

Testing Strategy – EPA

Define Test Approach and Test Scenarios

You are assigned to test the EPA's Carbon Footprint Calculator. What is your approach to test this application? Which tests are worth automating and which ones are not? How would you define your test scenario(s) and acceptance criteria? What are the main bugs? Please present a simple, clear, and concise format.

Thinking about testing strategy I will use the test pyramid and how it is an application focused on the web version. I will define together with the team, unit tests, api tests, it was verified that the page has health check requests, accessibility testing, load testing, acceptance test, exploratory testing and regressive automated testing.

I used heuristics to perform exploratory testing.

Acceptance testing and approval by the Design of the team or the PO of the project.

Responsiveness testing in different browsers: Safari, Chrome, Firefox.

Test scenario

Scenario 1 - Include an invalid number of residents for carbon footprint calculation

Given the user accesses the EPA website

When the user includes the number of people in the household

And include an invalid number

Then the user is redirected to the calculator page

Scenario 2 - Include valid data for carbon footprint calculation

Given the user accesses the EPA website

When the user includes the number of people in the household

And include the ZIP code number

Then the user is redirected to the calculator page successfully

Scenario 3 - ZIP code number available for different formats

Given the user accesses the EPA website

When the user includes the ZIP code number with more than 5 digits

Then the user sees an error message "Please enter a valid five-digit ZIP code."

Scenario 4 - Carbon footprint calculation

Given the user accesses the EPA website

When the user includes the number of people in the household

And include a valid number

Then the user is redirected to the calculator page

Given you are on the Home Energy page

When you fill in all the fields

And click on the button "Continue to Transportation"

Given you are on the Transportation page

When you fill in all the fields

And click on the "Continue to Waste" button

Given it's on the Waste page

When you fill in all the fields

And click on the button "Continue to Report"

Then the report will be generated successfully

Carry out automated tests:

e2e tests on different types of browsers

Test each functionality end-to-end

Improvements and bugs found:

Bug 1 – Campo Energy AC desabilitado

Environment: Production

All browsers have the same result

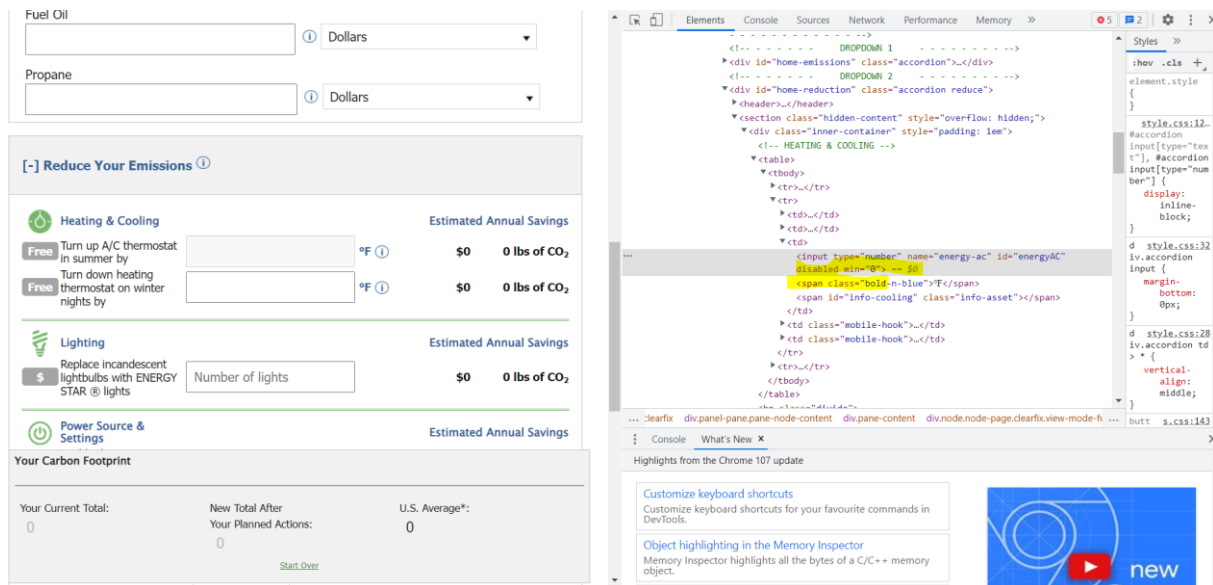
Component: text box

On the "Home Energy" page

In the part called "Heating and Cooling"

The first field is disabled for filling

Images below:



Heating

What is your household's primary heating source?

Select Source

Utility

Enter your average monthly bill or other data for each source of energy your household uses.
Click the icons, ⓘ below for each U.S. average

Natural Gas ⓘ

Dollars

0 lbs.

Electricity ⓘ

Dollars

% electricity that is Green ⓘ

0 lbs.

Fuel Oil ⓘ

Dollars

0 lbs.

Propane ⓘ

Dollars

0 lbs.

Estimated pounds of CO₂/year

[-] Reduce Your Emissions ⓘ

Heating & Cooling

Free

Turn up A/C thermostat in summer by

°F ⓘ

Free

Turn down heating thermostat on winter nights by

°F ⓘ

Lighting

\$

Replace incandescent lightbulbs with ENERGY STAR Ⓢ lights

Number of lights

Estimated Annual Savings

\$0

0 lbs of CO₂

\$0

0 lbs of CO₂

\$0

0 lbs of CO₂

Expected result: It should be possible to fill in the field

Priority: High

Severity: Impacts on the result of the calculation because it is not possible to fill in the field – Major

Bug 2 – Maximum valid number of residents in a residence

product env

all browsers

Possible to include an invalid address number for a household

Carbon Footprint Calculator

What is your carbon footprint?

Take a few minutes to find out with EPA's Household Carbon Footprint Calculator.

Get Started

About

- Many of our daily activities - such as using electricity, driving a car, or disposing of waste - cause greenhouse gas emissions. Together these emissions make up a household's carbon footprint.
- The calculator estimates your footprint in three areas: home energy, transportation and waste. Everyone's carbon footprint is different depending on their location, habits, and personal choices.
- For an explanation of the calculator's assumptions and sources, see the [Assumptions and References page](#).

How To

- You can get a quick, rough estimate of your carbon footprint by using U.S. average values. They are provided (*along with other useful information*) in the "tool tips" throughout the calculator.
- For a more accurate estimate, use your own numbers. Gather your utility bills (electricity, natural gas, fuel oil, propane) to calculate your average use over a year. You can find your car's rated fuel efficiency at fuelconomy.gov, or you can [calculate your car's actual efficiency](#).

Download

- To work offline or see the formulas behind the calculator, you can download it as a spreadsheet.

Calculator in Excel

Expected Result: Validation for valid and possible number

Priority: Low

Severity: Minor

Bug 3 - Dollar Savings field result with undefined value

<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>		
<p>If you take all of the new actions you've selected:</p> <p>Replace Vehicle 2 with one that gets MPG</p> <p>Your Estimated Totals:</p>	<p>Dollar Savings</p> <p>\$0</p>	<p>CO₂ Reduction</p> <p>NaN lbs.</p> <p>0 lbs.</p>
<p>By taking all of the actions you are already doing:</p> <p>Your Estimated Totals:</p>	<p>Dollar Savings</p> <p>\$0</p>	<p>CO₂ Reduction</p> <p>0 lbs.</p>

Show representative value instead of undefined value. For better user experience

Priority: Medium

Severity: Major

The “Loads per Week” field has different dimensions from the other fields causing contrast on the page.

Big 5 – Incorrect color palette on result page

Your Household Carbon Footprint Report

Priority: Low

Severity: Minor

Accessibility tests and performance tests generated by LightHouse

Report in pdf in a separate file.