

## WEATHER

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

Agree	Neutral	Disagree	Comments
5	1		<p>In CA, warmer temps are correlated to higher A/C summer loads? Are these higher loads motivation for added PV?</p> <p>How to capture non-traditional A/C use once acquired (i.e., if you have A/C, more willing to use it even if you wouldn't have before, especially with PV)?</p> <p>Humidity impacts in addition to temps.</p>

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

Agree	Neutral	Disagree	Comments
3	1	2	<p>Run sensitivity analysis on assumption. How sensitive is load to changes, +0.5°F or more above assumption?</p> <p>Need to reference other sources as well.</p>

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

	Yes	No	Comments
Higher than +1°F	3		2°F? Look at 1 – 2 °F what is the impact on load?
Lower than +1°F		4	

### What else could be considered?

- *It should be based on recent climate research predictions and cited as such.*
- *Why are you using Fahrenheit instead of Celsius given that most of the discussions I've seen to date discuss increase in climate temperature in Celsius? Maybe this is a moot issue given the conversion factor isn't that dramatic at 1 or 2 degree changes?*
- *Reasonable for use as a base case, scenario analysis could be useful to understand impact.*
- *Humidity should definitely be considered. Hawaii Energy observed a correlation to increased energy use during the considerably more humid months (September & October) in Hawaii. A good next step would be to identify which variable, temperature or humidity or both, best correlate to Hawaii's energy use.*

## 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 (Counts for Top 3 summarized)

No.	Driver	Ranking (1 to 8)						1	2	3
1	Cost parity of an EV with a comparable conventional vehicle	5	1	5	1	2	1	3	1	
2	Automakers developing more suitable models *	1	3	1	4	5	6	2		1
3	Increased charging opportunities	2	2	2	3	4	5		3	1
4	Higher level awareness and understanding of EVs			3	5	6	4			1
5	Lower cost of owning and maintaining	4		7	6	8	2		1	
6	Financial or other incentives	6		4	2	2	3		2	1
7	Policy	7		6	7	7	7			
8	Other		4	8			8			
	- Range anxiety					1		1		
	- Battery / cargo capacity	3								1

*Note: One participant had 2 answers tied for #2*

### Comments:

\* Particularly LDV trucks, most popular in area and won't consider other types.

Any market surveys available (customer sentiment/awareness)? Work with dealers to raise awareness?

## 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)		3	1	
In about 10 years (~ 2030)		2	2	
By 2045	1	3		

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

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

- *What are the lower income populations, do they differ by county? Income a barrier?*
- *Utility uses targeted approach for incentives. Carveouts for charger infrastructure for disadvantaged communities because less infrastructure investment in those communities historically. Also, limited secondary markets in those communities.*

## 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		
<u>Location is convenient and a charger/outlet is available</u>	5			<ul style="list-style-type: none"> <li>Convenience is right up there in importance with cost.</li> </ul>
<ul style="list-style-type: none"> <li>At home</li> </ul>				
<ul style="list-style-type: none"> <li>At the workplace</li> </ul>	2	3		
<ul style="list-style-type: none"> <li>Public charger</li> </ul>	2	3		
<ul style="list-style-type: none"> <li>Elsewhere</li> </ul>		4	1	
The cost to charge	4	1		<ul style="list-style-type: none"> <li>I find many EV owners drive to free lots and take advantage of incentive perks. Many also have PV, an indication of a desire to pay less for electricity &amp; gasoline.</li> </ul>
When more range is needed regardless of price	1	3		<ul style="list-style-type: none"> <li>This is status quo from internal combustion/conventional vehicles</li> </ul>

Commercial	1	2	3	Comments
When it fits the business' operations	5			<ul style="list-style-type: none"> <li>Business standard practice may be to keep it topped up because no one knows who/when it will be needed and for what range.</li> </ul>
The cost to charge	3	1	1	
Accessibility of a charger regardless of the cost to charge	2	2	1	

*Left blank intentionally*

## 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	5	1		
Tax credits / rebates / other incentives	3	3		<ul style="list-style-type: none"> <li>• Definitely important, maybe not the largest driver.</li> </ul>
Program structure and/or rate design	3	3		<ul style="list-style-type: none"> <li>• On-going costs are very important</li> </ul>
Number & duration of outages				<ul style="list-style-type: none"> <li>• Increases adoption for DER/storage, e.g., CA announced shutdown of transmission lines during high wind</li> <li>• Commercial backup – PV &amp; storage or diesel/CHP generators?               <ul style="list-style-type: none"> <li>▪ TX gen due to cost (fuel much cheaper).</li> </ul> </li> <li>• Rates (TOU, rate arbitrage) may be motivating storage.</li> </ul>

## 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		3	3	
Shared roof space		6		
Low consumption/low bill		5	1	
Low income		3	3	
Roof integrity		5	1	
Financing options		6		

Commercial	1	2	3	Comments
Lack of roof ownership		3	3	
Limited space		4	2	
Short lease on property		4	2	
Financing options	2	4		
Makes business sense		2	4	
Building aesthetics / historical	1	5		
Roof integrity		4	2	
Corporate policy				Green directive, loosen financial requirements for projects to achieve policy

### What would it take to see major growth?

1 – Very important

2 – Possibly important

3 – Not important

	1	2	3	Comments
New technologies	3	2	1	
System prices	5	1		
New incentives / pricing	6			

### 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	1		
In 10 years	1	4	1	
By 2045		1	5	

- *Mandated new construction include DER?*



## 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	5	1		
Extend lease	3	3		
Nothing		4	2	
Remove		2	4	

Commercial	1	2	3	Comments
Replace	5	1		
Extend lease	3	3		
Nothing		3	3	
Remove		3	3	

- *Degradation is considered by planners. How to track replace/expansion/updating of systems under discussion because unless the customer updates paperwork, it isn't trackable.*
- *Inverter replacement visibility? Replacement with smart inverters, no visibility?*