



# DECOPLED DAYS 2021

presented by **srijan:**

**Virtual Edition**  
July 14–15, 2021

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#### DIAMOND SPONSORS

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## Web components through the eyes of a newcomer

Brian Perry

<http://bit.ly/wc-dd>

# BRIAN PERRY

- » Sr. Technology Consultant, Decoupled Architectures @ Pantheon
- » Initiative Coordinator: Decoupled Menus Initiative
- » Rocking the Chicago ‘burbs

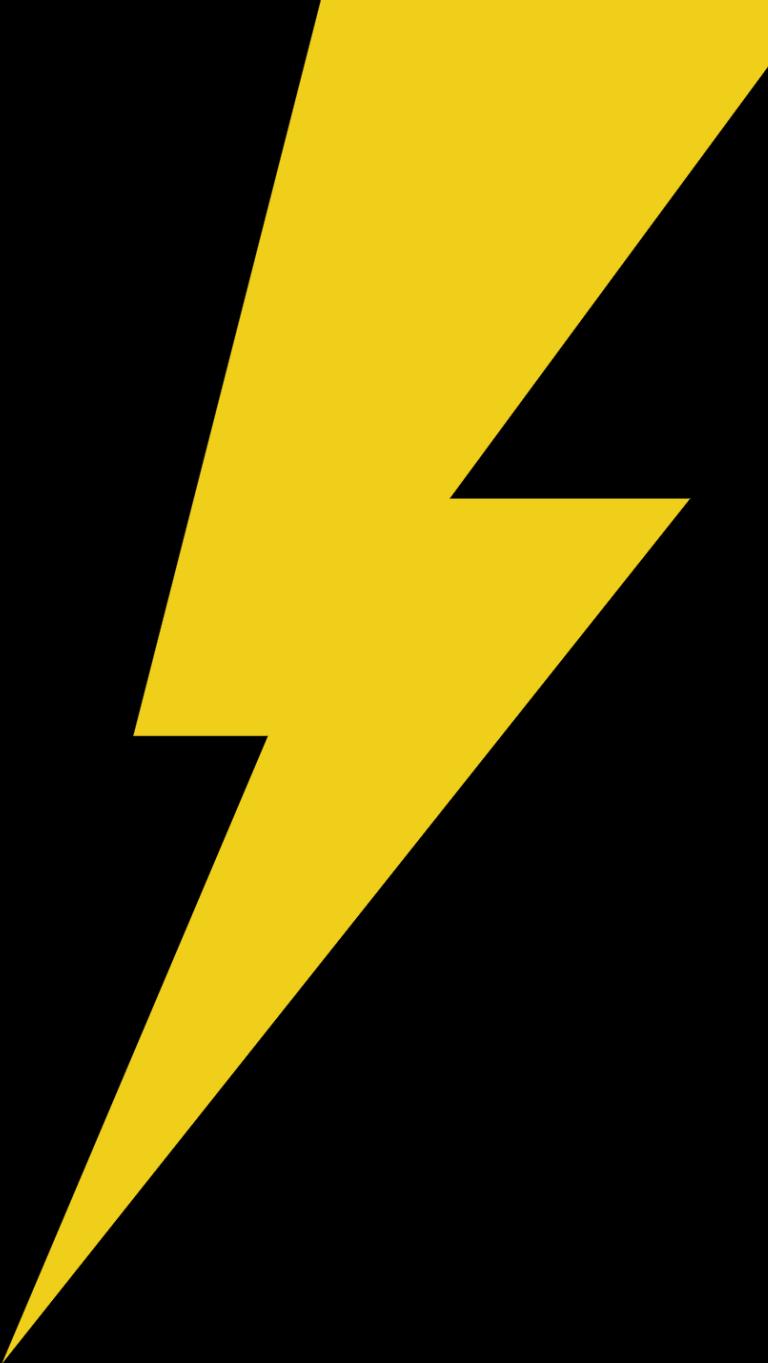
» Lover of all things components... and Nintendo

d.o: brianperry  
@bricomedy  
brianperry.dev



PANTHEON.IO

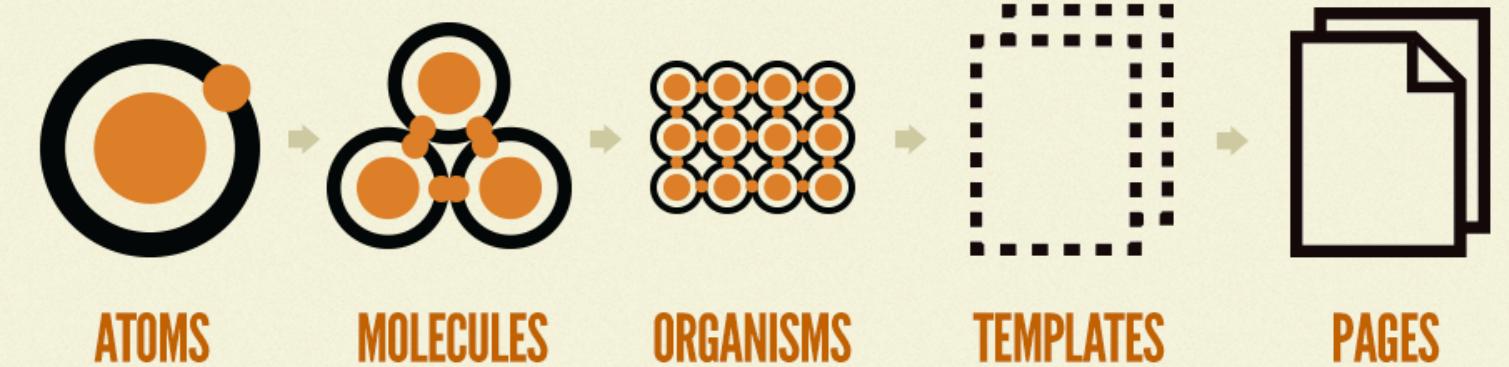
Pantheon is the WebOps platform where marketers and developers drive results, reaching billions globally with dynamic WordPress and Drupal sites. Learn more at [Pantheon.io](https://Pantheon.io).



# bounteous



# COMPONENTS HAVE TAKEN OVER THE WEB



**WE'RE HERE TO TALK  
ABOUT  
WEB  
COMPONENTS**

**LIKE REACT AND ANGULAR, RIGHT?**

# WEB COMPONENTS

A set of web platform APIs, not tied to a specific framework

- » Custom elements
- » Shadow DOM
- » HTML Templates

I ❤️ COMPONENTS.

SO I SHOULD ❤️ WEB COMPONENTS.

SO WHY WEREN'T THEY PART OF MY  
WORKFLOW? 

A black and white photograph of a man from the chest up. He has short dark hair and is looking slightly upwards and to his right with a neutral expression. He is wearing a dark-colored, long-sleeved button-down shirt with a fine, light-colored checkered pattern. His left hand is resting on his left shoulder, with his fingers partially hidden by the fabric. In the background, there is a small, potted plant with many green leaves, positioned behind his right shoulder.

**WARNING: NOT AN EXPERT**

# I LOOK TO:



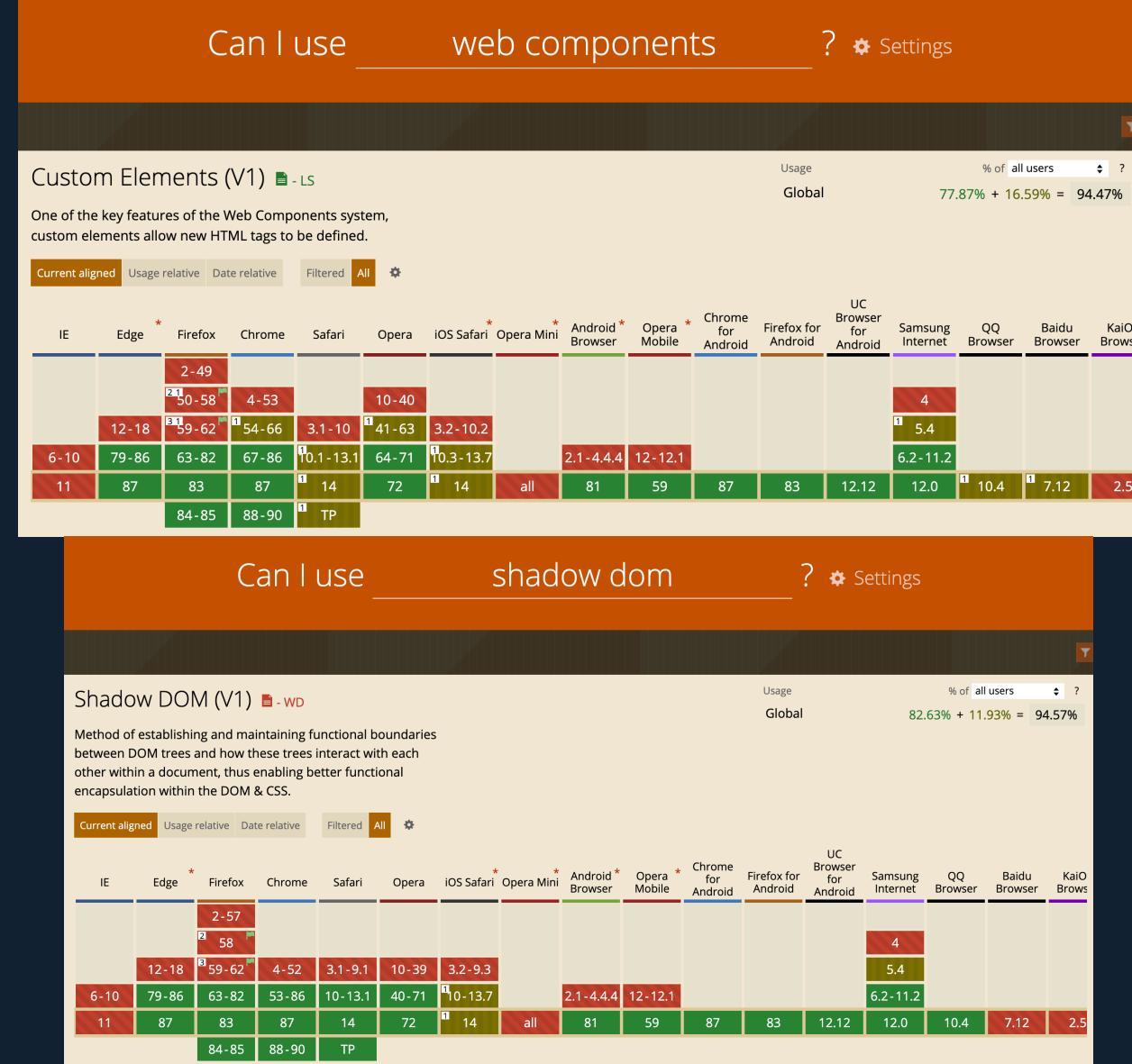
**@CASTASTROPHEE**

**@SALEM\_COBALT**

**@BTOPRO**

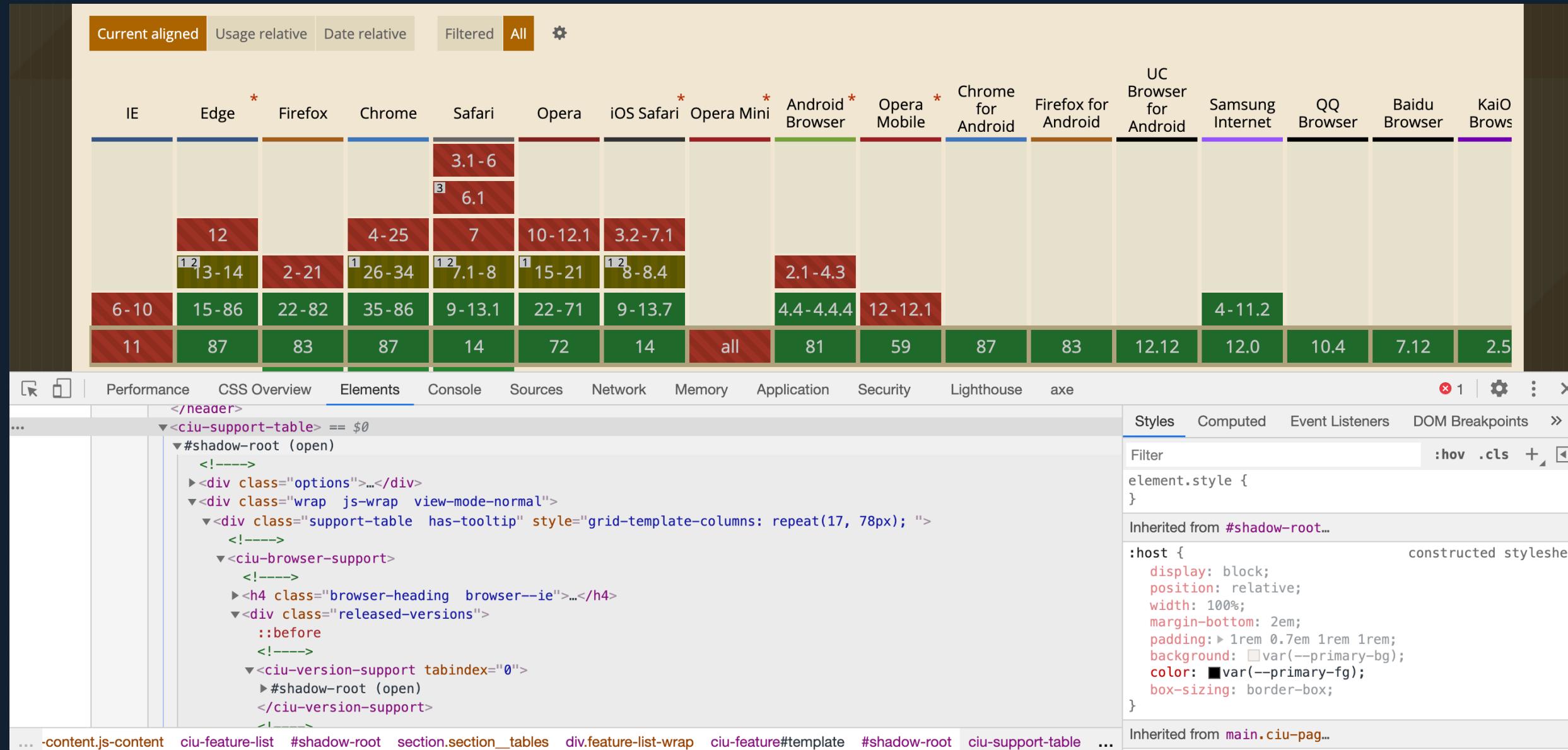
**@ILLEPIC**

# CAN I USE WEB COMPONENTS?<sup>1</sup>



<sup>1</sup> IE 11 can be supported using polyfills

# CAN CAN I USE USE WEB COMPONENTS?<sup>2</sup>



<sup>2</sup> Find many more examples at <https://wild.open-wc.org/>

# I SHOULD BUILD AN EXAMPLE WEB COMPONENT.

But what could be a relevant example in November 2020?

 2020 ELECTION

President

Senate

House

Question 1

Question 2

Mass. races

Find a race



**Joe Biden** Dem  
**264**

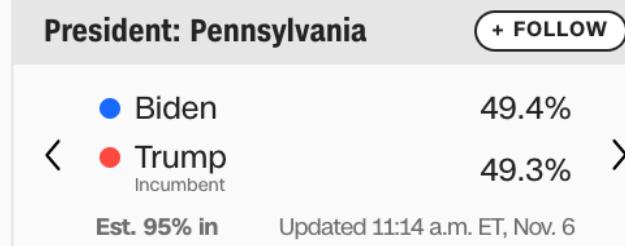
**270 to win**  
60 undecided

**Live Election Updates**

Trump says he will ‘never give up fighting’

- 1:55 p.m.  
**Trump vows to ‘never give up fighting,’ in new statement**
- 12:47 p.m.

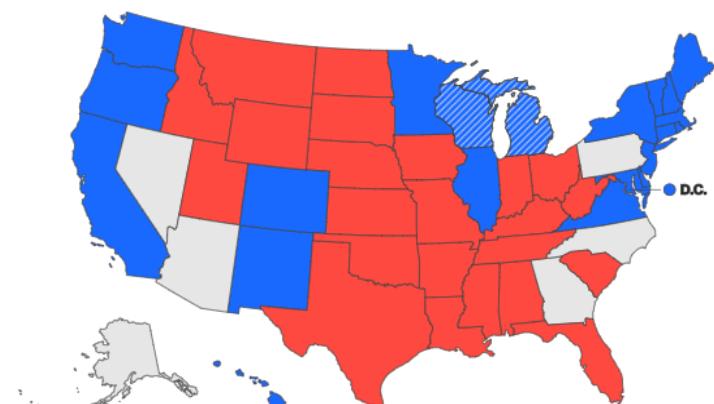
\* The Associated Press has called Joe Biden the winner in Arizona, which is reflected in this number. Some other major news organizations have yet to make a projection in the state.



# Biden



## CNN PRESIDENTIAL PROJECTIONS



Updated 11:23 a.m. ET, Nov. 6



President: Pennsylvania

+ FOLLOW

● Biden  
< ● Trump  
Incumbent

49.4%  
49.3% >

Est. 95% in

Updated 11:14 a.m. ET, Nov. 6

President: Pennsylvania

+ FOLLOW

● Biden  
< ● Trump  
Incumbent

49.4%  
49.3% >

Est. 95% in

Updated 11:14 a.m. ET, Nov. 6

# Biden



THE ROAD TO 270

253

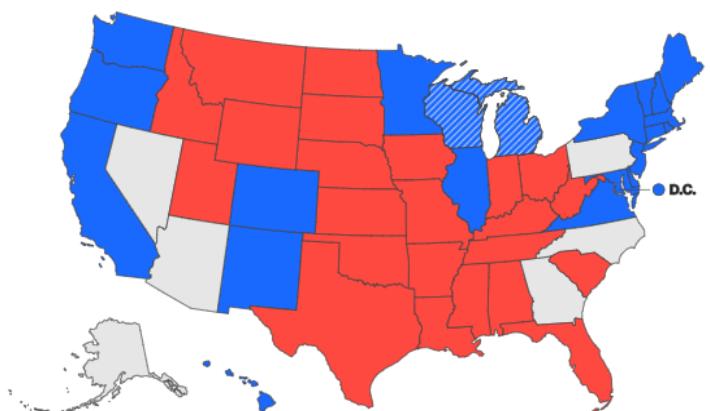
270

213



Updated 11:23 a.m. ET, Nov. 6

## CNN PRESIDENTIAL PROJECTIONS



Updated 11:23 a.m. ET, Nov. 6

BIDEN

TRUMP



# Biden



THE ROAD TO 270

253

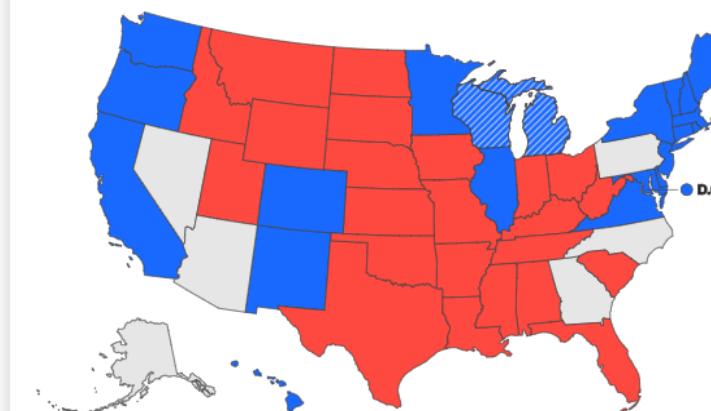
270

213



Updated 11:23 a.m. ET, Nov. 6

## CNN PRESIDENTIAL PROJECTIONS



Updated 11:23 a.m. ET, Nov. 6

BIDEN

TRUMP



President: Pennsylvania

+ FOLLOW

● Biden  
< ● Trump  
Incumbent

49.4%  
49.3% >

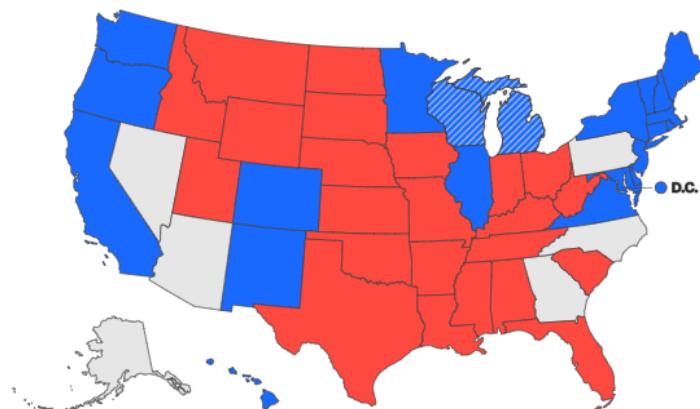
Est. 95% in

Updated 11:14 a.m. ET, Nov. 6

# Biden



## CNN PRESIDENTIAL PROJECTIONS



Updated 11:23 a.m. ET, Nov. 6

BIDEN  
Win Flip

TRUMP  
Win Flip

President: Pennsylvania

+ FOLLOW

● Biden  
< ● Trump  
Incumbent

49.4%  
49.3% >

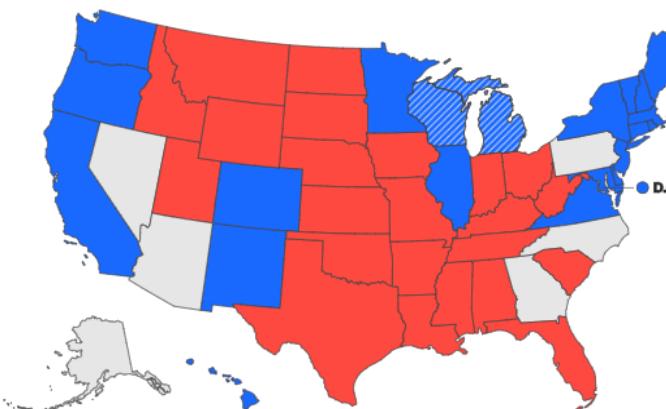
Est. 95% in

Updated 11:14 a.m. ET, Nov. 6

# Biden



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BIDEN  
Win Flip

TRUMP  
Win Flip

President: Pennsylvania

+ FOLLOW

● Biden  
< ● Trump  
Incumbent

49.4%  
49.3% >

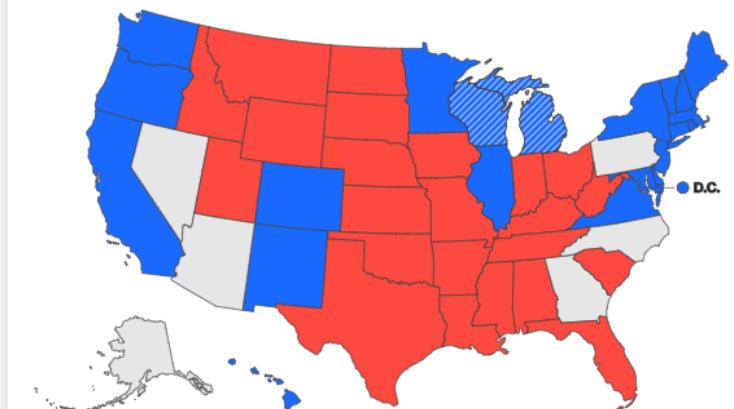
Est. 95% in

Updated 11:14 a.m. ET, Nov. 6

# Biden



## CNN PRESIDENTIAL PROJECTIONS



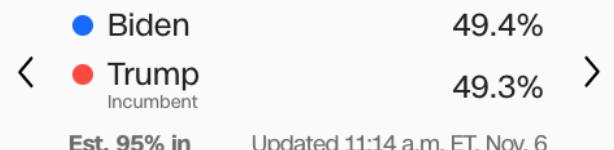
Updated 11:23 a.m. ET, Nov. 6

BIDEN  
Win Flip

TRUMP  
Win Flip

**President: Pennsylvania**

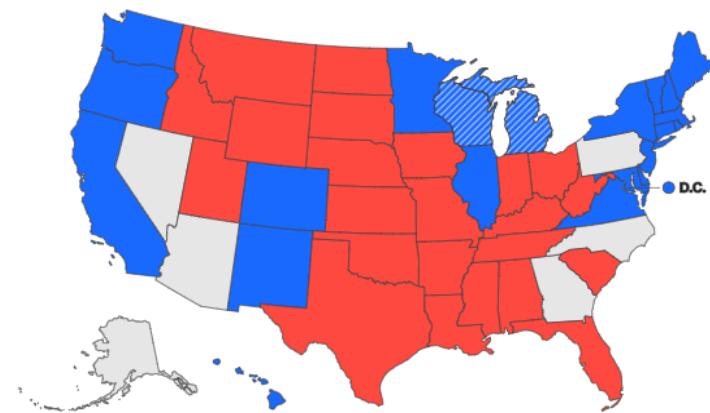
+ FOLLOW



# Biden



Updated 11:23 a.m. ET, Nov. 6

**CNN PRESIDENTIAL PROJECTIONS**

Updated 11:23 a.m. ET, Nov. 6



47

SENATE CONTROL

47

**President: Pennsylvania**

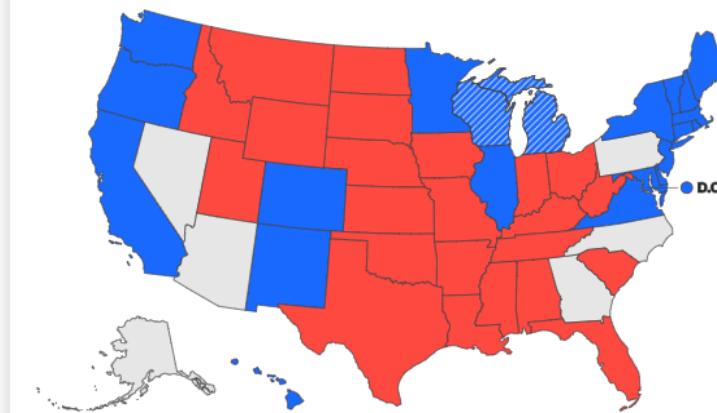
+ FOLLOW



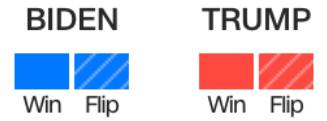
# Biden



Updated 11:23 a.m. ET, Nov. 6

**CNN PRESIDENTIAL PROJECTIONS**

Updated 11:23 a.m. ET, Nov. 6



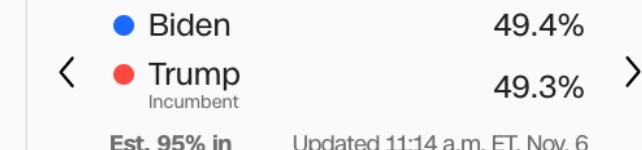
47

SENATE CONTROL

47

**President: Pennsylvania**

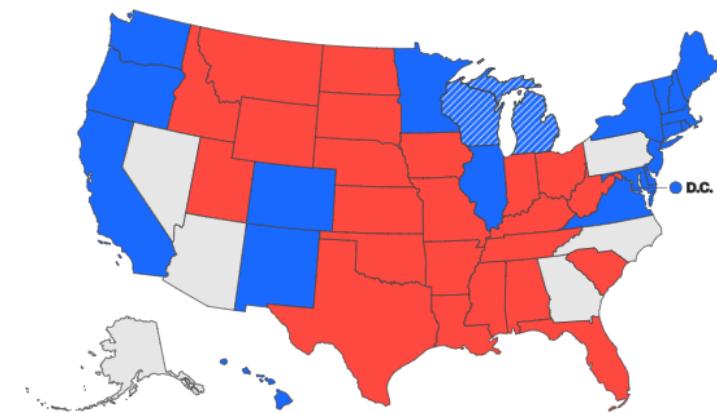
+ FOLLOW



# Biden



Updated 11:23 a.m. ET, Nov. 6

**CNN PRESIDENTIAL PROJECTIONS**

Updated 11:23 a.m. ET, Nov. 6



47

SENATE CONTROL

47

**President: Pennsylvania**

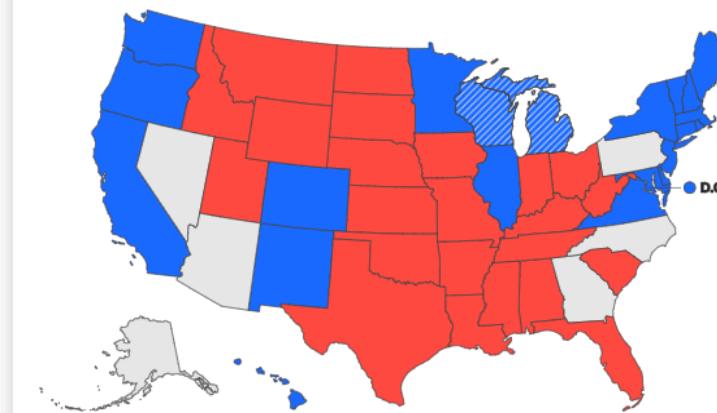
+ FOLLOW



# Biden



Updated 11:23 a.m. ET, Nov. 6

**CNN PRESIDENTIAL PROJECTIONS**

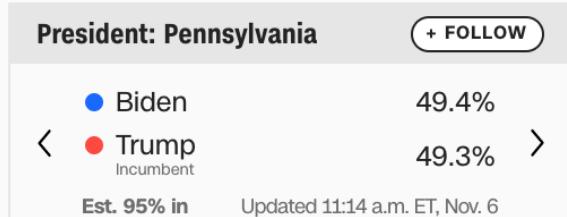
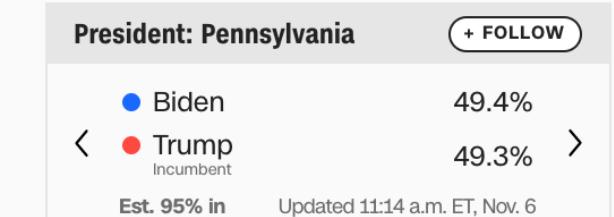
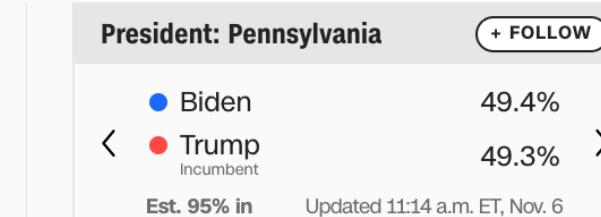
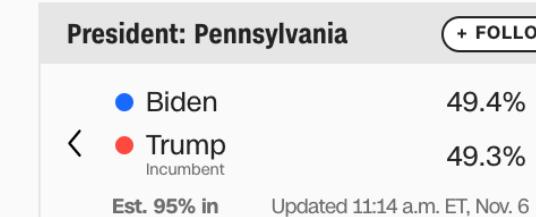
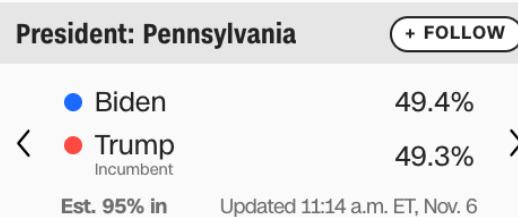
Updated 11:23 a.m. ET, Nov. 6



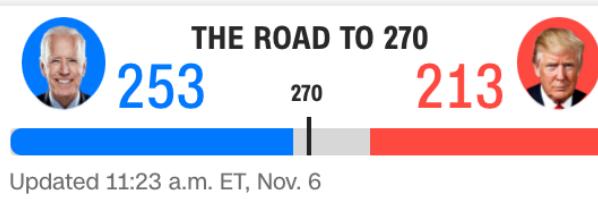
47

SENATE CONTROL

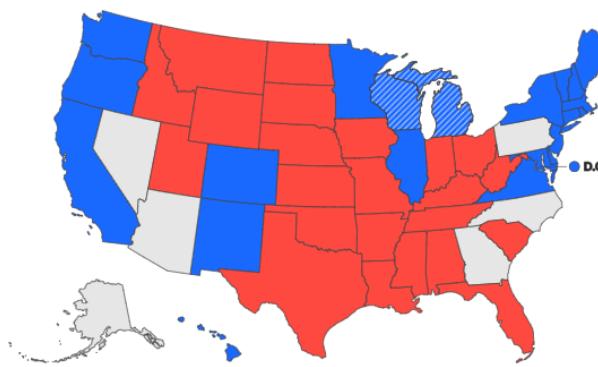
47



# Biden Biden Biden Biden Biden



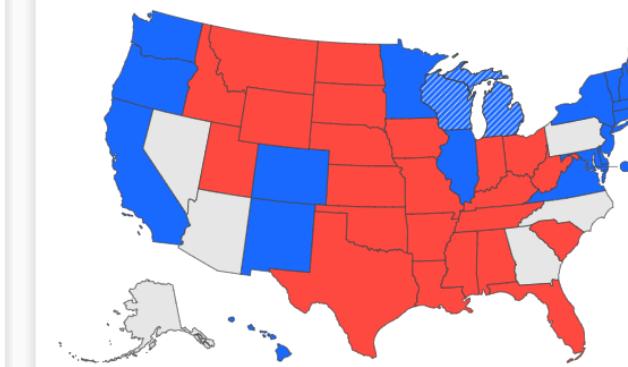
## CNN PRESIDENTIAL PROJECTIONS



Updated 11:23 a.m. ET, Nov. 6

**BIDEN**  
 Win Flip  
 Win Flip

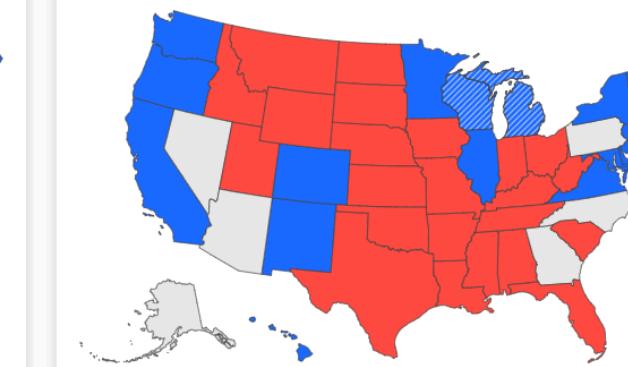
## CNN PRESIDENTIAL PROJECTIONS



Updated 11:23 a.m. ET, Nov. 6

**BIDEN**  
 Win Flip  
 Win Flip

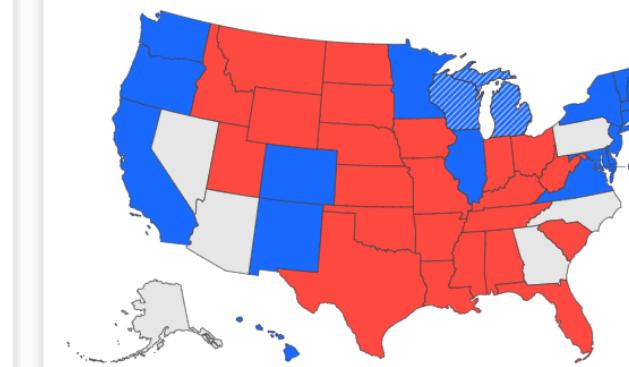
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**BIDEN**  
 Win Flip  
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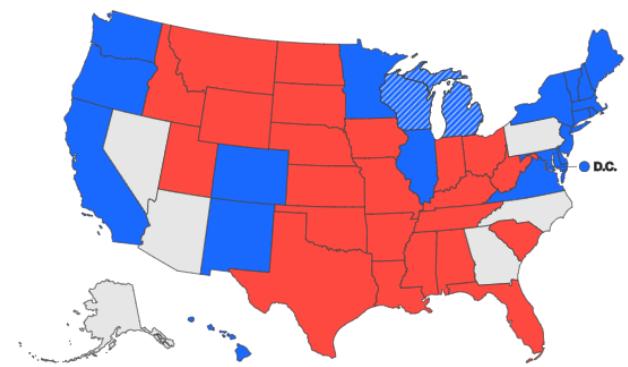
## CNN PRESIDENTIAL PROJECTIONS



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**BIDEN**  
 Win Flip  
 Win Flip

## CNN PRESIDENTIAL PROJECTIONS

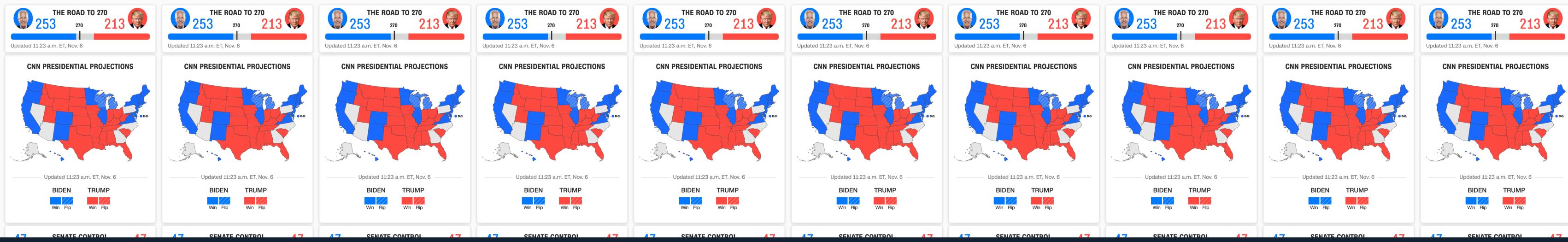


Updated 11:23 a.m. ET, Nov. 6

**BIDEN**  
 Win Flip  
 Win Flip

47 SENATE CONTROL

Biden Biden



**Friday, November 6, 2020**

# The New York Times

 **62°F** 74° 52°  
S&P 500 -0.14% ↓

# *Biden Leads in Pennsylvania; Win There Would Be Decisive*

# **State Has Electoral Votes to Put Him Over the Top**

**Live Updates >**



## **President >**

253

270  
TO WIN

214

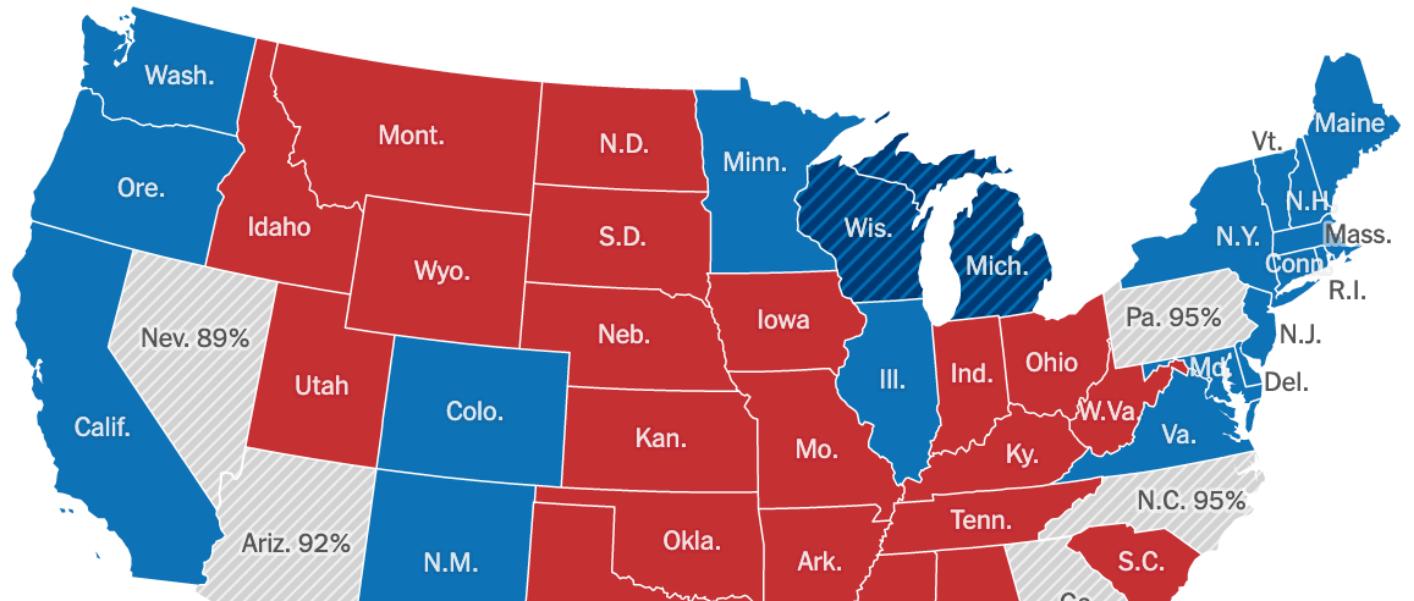
 **Dave Philipps, in Las Vegas** 39m ago

Good morning from Las Vegas. A protest at the election center last night was peaceful — no arrests. We're expecting about 50,000 votes to be released at 9 a.m. here (noon ET). See Nevada results.

### See Nevada results :

# Biden Also Edges Ahead in Georgia, Gathering Strength

- Joe Biden took the lead over President Trump in Pennsylvania, whose 20 electoral votes would put him past the threshold for victory.
  - Mr. Biden has steadily erased Mr. Trump's early lead in the state. He also inched up in Georgia, but his lead is diminished in Arizona.
  - At the White House, Mr. Trump made a brief statement filled with falsehoods about the election process. Here's the latest.



[President](#)    [Senate](#)    [House](#)    [Photos](#)

LIVE

- In photos: All eyes on Philadelphia. [15m ago](#)
  - Here are some of the things we're watching for today as vote counting continues. [43m ago](#)
  - If Trump does not concede, Biden campaign says U.S. government is 'perfectly capable of escorting trespassers out of the White House.' [1h ago](#)
  - In Wilmington, Biden's supporters hope today will bring a victory celebration. [1h ago](#)

**Key States >**

# MY OWN PERSONAL ELECTION TRACKER

Storybook

Canvas Docs

Find components /

EXAMPLE

Introduction

COMPONENTS

Results Tracker

Primary

No Politics

## Race Between Old Men Too Close To Call

Nation tired of hitting reload in their web browsers.

**President >**

**253** **214**

270 TO WIN

**Joseph R. Biden Jr.**  
73,879,622 votes (51%)

**Donald J. Trump**  
69,772,905 votes (49%)

Controls (5) Actions

Name	Control
headline	Race Between Old Men Too Close To Call
subheadline	{"strings": ["<p>\n    Nation tired of hitting reload in their web browsers.\n  </p>"], "values": [], "type": "html", "processor": []}
race	President
total	538
candidates	[{"name": "Joseph R. Biden Jr.", "primary": 253, "secondary": 73879622, "color": "#1375b7"}, {"name": "Donald J. Trump", "primary": 214, "secondary": 69772905, "color": "#c93135"}]

# USING <ELECTION-TRACKER>

- » Import script as JS module. Could be:
- » local file
- » NPM dependency (@backlineint/results-tracker)
- » Use your custom element in markup
- » Pass data in using attributes

Note: If your component has external dependencies, you'll need to use a bundler (Webpack, Rollup, Parcel, etc.)

# CUSTOM ELEMENTS<sup>3</sup>

The screenshot shows a CodePen interface with the title "Election Results Tracker" and author "Brian Perry". The top navigation bar includes icons for heart, save, settings, change view, and a user profile. The left sidebar shows the "HTML" tab selected, displaying the following code:

```
1 <head>
2   <script type="module" src="https://unpkg.com/@backlineint/results-tracker@1.0.0/results-tracker.js?module"></script>
3   <link rel="preconnect" href="https://fonts.gstatic.com">
4   <link href="https://fonts.googleapis.com/css2?family=Domine:wght@700&family=Libre+Franklin:wght@500;600;700&display=swap" rel="stylesheet">
5 </head>
6 <body>
7   <results-tracker
8     headline="Race Between Old Men Too Close To Call"
9     race="President"
10    total="538"
11    candidates='[
12      {"name": "Joseph R. Biden Jr.", "primary": 253, "secondary": 73879622, "color": "#1375b7"},
13      {"name": "Donald J. Trump", "primary": 214, "secondary": 69772905, "color": "#c93135"}
14    ]'
15  >
16    <p>Nation tired of hitting reload in their web browsers.</p>
17  </results-tracker>
18 </body>
```

The preview window below displays the heading "Race Between Old Men Too Close To Call" and the subtext "Nation tired of hitting reload in their web browsers.". It features a progress bar comparing two candidates:

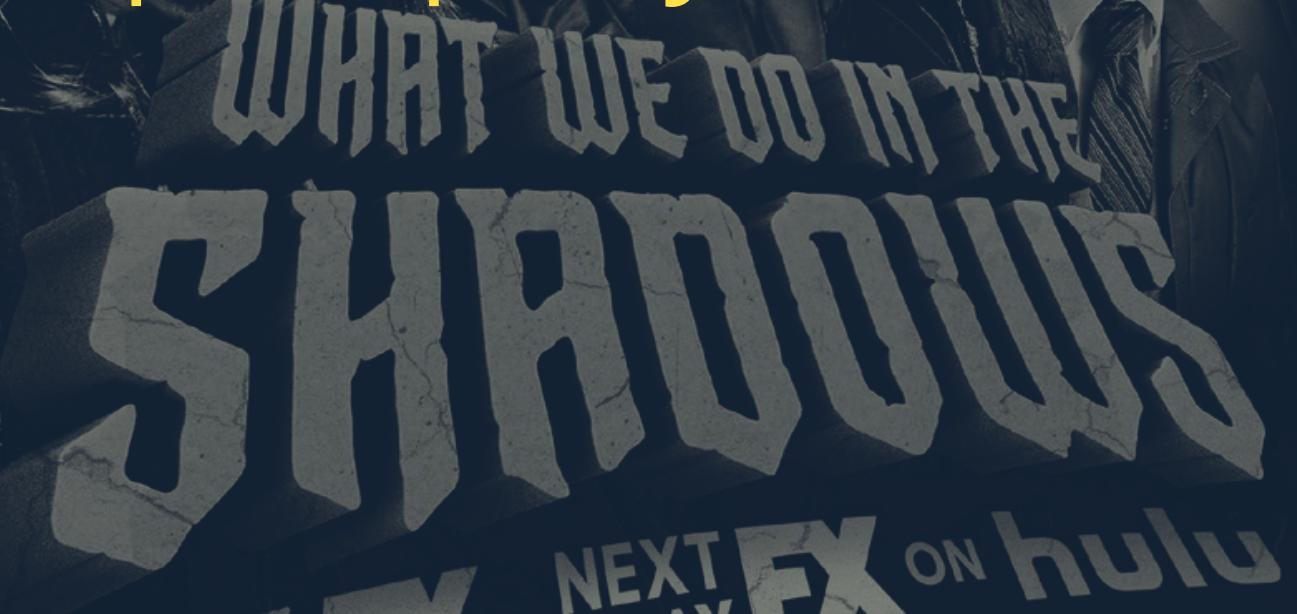
Candidate	Primary Votes	Total Votes	Color
Joseph R. Biden Jr.	253	73,879,622 votes (51%)	Blue (#1375b7)
Donald J. Trump	214	69,772,905 votes (49%)	Red (#c93135)

Below the preview are navigation links: Console, Assets, Comments, ⌘ Keys, Last saved LESS THAN A MINUTE ago, Delete, Add to Collection, Fork, Embed, Export, and Share.

<sup>3</sup> <https://codepen.io/brianperry/pen/RwGPLBx>

# SHADOW DOM

- » Encapsulated DOM Tree
- » Separate from main DOM
- » Elements won't collide
- » Scoped styles
- » Super spooky



```
<!DOCTYPE html>
<html>
  ▶ <head>...</head>
  ▼ <body>
    ▼ <results-tracker headline="Race Between Old Men Too Close To Call" race="President" total="538" candidates="[
      {"name": "Joseph R. Biden Jr.", "primary": 253, "secondary": 73879622, "color": "#1375b7"}, {"name": "Donald J. Trump", "primary": 214, "secondary": 69772905, "color": "#c93135"}]>
      ▌
      ▼ #shadow-root (open)
        <!-->
        <link href="https://fonts.googleapis.com/css2?family=Domine:wght@700&family=Libre+Franklin:wght@500;600;700&display=swap" rel="stylesheet">
      ▼ <div class="results-tracker">
        ▼ <div class="results-tracker__headline">
          ▼ <h2>
            <!-->
            "Race Between Old Men Too Close To Call"
            <!-->
          </h2>
        </div>
        ▶ <div class="results-tracker__sub-headline">...</div> == $0
        ▶ <div class="results-tracker__race">...</div>
        ▶ <div class="results-tracker__counts">...</div>
        ▶ <div class="results-tracker__bars">...</div>
        ▶ <div class="results-tracker__candidates">...</div>
      </div>
      <!-->
      <p>Nation tired of hitting reload in their web browsers.</p>
    </results-tracker>
    ▶ <script>...</script>
  </body>
</html>
```

# BUILDING <ELECTION-TRACKER> TAKE 1: VANILLA JS

# Rendering a Headline

## index.html

```
<html>
  <head>
    <title>Results Tracker Heading</title>
    <meta charset="UTF-8" />
  </head>

  <body>
    <results-tracker headline="Race Between Old Men Too Close To Call" />

    <script type="module" src="src/results-tracker.js"></script>
  </body>
</html>
```

# results-tracker.js

```
class ResultsTracker extends HTMLElement {
  constructor() {
    // Always call super first in constructor
    super();

    // Create a shadow root
    const shadow = this.attachShadow({ mode: "open" }); // sets and returns 'this.shadowRoot'

    // Create wrapping element
    const wrapper = document.createElement("div");
    wrapper.setAttribute("class", "results-tracker");

    this.headlineElement = document.createElement("h2");
    this.headlineElement.setAttribute("class", "results-tracker__headline");
    this.headlineElement.textContent = this.getAttribute("headline");
    wrapper.appendChild(this.headlineElement);

    // Attach the results tracker to the shadow DOM.
    shadow.appendChild(wrapper);
  }
}

// Define the new element
customElements.define("results-tracker", ResultsTracker);
```

# Refactoring to use <template>

```
class ResultsTracker extends HTMLElement {
  constructor() {
    super();
    this.shadow = this.attachShadow({ mode: "open" });

    // Templates are not referenced in the DOM, but can be referenced / cloned using js
    const template = document.createElement("template");

    template.innerHTML = `
      <div class="results-tracker">
        <div class="results-tracker__headline">
          <h2>${this.getAttribute("headline")}</h2>
        </div>
      </div>
    `;

    // Attach the template to the Shadow DOM
    this.shadow.appendChild(template.content);
  }
}

customElements.define("results-tracker", ResultsTracker);
```

# Add scoped styling

```
class ResultsTracker extends HTMLElement {
  constructor() {
    super();
    /* Removed for brevity... */

    // Create CSS to apply to the shadow dom
    const style = document.createElement("style");

    style.textContent = `
      :host {
        font-family: 'Libre Franklin', helvetica, arial, sans-serif;
      }
      h2 {
        margin: .5rem 0;
        font-family: 'Domine', serif;
        font-weight: 700;
        font-size: 36px;
        text-align: center;
      }
    `;

    // Attach the styles to the shadow dom
    shadow.appendChild(style);

    /* Removed for brevity... */
  }
}
```

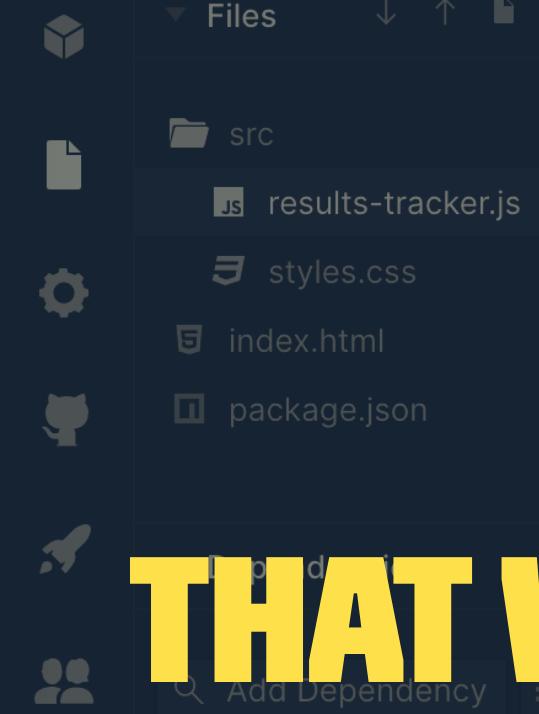
# Observe attributes and re-render if changed

```
class ResultsTracker extends HTMLElement {
  // Specify observed attributes for attributeChangedCallback
  static get observedAttributes() {
    return ["headline"];
  }

  constructor() {
    /* Removed for brevity */
  }

  // Custom element lifecycle callback function
  attributeChangedCallback(name, oldValue, newValue) {
    // Compare old to new to prevent unnecessary re-rendering
    if (oldValue !== newValue && name === "headline") {
      this.shadow.querySelector(".results-tracker__headline h2").textContent =
        newValue;
    }
  }
}

// Define the new element
customElements.define("results-tracker", ResultsTracker);
```



```
1 class ResultsTracker extends HTMLElement {  
2     // Specify observed attributes so that attributeChangedCallback  
3     static get observedAttributes() {  
4         return ["headline"];  
5     }  
6  
7     constructor() {  
8         // Always call super first in constructor  
9         super();  
10        this.shadow = this.attachShadow({ mode: "open" }); // sets up the  
11        // Shadow DOM  
12        this.shadow.innerHTML = `  
13            <div class="results-tracker">  
14                <div class="results-tracker__headline">  
15                    <h2></h2>  
16                </div>  
17            </div>  
18        `;  
19  
20        // Attach the template to the Shadow DOM  
21        this.shadow.appendChild(template.content);  
22  
23        // Create CSS to apply to the shadow dom  
24        const style = document.createElement("style");  
25        style.innerHTML = `  
26            .results-tracker {  
27                display: flex;  
28                align-items: center;  
29            }  
30            .results-tracker__headline {  
31                margin-right: 10px;  
32            }  
33            h2 {  
34                font-size: 1.5em;  
35            }  
36        `;  
37        this.shadow.appendChild(style);  
38    }  
39  
40    attributeChangedCallback(name, oldVal, newVal) {  
41        if (name === "headline") {  
42            this.shadow.querySelector(".results-tracker__headline h2").innerHTML = newVal;  
43        }  
44    }  
45}
```

## Race Between Old Men Too Close To Call

**THAT WAS TOO MUCH WORK FOR A HEADLINE...<sup>4</sup>  
SHOULDN'T THIS BE EASIER?**

<sup>4</sup> <https://codesandbox.io/s/results-tracker-heading-vanilla-js-lunes>

**WAIT FOR IT**

The image features a bold, sans-serif font where the letters 'W', 'A', 'I', 'T', 'F', 'O', 'R', and 'I' are filled with a bright yellow color. The 'T' in 'IT' is only partially filled, with the right side being white. The letters are set against a solid black background. To the right of the word 'IT', there are three small, solid yellow circles of decreasing size, suggesting motion or continuation.

**SO.  
MANY.  
LIBRARIES.**

- » Lit
- » Stencil
- » FastElement
- » Haunted
- » Hybrids
- » Many more...

**AREN'T WE JUST BACK WHERE WE  
STARTED?**

Only one way to find out...

# BUILDING <ELECTION-TRACKER> TAKE 2: LIT 🔥

# Rendering a headline (Lit version)

## index.html

```
<html>
  <head>
    <title>Results Tracker Heading - Lit</title>
    <meta charset="UTF-8" />
  </head>

  <body>
    <results-tracker headline="Race Between Old Men Too Close To Call" />

    <script type="module" src="src/results-tracker.js"></script>
  </body>
</html>
```

(same as vanilla js version)

# results-tracker.js

```
import { LitElement, html } from "lit";

export class ResultsTracker extends LitElement {
  static get properties() {
    return {
      headline: { type: String },
    };
  }

  render() {
    return html`
      <div class="results-tracker">
        <div class="results-tracker__headline">
          <h2>${this.headline}</h2>
        </div>
      </div>
    `;
  }
}

window.customElements.define("results-tracker", ResultsTracker);
```

# A LOT WITH LESS

- » Renders custom element
- » Templating
- » Observes updates to attributes

Just need to add scoped styles.

# Add scoped styling

```
import { LitElement, html, css } from "lit";

export class ResultsTracker extends LitElement {
  static get styles() {
    return css`
      :host {
        font-family: "Libre Franklin", helvetica, arial, sans-serif;
      }
      .results-tracker__headline h2 {
        margin: 0.5rem 0;
        font-family: "Domine", serif;
        font-weight: 700;
        font-size: 36px;
        text-align: center;
      }
    `;
  }

  // Properties...

  // Render method...
}

window.customElements.define("results-tracker", ResultsTracker);
```

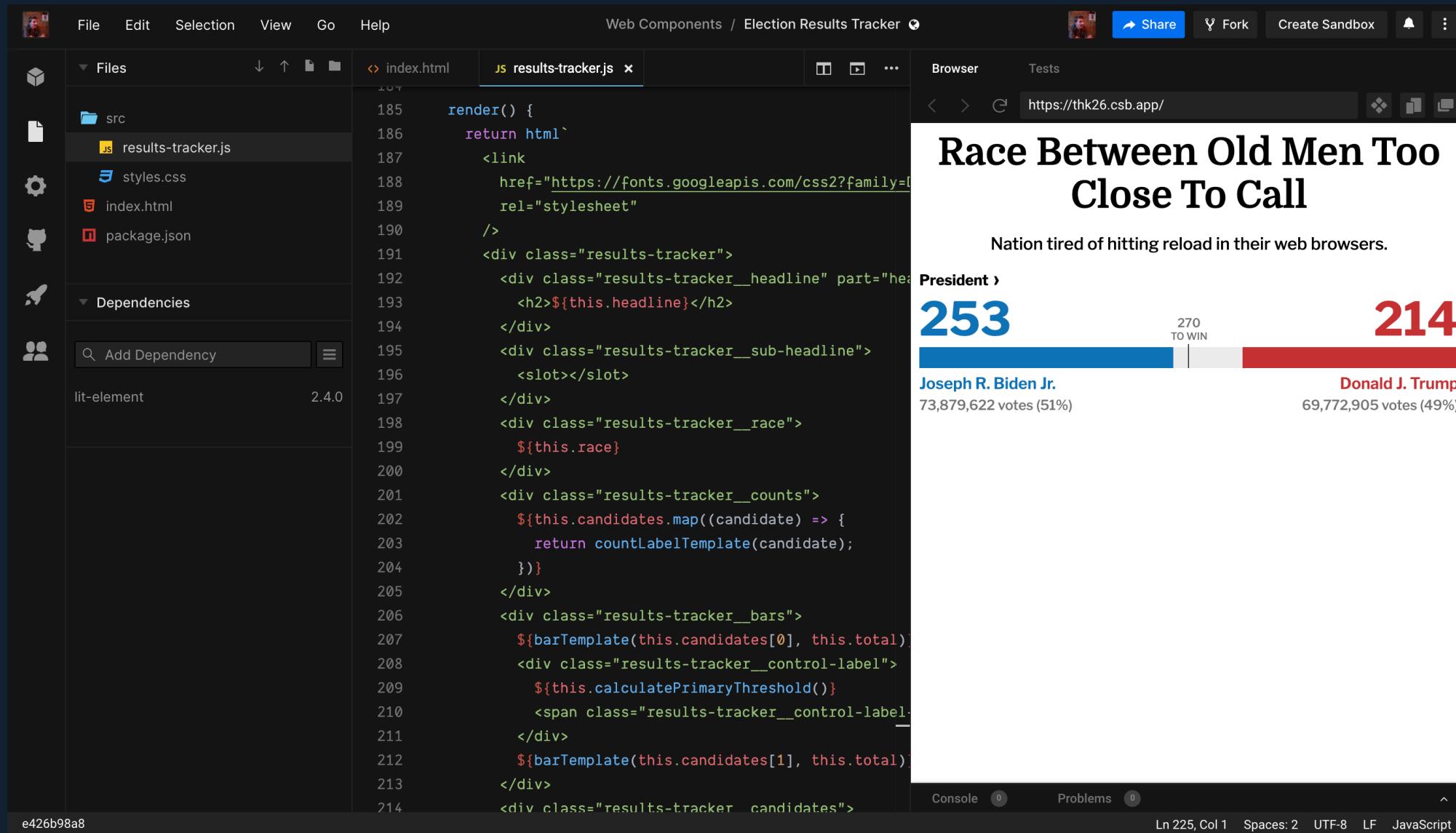
# Converting attributes

```
// Vanilla JS - have to manually transform string attributes
processCandidates() {
  this.candidates = JSON.parse(this.getAttribute('candidates'));
  // ...
}

// Define the type of your property, and LitElement will automatically
// handle conversion for you.
static get properties() {
  return {
    /**
     * An array of objects containing data for each candidate
     */
    candidates: {type: Array},
  };
}
```

(And many other DX niceties)

# Feels like a more appropriate amount of work for a headline... and especially the full results-tracker<sup>5</sup>



The screenshot shows a web component editor interface with the following details:

- File Explorer:** Shows files in the `src` directory: `results-tracker.js` (selected), `styles.css`, and `index.html`. It also lists dependencies: `lit-element@2.4.0`.
- Code Editor:** The `results-tracker.js` file contains the source code for the election results tracker. The code includes imports for `lit-element` and `css` from `style-loader`. It defines a `render` method that returns an HTML template for the results page. The template includes a headline, sub-headline, race section, counts section, and bars section. The counts section maps candidates to their vote counts and labels. The bars section uses a template to generate progress bars for each candidate.
- Preview:** On the right, the preview window shows the results for the "President" race. The headline reads "Race Between Old Men Too Close To Call". Below it, a sub-headline says "Nation tired of hitting reload in their web browsers.". The race summary shows "253" for Joseph R. Biden Jr. and "214" for Donald J. Trump, with a "270 TO WIN" threshold. Below the counts, the candidates' names and their respective vote counts (73,879,622 and 69,772,905) are listed with their percentages (51% and 49%).
- Bottom Status:** The status bar at the bottom indicates the code has 225 lines, 2 spaces, and is in UTF-8 format.

<sup>5</sup> <https://codesandbox.io/s/election-results-tracker-thk26>

# STENCIL

“Compiler that generates web components”

Provides extra capabilities on top of Web Components:

- » Prerendering
- » Objects-as-properties
- » Virtual DOM
- » JSX
- » Async Rendering

The screenshot shows the official Stencil website. At the top, there's a dark header bar with the Ionic logo and the Stencil logo. To the right of the logos, there's a link to 'See how Stencil fits into the entire Ionic Ecosystem →'. Below the header, there's a large, bold title 'Build. Distribute. Adopt.' followed by a brief description: 'Stencil is a toolchain for building reusable, scalable Design Systems. Generate small, blazing fast, and 100% standards based Web Components that run in every browser.' At the bottom of the main content area, there are two buttons: a blue 'GET STARTED' button and a white 'WHY STENCIL?' button.

# VUE

Supports web components as a build target.

But...

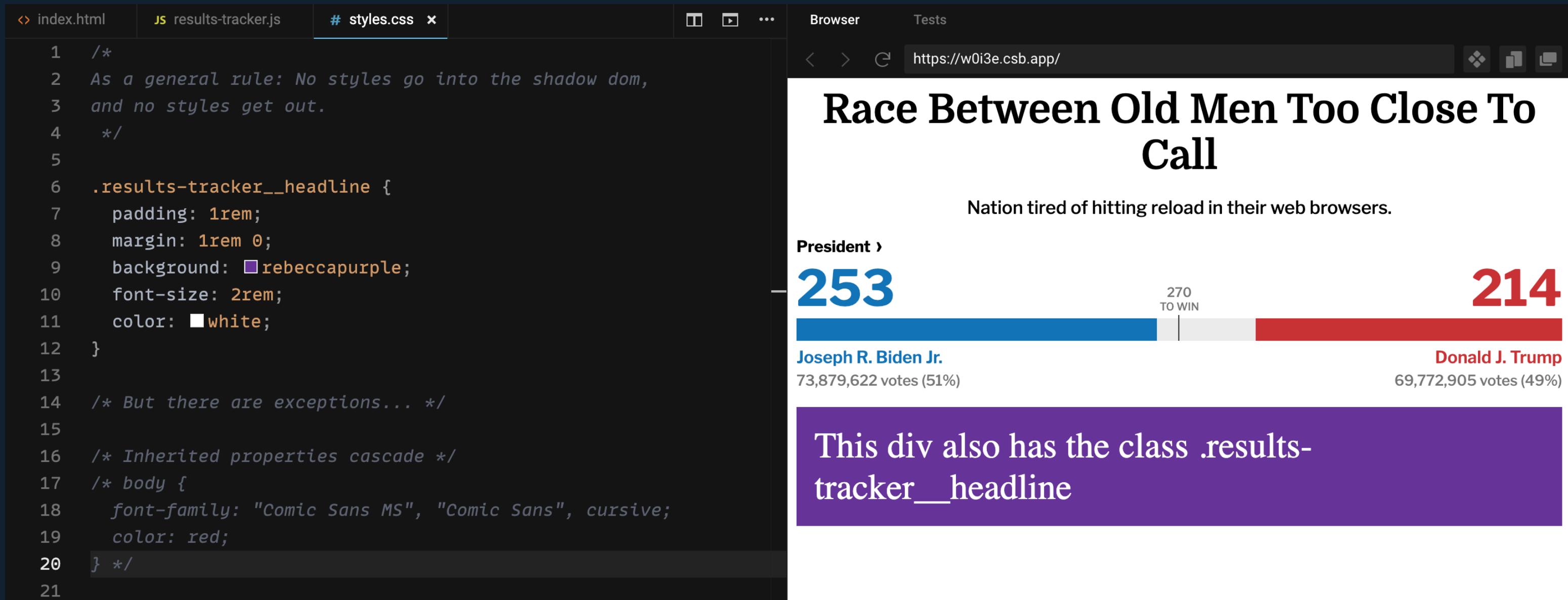
It still requires the Vue library as a global dependency.



The screenshot shows the Vue CLI documentation page. The left sidebar has sections for Basics, Development, and Build Targets. The main content area is titled "Web Component". It includes a note about compatibility (not supporting IE11) and a note about Vue dependency (Vue being externalized). It shows command-line examples for building a single entry as a web component and notes about the entry file requirements. The URL is <https://cli.vuejs.org/guide/build-targets.html#web-component>.

ODDS N' ENDS

# SCOPED STYLES<sup>6</sup>



The image shows a code editor on the left and a browser window on the right. The code editor displays the contents of a file named styles.css. The browser window shows a web page titled "Race Between Old Men Too Close To Call".

**Code Editor (styles.css):**

```
1  /*  
2  As a general rule: No styles go into the shadow dom,  
3  and no styles get out.  
4  */  
5  
6  .results-tracker__headline {  
7    padding: 1rem;  
8    margin: 1rem 0;  
9    background: #rebeccapurple;  
10   font-size: 2rem;  
11   color: white;  
12 }  
13  
14 /* But there are exceptions... */  
15  
16 /* Inherited properties cascade */  
17 /* body {  
18   font-family: "Comic Sans MS", "Comic Sans", cursive;  
19   color: red;  
20 } */  
21
```

**Browser Content:**

**Race Between Old Men Too Close To Call**

Nation tired of hitting reload in their web browsers.

President >

President	Votes	To Win
Joseph R. Biden Jr.	253	270 TO WIN
Donald J. Trump	214	

Joseph R. Biden Jr.  
73,879,622 votes (51%)

Donald J. Trump  
69,772,905 votes (49%)

This div also has the class .results-tracker\_\_headline

<sup>6</sup> <https://codesandbox.io/s/election-results-tracker-global-styling-options-w0i3e?file=/src/styles.css>

# HERE'S HOW I'VE BEEN MAKING SENSE OF THIS...

- » Only inherited properties pierce the shadow DOM
- » Everything else requires the component to expose a styling hook:
  - » CSS custom properties (variables)
  - » Classes
  - » Shadow Parts
  - » Slots

# USING WEB COMPONENTS WITH A FRAMEWORK

custom-elements-  
everywhere.com outlines  
support for many frameworks.

Support is pretty solid  
across the board.

React has some notable  
limitations. 😞

LIBRARY	SCORE	BASIC TESTS	ADVANCED TESTS
Angular 8.2.14	100%	16/16	14/14

Handling data

Angular's default binding syntax will always set properties on an element. This works well for rich data, like objects and arrays, and also works well for primitive values so long as the Custom Element author has mapped any exposed attributes to corresponding properties.

Angular also provides binding syntax specifically for setting an attribute, if a developer would prefer to communicate with an element that way.

Handling events

Angular components can listen to native DOM events dispatched from Custom Elements. It supports all styles of events (lowercase, camelCase, kebab-case, etc).

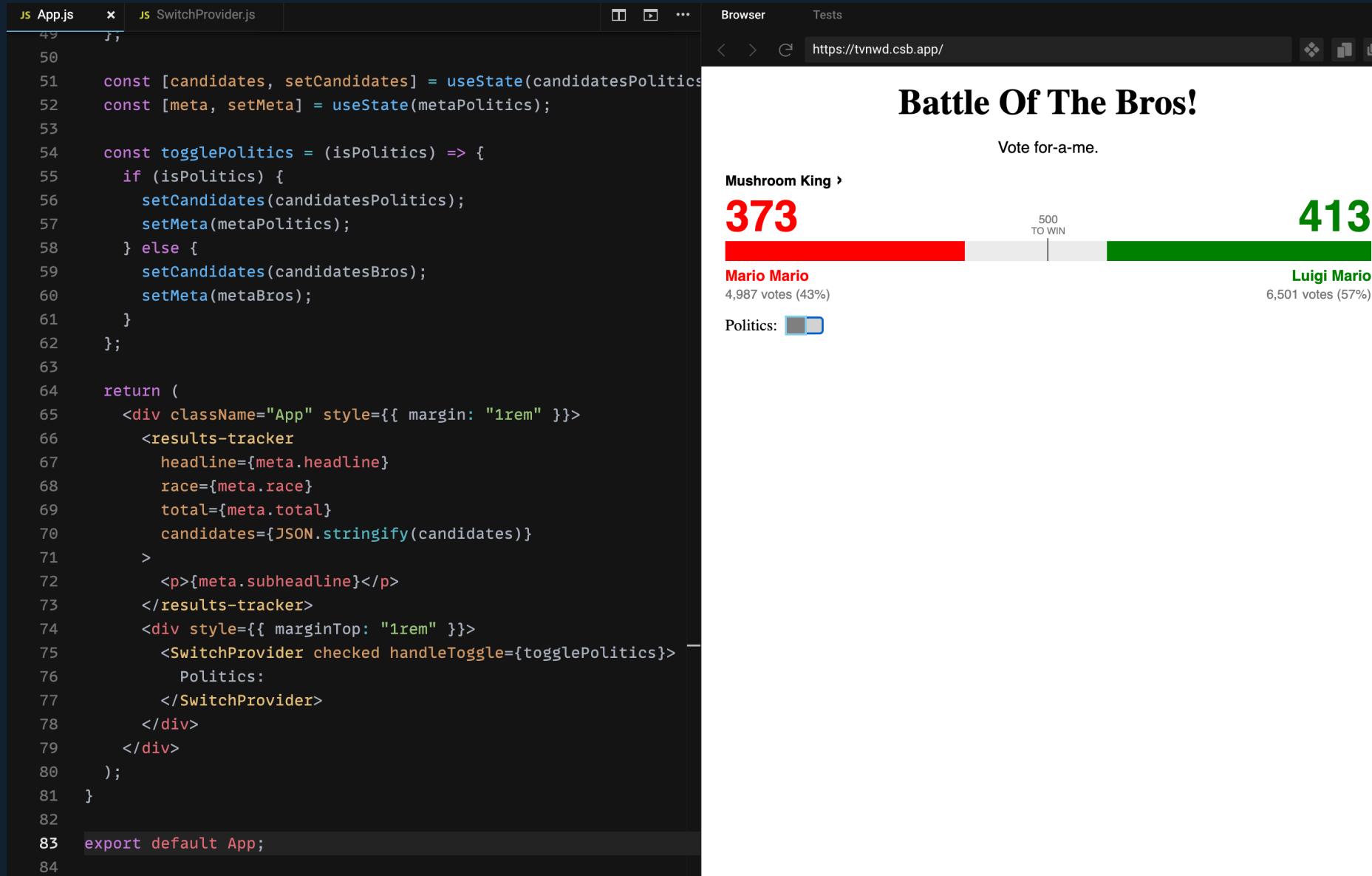
[View the tests](#)

Related Issues



Yay! No open issues!

# REACT + CUSTOM ELEMENTS<sup>7</sup>



The screenshot shows a development environment with two tabs: "App.js" and "SwitchProvider.js". The "App.js" tab displays the following code:

```
49
50
51  const [candidates, setCandidates] = useState(candidatesPolitics);
52  const [meta, setMeta] = useState(metaPolitics);
53
54  const togglePolitics = (isPolitics) => {
55    if (isPolitics) {
56      setCandidates(candidatesPolitics);
57      setMeta(metaPolitics);
58    } else {
59      setCandidates(candidatesBros);
60      setMeta(metaBros);
61    }
62  };
63
64  return (
65    <div className="App" style={{ margin: "1rem" }}>
66      <results-tracker
67        headline={meta.headline}
68        race={meta.race}
69        total={meta.total}
70        candidates={JSON.stringify(candidates)}
71      >
72        <p>{meta.subheadline}</p>
73      </results-tracker>
74      <div style={{ marginTop: "1rem" }}>
75        <SwitchProvider checked handleToggle={togglePolitics}> —
76          Politics:
77        </SwitchProvider>
78      </div>
79    </div>
80  );
81}
82
83 export default App;
```

The browser window shows a web application titled "Battle Of The Bros!". It features a progress bar with the text "Vote for-a-me." above it. Two candidates are shown: "Mushroom King" with 373 votes (red bar) and "Luigi Mario" with 413 votes (green bar). Below the progress bar, it says "500 TO WIN". Under "Mushroom King", it lists "Mario Mario" with 4,987 votes (43%) and "Luigi Mario" with 6,501 votes (57%). A "Politics:" switch is also present.

<sup>7</sup> <https://codesandbox.io/s/web-components-with-react-tvnwd>

# @LIT-LABS/REACT<sup>8</sup>

**@lit-labs/react** TS

1.0.0-rc.2 • Public • Published 2 months ago

[Readme](#) [Explore BETA](#) [0 Dependencies](#) [8 Dependents](#) [4 Versions](#)

## @lit-labs/react

React integration for Web Components and Reactive Controllers.

### Overview

#### createComponent

While React can render Web Components, it **cannot** easily pass React props to custom element properties or event listeners.

This package provides a utility wrapper `createComponent` which makes a React component wrapper for a custom element class. The wrapper correctly passes React `props` to properties accepted by the custom element and listens for events dispatched by the custom element.

#### How it works

For properties, the wrapper interrogates the web component class to discover its available properties. Then any React `props` passed with property names are set on the custom element as properties and not attributes.

For events, `createComponent` accepts a mapping of React event prop names to events fired by the custom element. For example passing `{onfoo: 'foo'}` means a function passed via a `prop` named `onfoo` will be called when the custom element fires the `foo` event with the event as an argument.

Install  
`> npm i @lit-labs/react`

Weekly Downloads  
62 

Version	1.0.0-rc.2	License	BSD-3-Clause
Unpacked Size	47.4 kB	Total Files	19
Issues	140	Pull Requests	45
Homepage	<a href="https://lit.dev/">lit.dev/</a>		
Repository	<a href="https://github.com/lit/lit">github.com/lit/lit</a>		
Last publish	2 months ago		

<sup>8</sup> <https://codesandbox.io/s/lit-react-358ez>

# MY (SLIGHTLY) MORE EDUCATED VIEWS ON WEB COMPONENTS

- » This was pretty hard to learn!
- » I'd turn to this for special purpose components today.
- » Close to getting comfortable enough to use this for a full app/design system.
- » I would use a library, but one close to the vanilla API.

# ON AN INFINITE TIMESCALE...

- » I think some version of this concept will win out.
- » But how infinite is that timescale?
- » And will it be this take on web components?
- » Things are looking better every day...

# Generic Drupal Web Components (GDWC)

Download & Extend

Drupal Core Distributions Modules Themes General projects

Add Issues for Generic Drupal Web Components to dashboard +

## Generic Drupal Web Components

[View](#) Edit Version control View history Maintainers

By [brianperry](#) on 14 March 2021, updated 11 April 2021

This project is not covered by Drupal's [security advisory policy](#).

Inspired by [@generic-components/components](#) this project aims to create a library of generic web components that are accessible, framework agnostic, possible to style, and easy to use with data provided by Drupal.

A demo of the current components can be found at: <https://gdwc.netlify.app/> and you can also watch a [brief project overview video](#).

### Usage

#### Via NPM

Components can be installed via NPM ([View example on Codesandbox](#)):

```
npm i @gdwc/components
```

And imported in your code via ES imports:

```
import '@gdwc/components/menu';
```

#### Via CDN

Alternatively you can load the components from a CDN and drop them in your HTML file as a script tag. ([View example on Codepen](#))

```
<script type="module">
import gdwcComponents from 'https://cdn.skypack.dev/@gdwc/components';
</script>

<gdwc-menu branding="Menu Heading" baseUrl="https://decoupled-menus.jsonapi.dev"
menuId="main"></gdwc-menu>
```

Note: using the baseUrl and menuId attributes with the gdwc-custom element requires a Drupal site with the [Decoupled Menus](#) module enabled.

Maintainers for Generic Drupal Web Components

[brianperry](#) – 16 commits  
last: 1 month ago, first: 3 months ago

[View all committers](#) [View commits](#)

Issues for Generic Drupal Web Components

To avoid duplicates, please search before submitting a new issue.

 [Search](#)

[Advanced search](#)

All issues  
13 open, 32 total

Bug report  
1 open, 4 total

Statistics

New issues 0  
Response rate 50 %  
1st response 56 hours  
Open bugs 1  
Participants 1

2 year graph, updates weekly

Resources

[Read license](#) [Try out a demonstration](#)

# THANKS!

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