



Streamlining Building Decarbonization to Accelerate California's Clean Air & Climate Goals

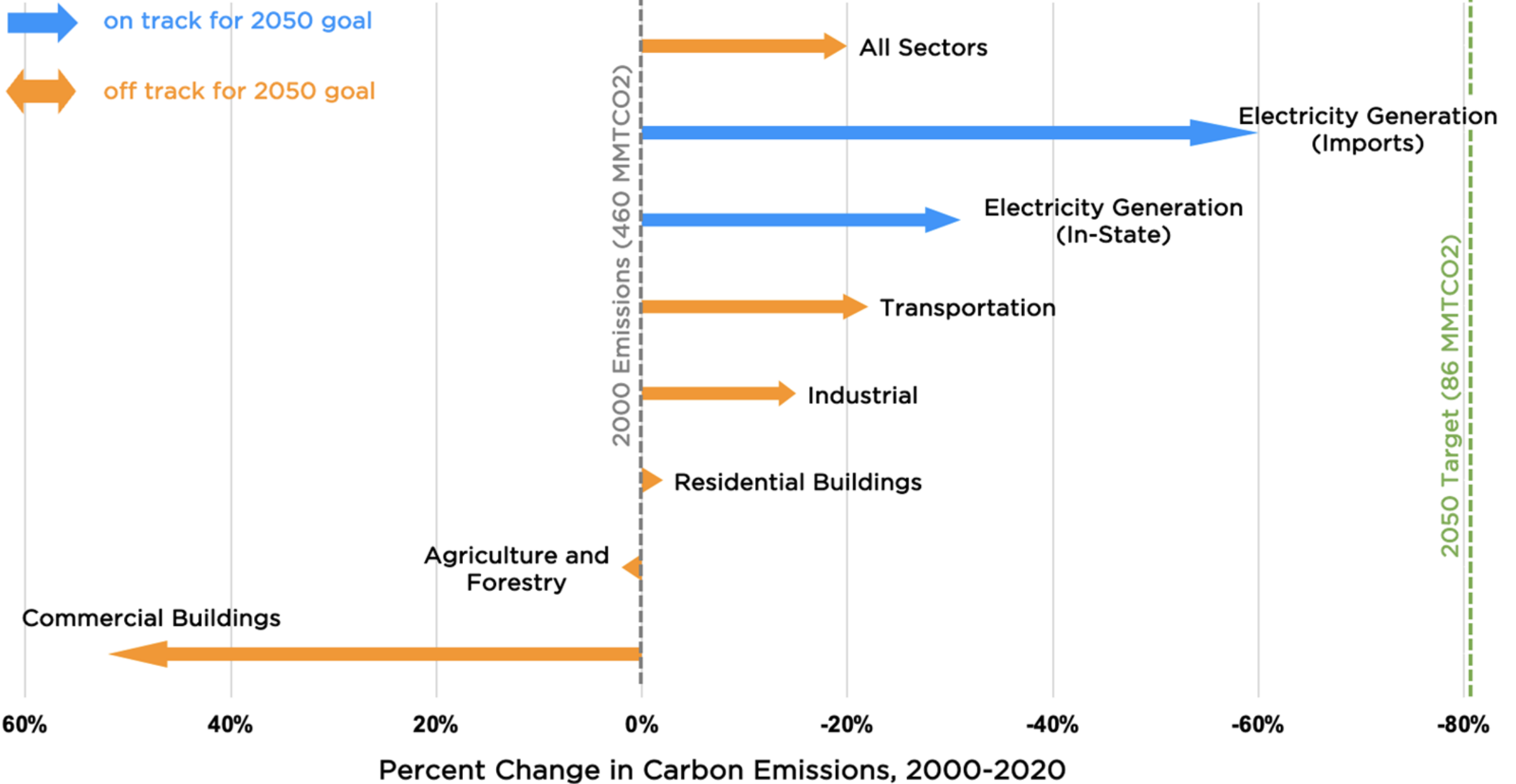
Laura Feinstein, SPUR • June 21, 2023





**Why Streamlining
Electrical Service
Upgrades Is Critical**

Buildings Are Holding California Back On Its Climate Goals



Energization:

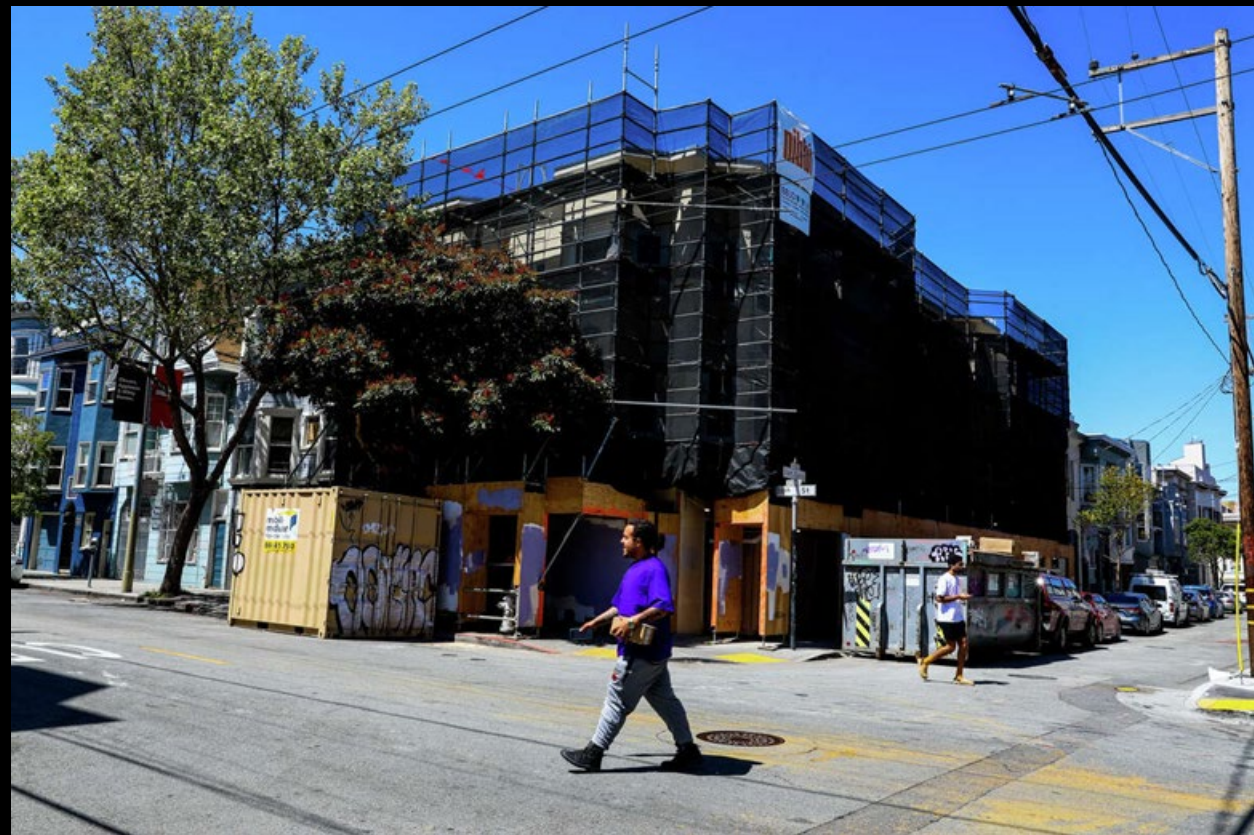
**Extending an electricity line
or expanding distribution
infrastructure to service
new or expanded customer
load (often used
interchangeably with
interconnection)**



California's Energization Problem

Electric semi trucks sitting unused because EV chargers haven't been energized

Affordable housing sitting empty in San Francisco because it has no power



Inside Climate News

Clean Energy

Noting a Mountain of Delays, California Lawmakers Advance Bills Designed to Speed Grid Connections

The state has ambitious goals to switch to electric vehicles and add clean energy to its grid, but some say it's contending with an "interconnection crisis."

"When it goes smoothly, connecting new homes, energy projects and electric appliances to California's grid is a formulaic process that doesn't draw a lot of attention outside the energy and utility industry. But over the last year, the **delays have drawn intense scrutiny from California housing advocates, builders, city governments and environmentalists**... a group of 35 organizations sent a letter to the governor's office and the legislature calling for action on what they referred to as an **"interconnection crisis."**

Joint Comments From Tesla, Electrify America, ChargePoint, & Evgo:

"... meeting the state's ambitious policy goals for transportation electrification will require accelerating interconnection processes to enable scale and efficiency... (Transformer shortages are) **a threat to California's broader electrification goals.**

Homes

Costs:

\$2,850 - \$30,000

Timeline:

8 weeks to 9 months



Time is of the Essence

- Bay Area Air District rules requiring homeowners to switch to heat pumps upon burnout begin in 2027
- \$100+B from Inflation Reduction Act and nearly \$1B from California in building decarb subsidies



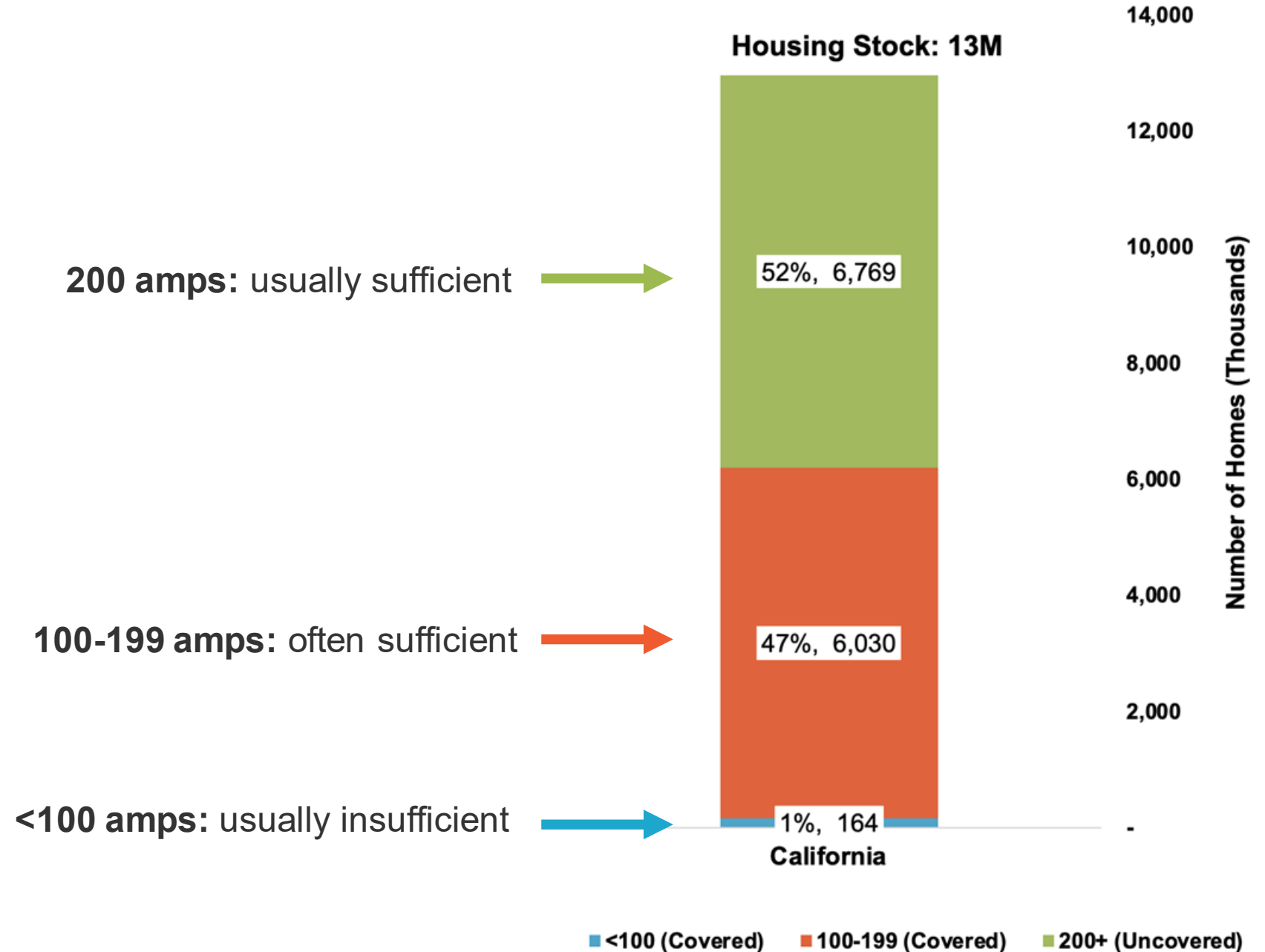
How many homes need electrical service increases?

There are 6 million homes in California with 100-amp panels.

If all of them upsize, they would choke up the utility's energization queue.

But many homes can electrify comfortably on a 100-amp panel.

Source: SPUR analysis of data from Home Energy Analytics (2022), TECH Clean California (2023), BayREN (2022), and American Community Survey (2021).



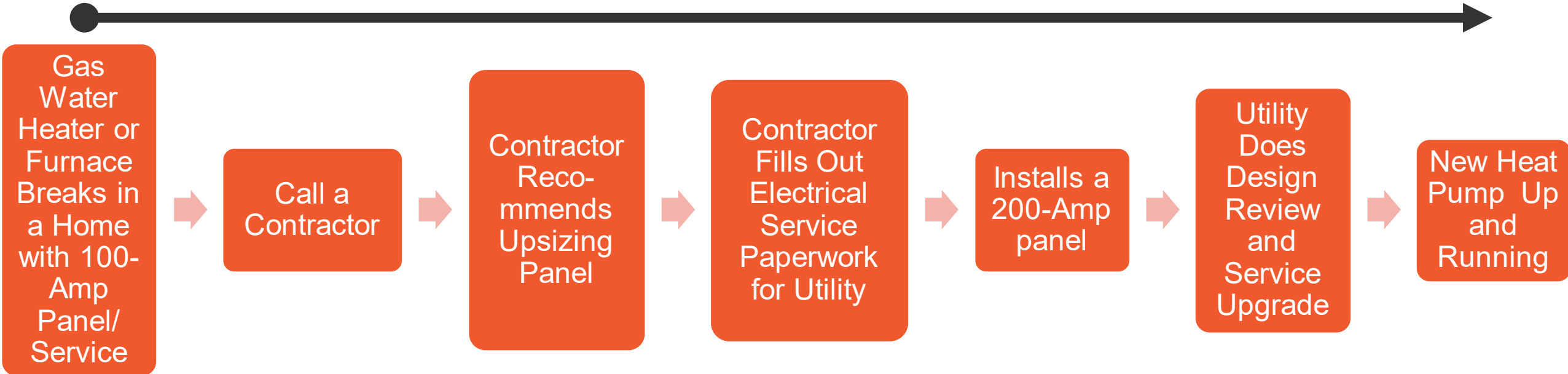
**Electrifying an Older
Home – the
Customer Journey**



10.04.2013

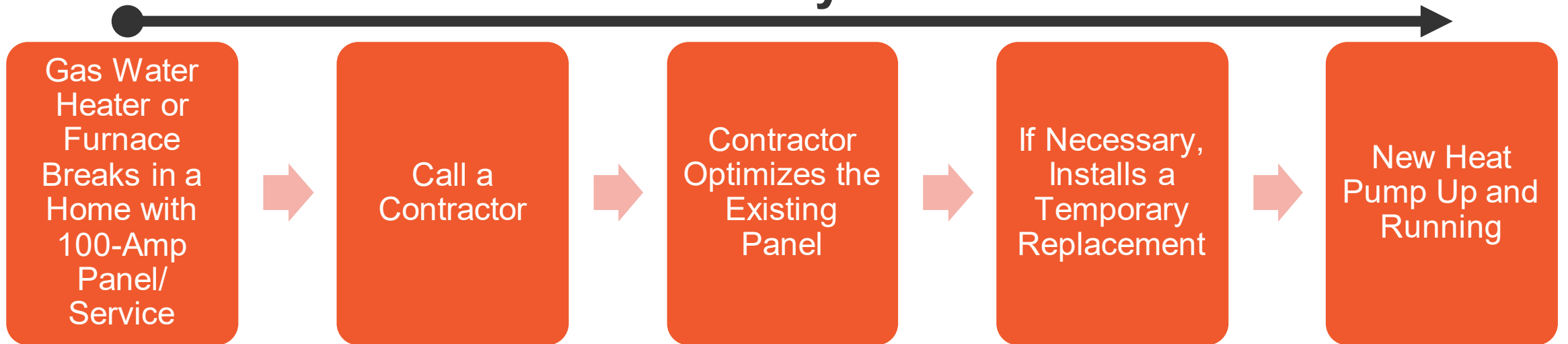
How It Works All Too Often:

2-10 months



How It Should Work

1- 7 days



**Policy Solutions to
Streamline Panel &
Service Upsizing**



10.04.2013

Optimize the Electrical Panel and Service Process

Avoid Panel and Service Upsizing When Possible

Streamline For Cases Where Panel and Service Upsizing are Called For

Resolve Knowledge Gaps

Avoid: Upsize Less Often

- Encourage strategic use of 220.83 and 220.87: one will usually yield a lower estimate of required panel capacity
- Issue guidance on interpretation of electrical code sections on estimating needed panel capacity.
- Amend the National Electrical Code to remove baked-in biases to overestimate load more than necessary in National Electrical Code

Avoid: Upsize Less Often

Utilities should provide information on peak demand for every customer. As a secondary, less preferred option, utilities should give easy access to 15-minute interval data.

Encourage or mandate advance planning for residential electrification.

Offer workforce education on panel optimization strategies, navigating the electrical code and working with building inspectors on panel issues.

Avoid: Upsize Less Often

- Subsidize technologies like circuit splitters that mitigate the need for upsizing. Offer kickers for using the most power-efficient equipment (similar to how efficiency is encouraged).
- Set caps for the maximum panel capacity covered by incentive programs.

Streamlining: Make Upsizing Simple, Fast and Affordable When It's Called For

- Make incentive dollars available for upsizing of panels under 100 amps in advance of an electrification project.
- A streamlined and more transparent process for utilities to advance applications for energization projects.
- Socialize at least some of the costs of electrical service upsizing for residential electrification as long as the costs have minimal rate impacts.
- Make it easier for license HVAC installers and plumbers to subcontract to electricians.
- AHJs should align on a standard set of calculations for estimating load when submitting permits.

Avoiding and Streamlining Electric Panel and Service Upsizing to Accelerate Building Decarbonization

- Collect better data on electrical panels to understand the scope of the challenge.
- Ask electric utilities to develop and publish transparent criteria on how they allocate electrical service upgrade costs to customers.

Thank You

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