = 32 Rank = 5
7	Policy	7,1,3,6,7,5,7 = 36 Rank = 6
8	Other	8,8,8,8,8,8,8 = 56 Rank = 8

Comments:

2 EV owners out of 7

Is rental car industry included in the forecast?

Even if you have PHEV, if you have a commute of 50 miles or less, most of it will be on electric

What is the future market saturation of EVs as a percent of light duty vehicles?

Using the example of scenarios from the handout developed for the EoT Roadmap as a guide where the numbers 1 through 3 represent being **closer** to the:

1 = Low Case 2 = Reference Case 3 = High Case

Oahu	1	2	3	Comments
In the next 5 years (~ 2024)	1	3	2	Challenge of charging for high-rise dwellers
In about 10 years (~ 2030)	1	2	4	
By 2045	2	2	3	

Low due to unknowns in market – use in tourist industry, high rises, etc.

Noticed hotels only have a few charging ports

Backbone study recently filed by HECO; forecasts a big need for chargers

Maui County	1	2	3	Comments
In the next 5 years (~ 2024)	3	3	1	
In about 10 years (~ 2030)	1	4	2	
By 2045	2	0	5	

Group noted higher adoption on Maui – no high rise barriers like on Oahu

JumpSmart Maui program led to increased EV adoption, but now Hitachi is no longer servicing the program and business side of maintaining the program has been a struggle

Hawaii Island	1	2	3	Comments
In the next 5 years (~ 2024)	6	0	1	
In about 10 years (~ 2030)	4	2	1	
By 2045	1	4	2	

Group noted need for trucks, including hauling own garbage

Highest percentage of low income residents

What influences a customer's decision when to charge their vehicle?

1 = Very important 2 = Somewhat important 3 = Not important

Personally owned	1	2	3	Comments
When it fits their schedule	3	2	0	
<u>Location is convenient and a charger/outlet is available</u>	6			
• At home				
• At the workplace	6			
• Public charger	6			
• Elsewhere				
The cost to charge	2	4		
When more range is needed regardless of price	5	1		

All location items (home, workplace, etc) have to be "Very Important" to get to reference or high scenarios.

Consensus that cost doesn't matter when you're running on empty. Demand for gasoline is inelastic, and do expect similar behavior here.

Commercial	1	2	3	Comments
When it fits the business' operations	5	0	1	
The cost to charge	1	5	0	
Accessibility of a charger regardless of the cost to charge	0	5	1	

Depends on type of operations; e.g. blood delivery cannot compromise operations

DISTRIBUTED ENERGY RESOURCES (DER)

What are the drivers for adoption?

- 1 – Very important in customer’s decision making
- 2 – Possibly important in customer’s decision making
- 3 – Not important in customer’s decision making

Driver	1	2	3	Comments
PV and storage installed costs	1	4		
Tax credits / rebates / other incentives	6			
Program structure and/or rate design	4	2		
				Relative price vs utility cost Reliability concerns Right thing to do

What are the barriers for customers?

1 – Not a barrier

2 – Possibly a barrier

3 – Major barrier

Residential	1	2	3	Comments
Lack of home ownership	0	1	5	
Shared roof space	0	5	1	
Low consumption/low bill	0	4	2	
Low income	1	4	1	Can get if good credit
Roof integrity	2	4	0	
Financing options (<i>lack of</i>)	0	2	4	

Environmentally conscious may still adopt regardless of their bill

If 80% of your income is going to housing and groceries, you aren't going to pay thousands for a PV system

Roof integrity not necessarily a barrier; may impact timing

Commercial	1	2	3	Comments
Lack of roof ownership	0	2	4	
Limited space	0	0	6	Major barrier on Oahu, less on neighbor islands
Short lease on property	0	0	6	
Financing options (<i>lack of</i>)	2	4	0	
Makes business sense				Confusing question – we pass
Building aesthetics / historical	0	6	0	
Roof integrity	0	5	1	

HOA type rules may affect ability to install

Some "historic" homes have installed PV on side of roof facing away from street

What would it take to see major growth?

1 – Very important

2 – Possibly important

3 – Not important

	1	2	3	Comments
New technologies	0	5	1	
System prices	6	0	0	
New incentives / pricing	3	3	0	
				Policy support (e.g. building code)

Hawaii is pretty innovative on new incentives/pricing

In California new construction is required to be net zero capable

What is the future market saturation?

1 – partially saturated, still room for growth

2 – nearing saturation, low growth

3 – fully saturated, no growth

	1	2	3	Comments
In 5-years	5			Battery storage prices will come down
In 10 years	4	1		
By 2045	0	2	4	For 2045 prices → increased participation, saturation and defection

Historically to hit the top third of the adoption curve you would need policy to drive it

People are holding off on adoption, waiting for technology improvements/price reductions

What happens to existing DER systems after they degrade or the lease ends?

1 – Most Likely

2 – Unknown

3 – Unlikely

Residential	1	2	3	Comments
Replace	6	0	0	
Extend lease	3	3	0	Depends on lease rate
Nothing	4	1	1	
Remove	0	1	5	
<i>Transfer</i>				How can you recycle

If lease can be extended at the same rate, then it will be chosen since electricity prices are going up

Wouldn't extend the lease if the systems output is degraded

People don't even change the filters for their HVAC; not going to do anything about an old PV system

"Transfer" as an option as it may be used for another purpose later

Commercial	1	2	3	Comments
Replace	6	0	0	
Extend lease	5	1	0	
Nothing	0	0	6	
Remove (<i>and not replace</i>)	0	0	6	