

Quantitative Energy Equity

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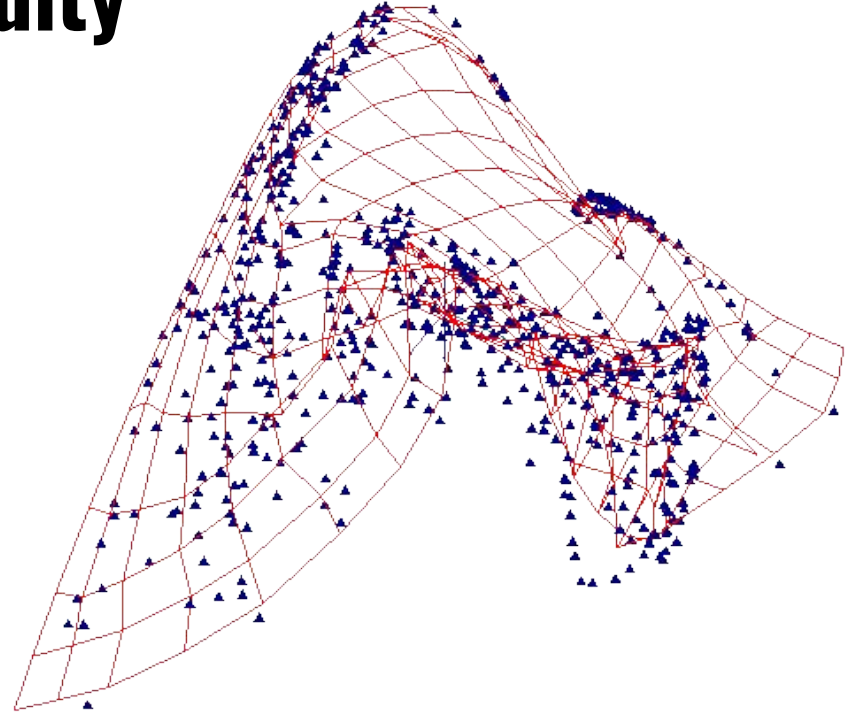
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Ask me about:

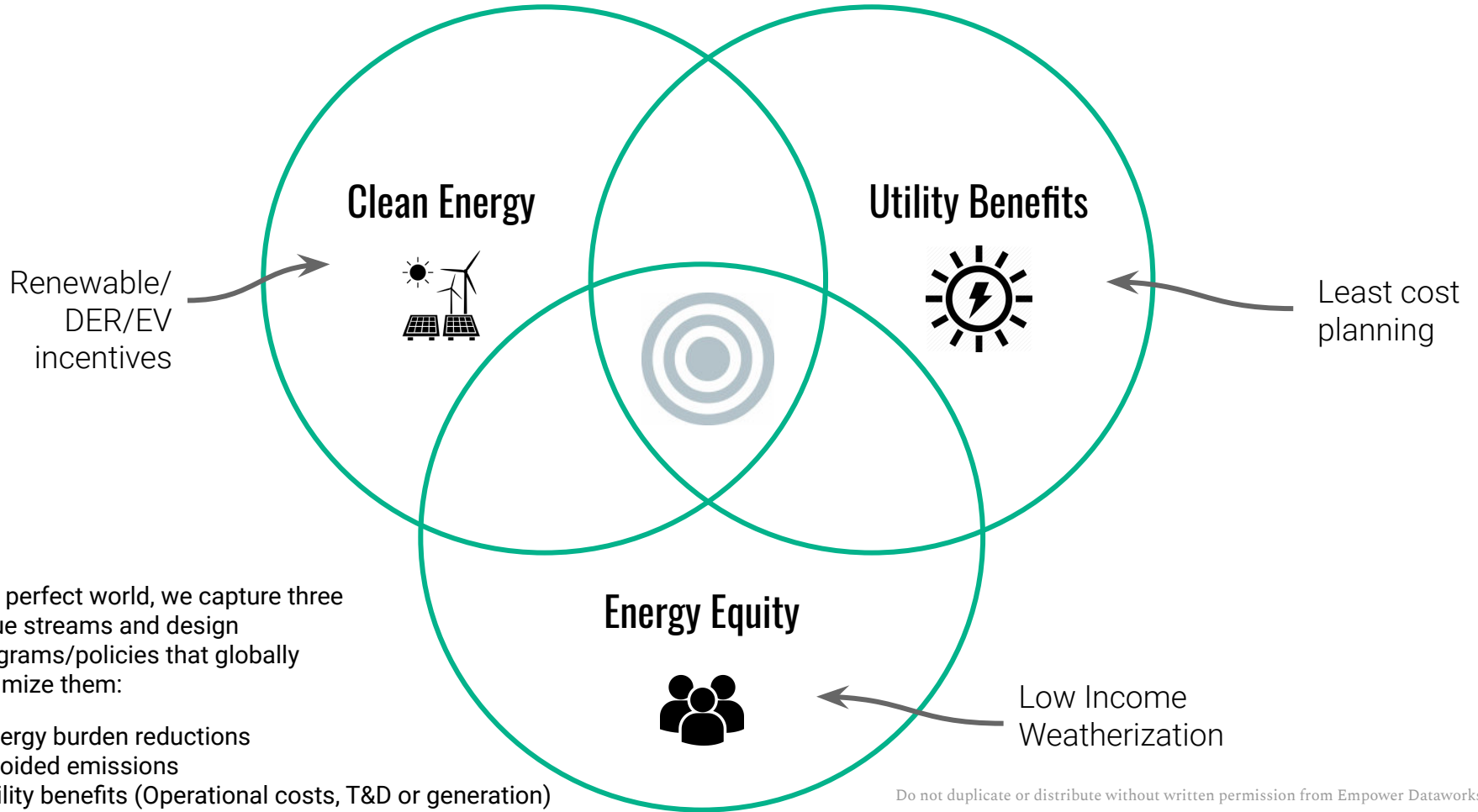
Data and metrics

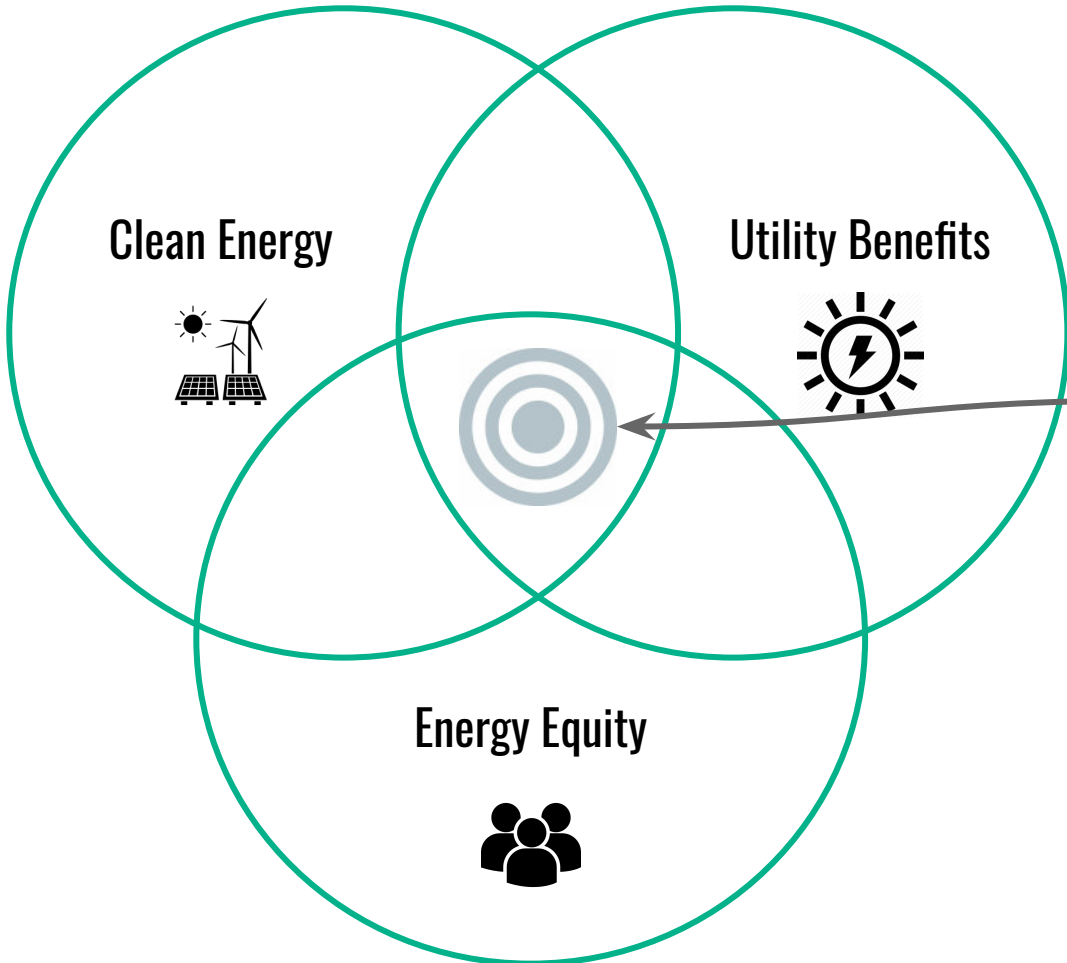
Equity-focused utility programs, planning
and marketing

empower
dataworks






An Energy Trilemma





To get here, we need to understand:

-  How **buildings** use **energy**
-  How **people** use **buildings**
-  What do the **people in the buildings** need

What makes you act/not act on energy equity?

<https://www.menti.com/gjouyoez46>

Or go to menti.com and enter this code:
9277 5934

**Our goal is to achieve an equitable distribution
of grid costs and benefits**

But how do we measure “energy equity”?

Vanity metrics for low-income programs

→ *“We serve 5000 low income customers a year.”*

How much of these customers' energy burden is actually reduced? Are those the right customers to be serving?

→ *“100% of participants are satisfied with our program.”*

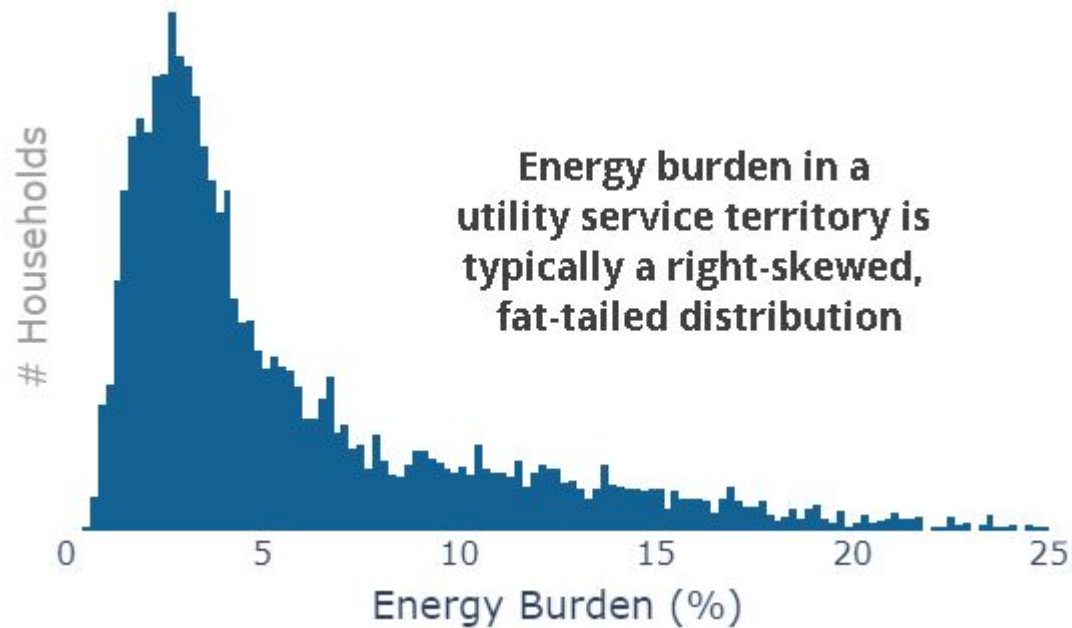
Who doesn't like free money or free home upgrades? Is the high customer satisfaction being translated to an improved image of the utility? Do customers even know the utility's role in the program?

→ *“Our annual program budget is \$XX million.”*

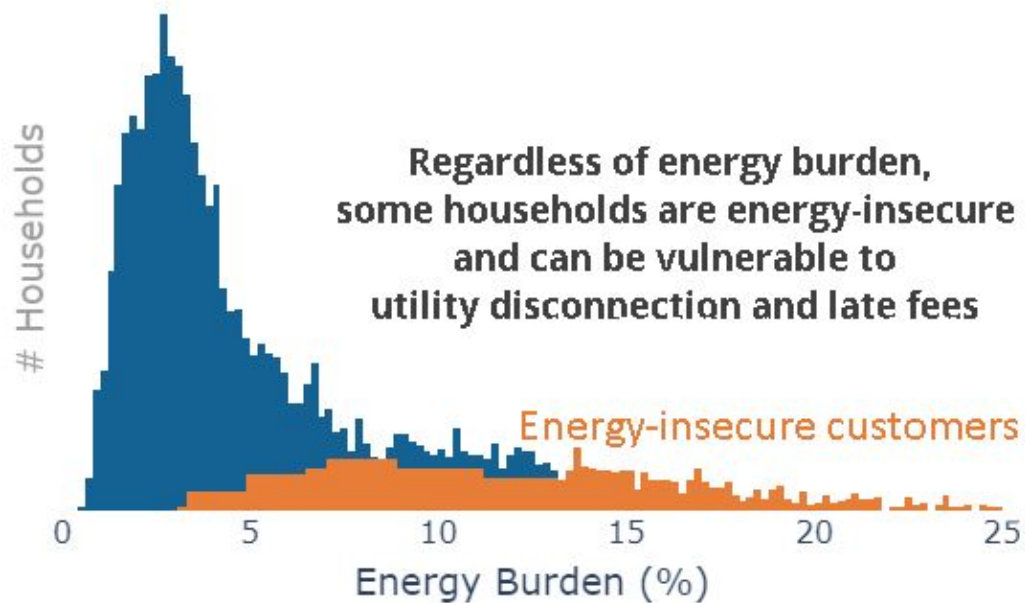
Bigger isn't always better - are these funds being used cost-effectively? Could these funds be used in different ways for more persistent benefits?

The primary metric of success is
reduction in energy insecurity
(folks become less vulnerable to
disconnections and late fees)

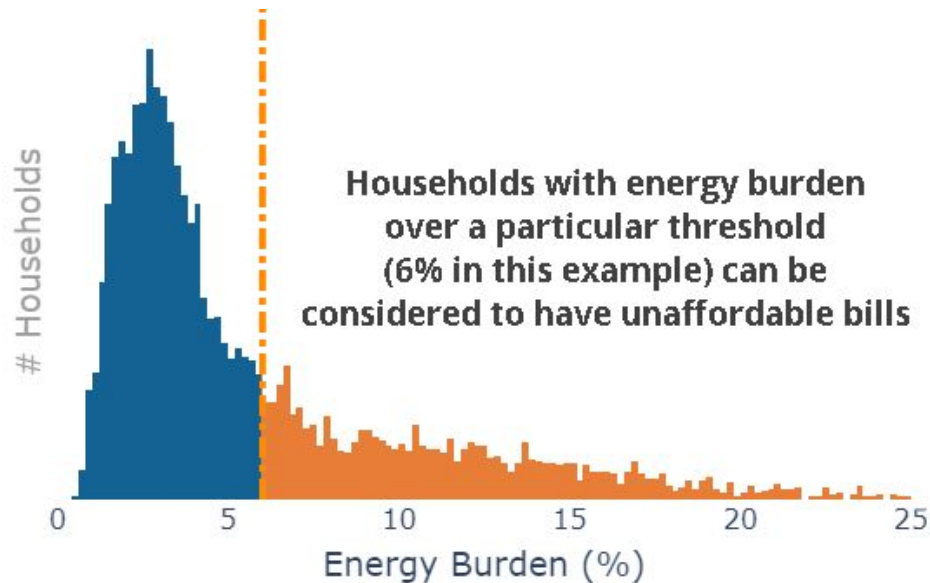
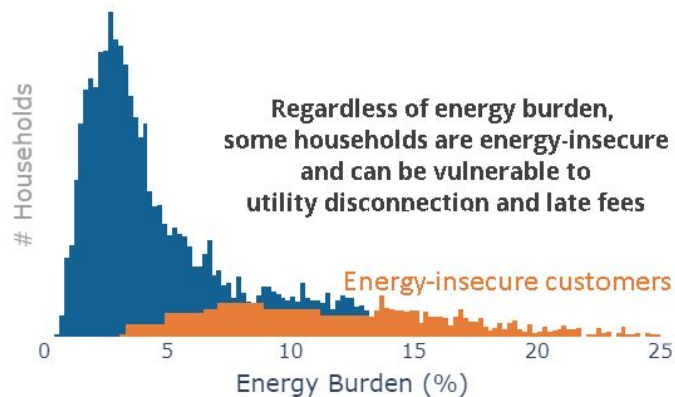
Energy Burden is a Distribution



Energy Insecurity is Harder to Measure



Energy Burden is a Proxy for Energy Insecurity



The primary, measurable metric of success is
**reduction in energy burden
for high-burden customers**

Energy Equity Metrics

Funding Need
To eliminate energy burden over X%



Gap between need and program funding



Energy Assistance Funding
Total funding earmarked for assistance programs

Overhead + inefficiencies in program delivery



Avoided Burden
Lifetime bill savings for all program participants

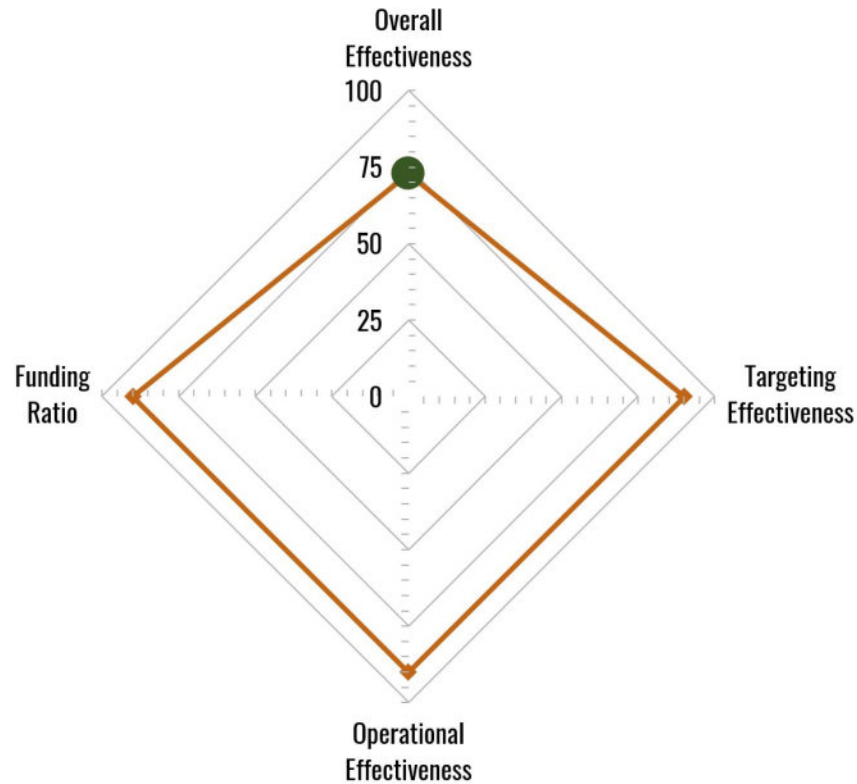


Avoided Need
Bill savings for high-burden participants above X% threshold

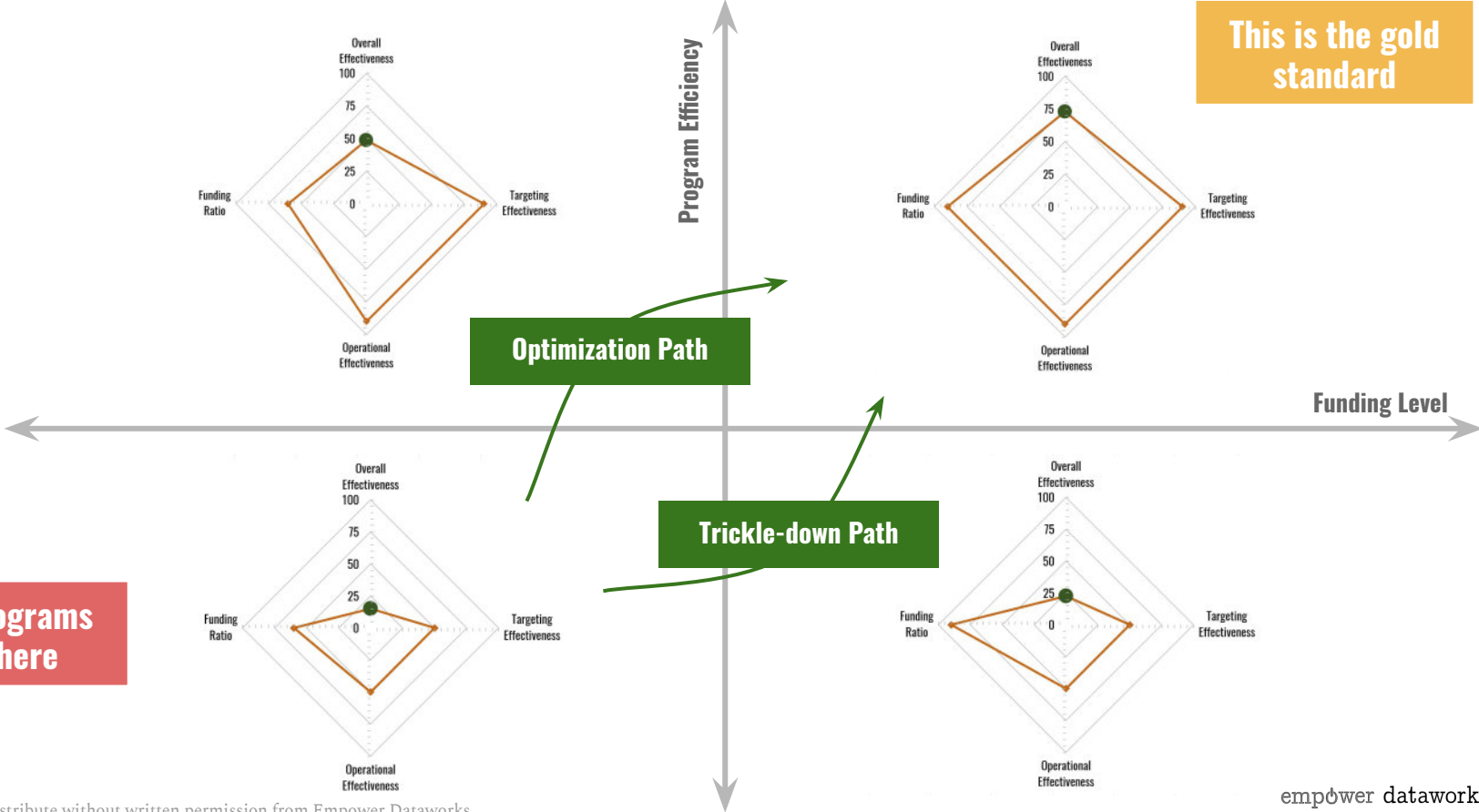
Bill savings below X% energy burden threshold

Effective programs make this gap as small as possible

How do we Assess Equity in Programs?



Progress in Energy Equity



Most programs start here

This is the gold standard

Optimization Path

Trickle-down Path

Utility Business Case for Energy Burden Reduction Programs

Benefits

Improved on-time payment rates

Reduced debt collection costs

Enhanced customer satisfaction

Costs

Direct assistance (70-80%)

Administrative and marketing (10-30%)

Program Analytics (0-5%)

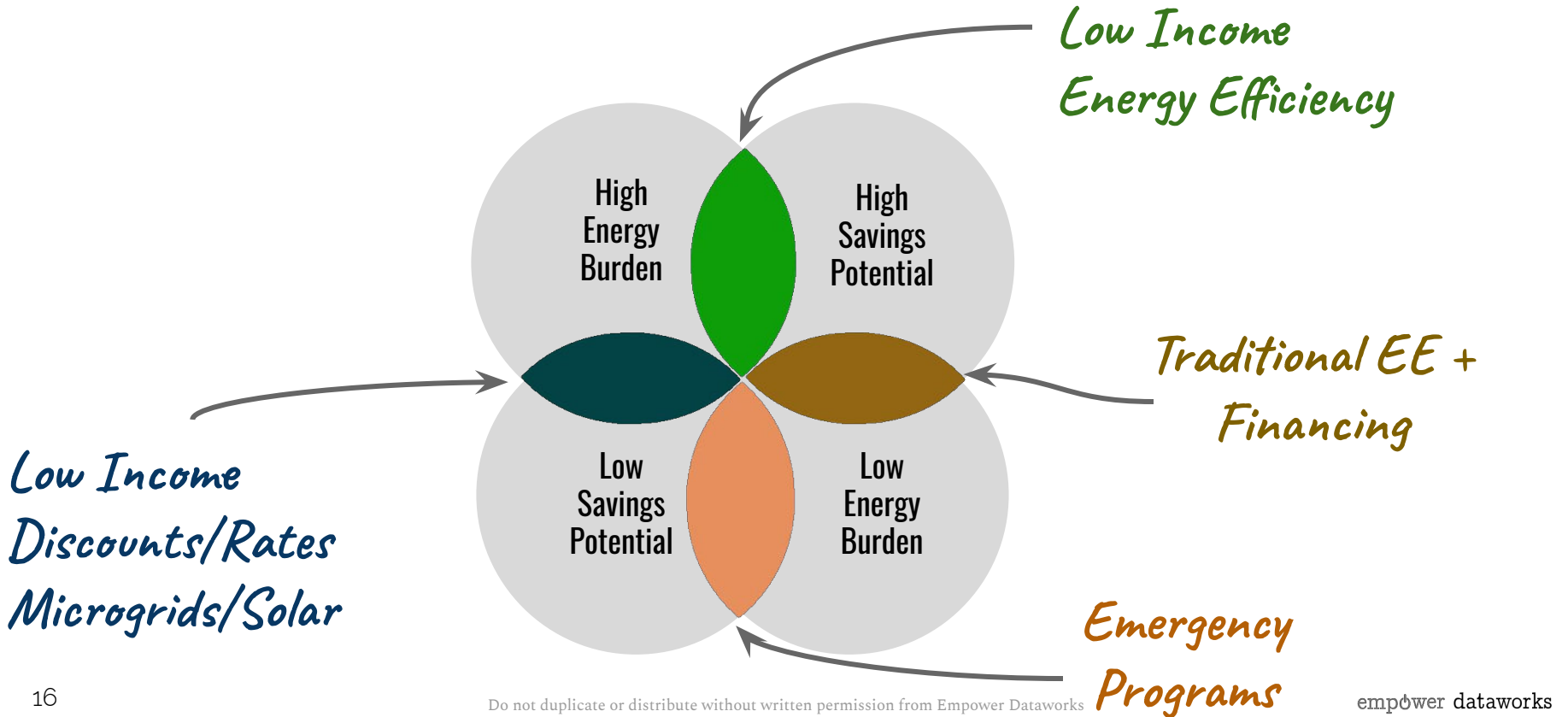
Risks

Waste of ratepayer funds

Burdensome program implementation

Insufficient impact on bill affordability

Energy Equity Program Portfolio



It all starts with customer-level data...

From utilities:

- CIS data (account and monthly billing data)
- Arrearages
- Payment dates
- Late payment/disconnect notices
- Conservation potential studies
- Energy assistance programs
- LI weatherization program data
- Marketing campaign performance

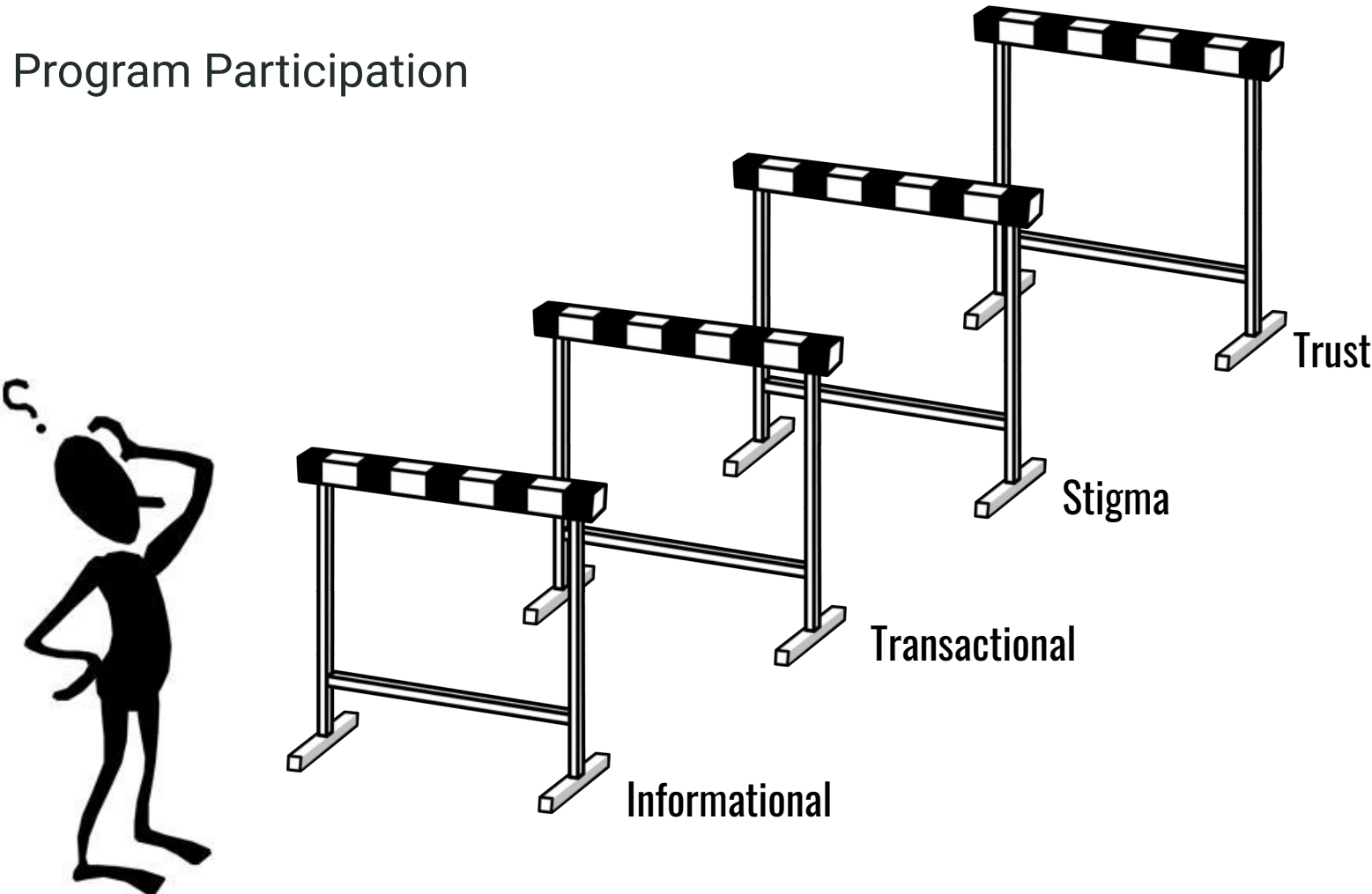
Other sources:

- Customer demographics
- County assessor data
- Census/ACS data
- Voter registration data
- Customer/Stakeholder interviews
- Other qualitative research

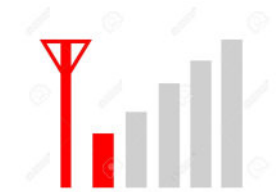
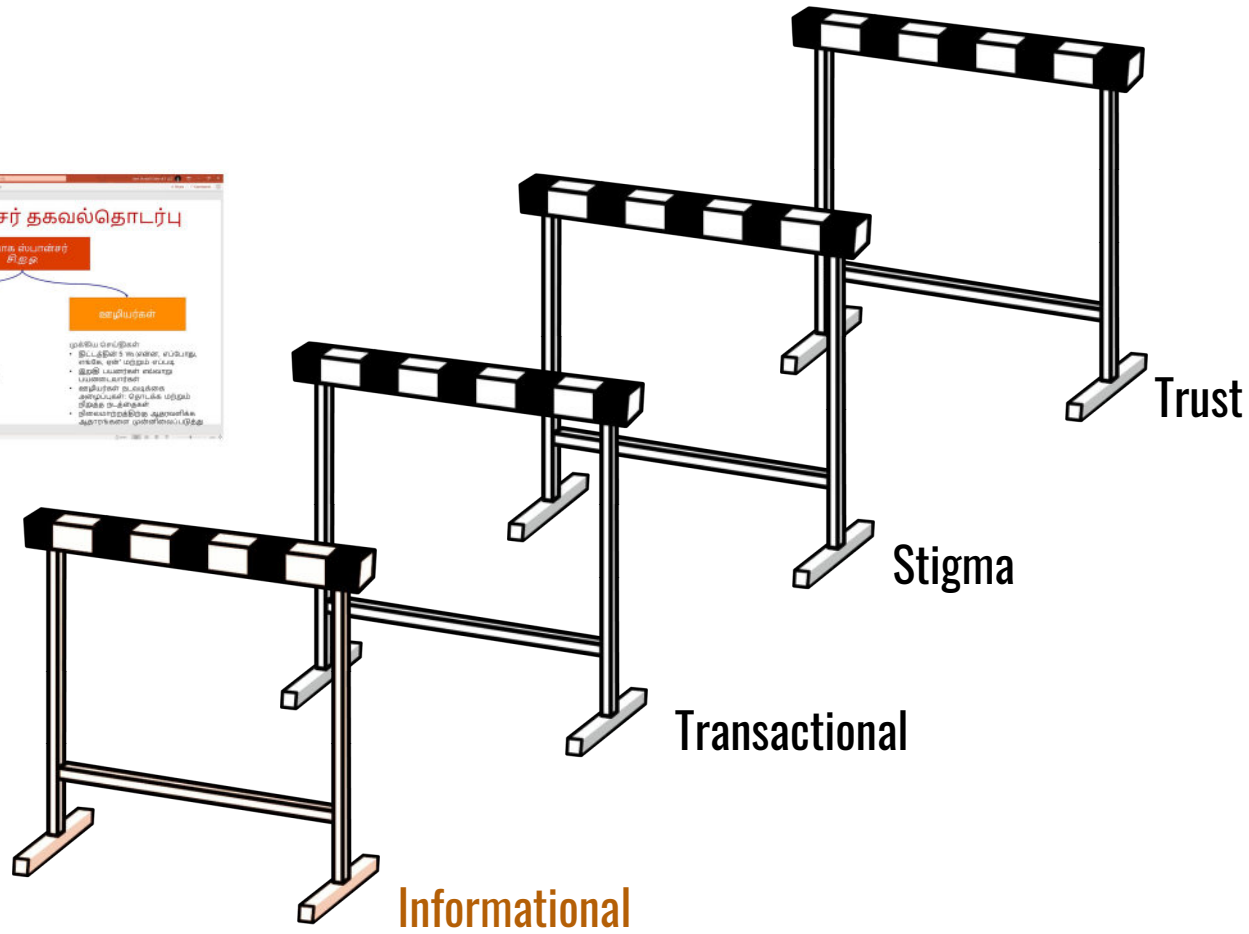
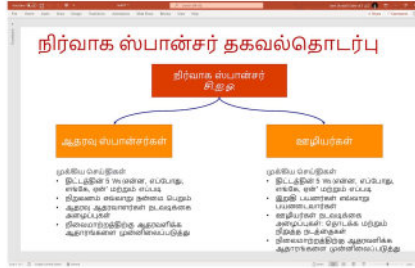
Quantitative Energy Equity 2.0:

From raw data analytics to a
psychometric model of program participation

Barriers to Program Participation

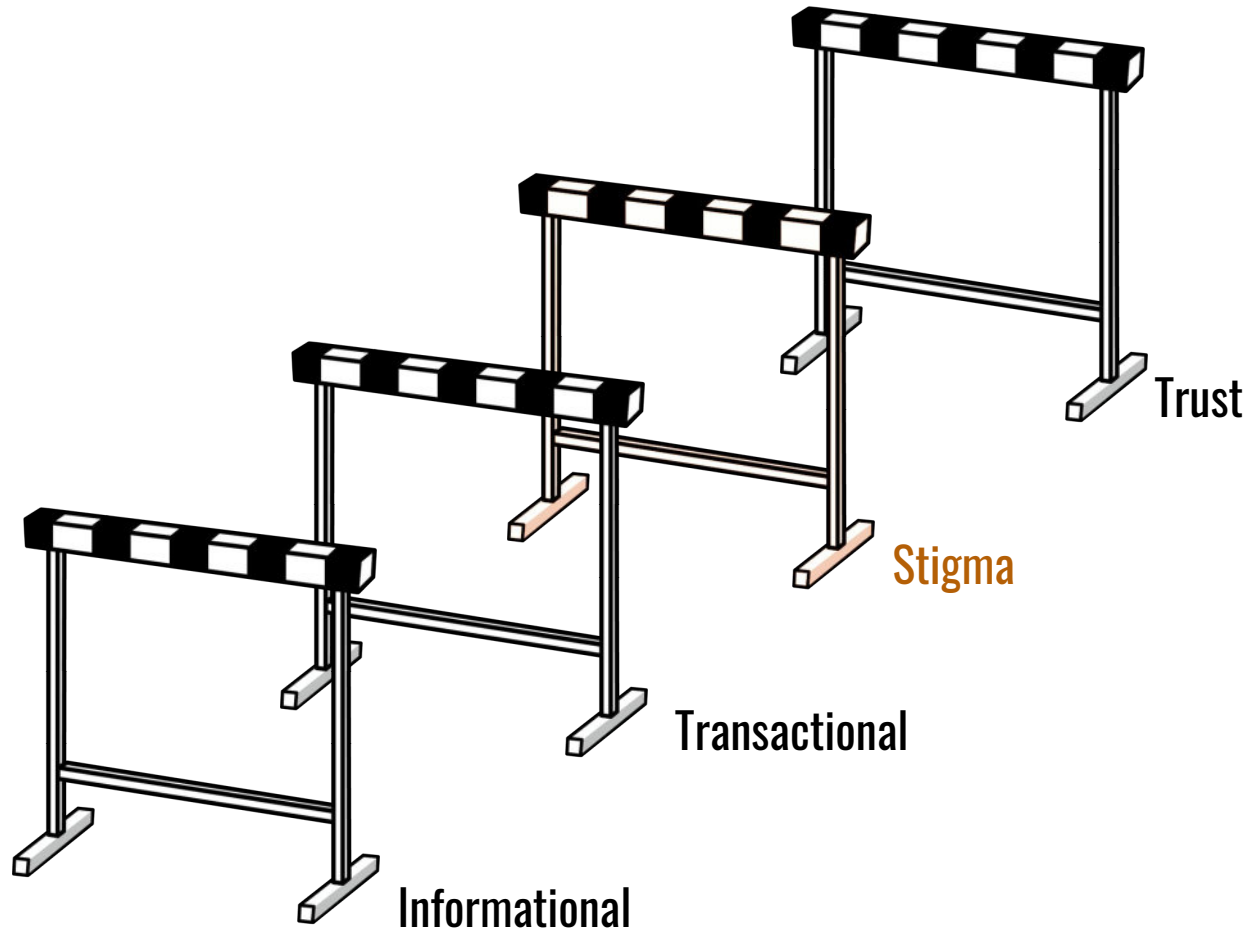


Informational Barriers

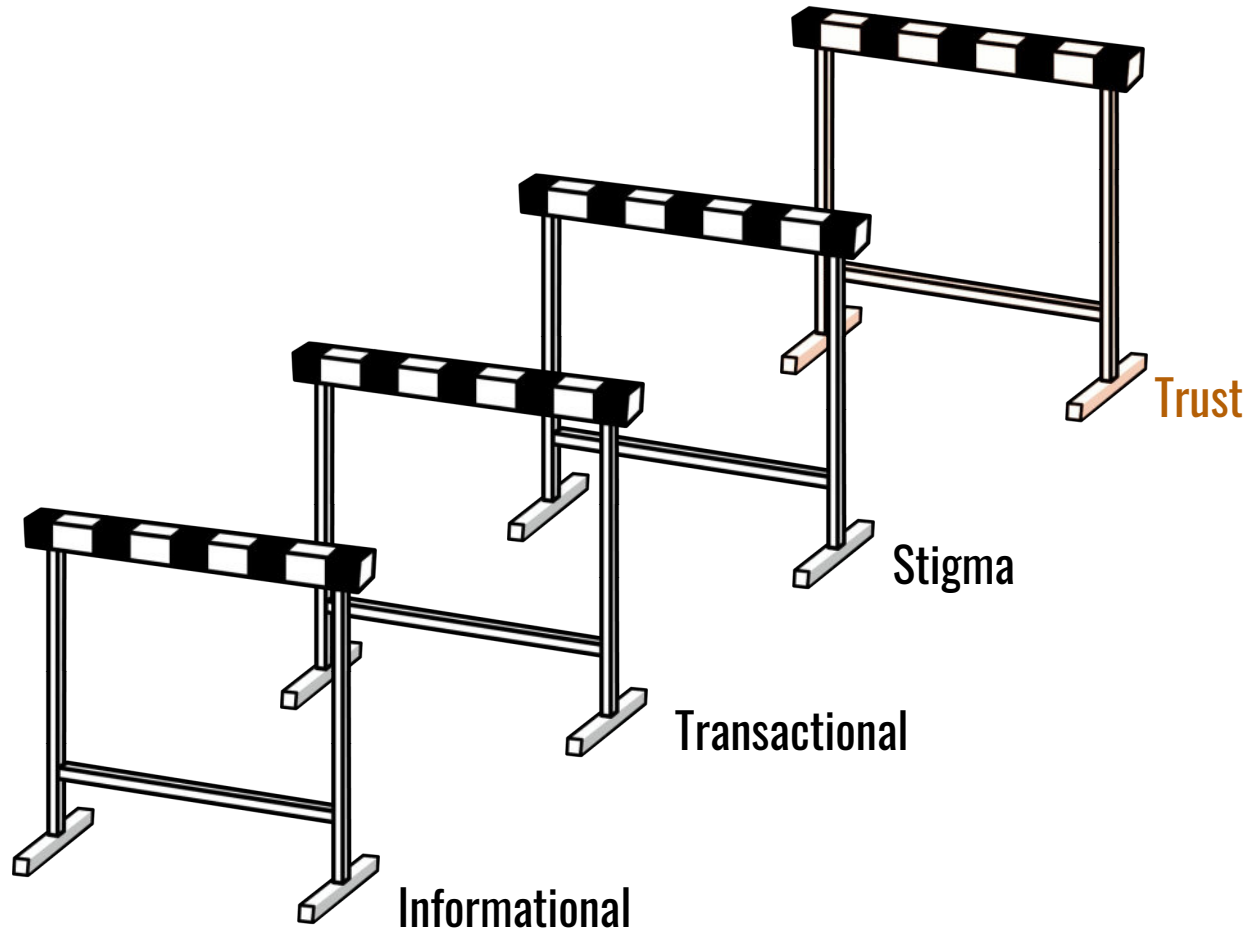


Stigma Barriers

I AM NOT POOR
I AM PRE-RICH
\$\$\$

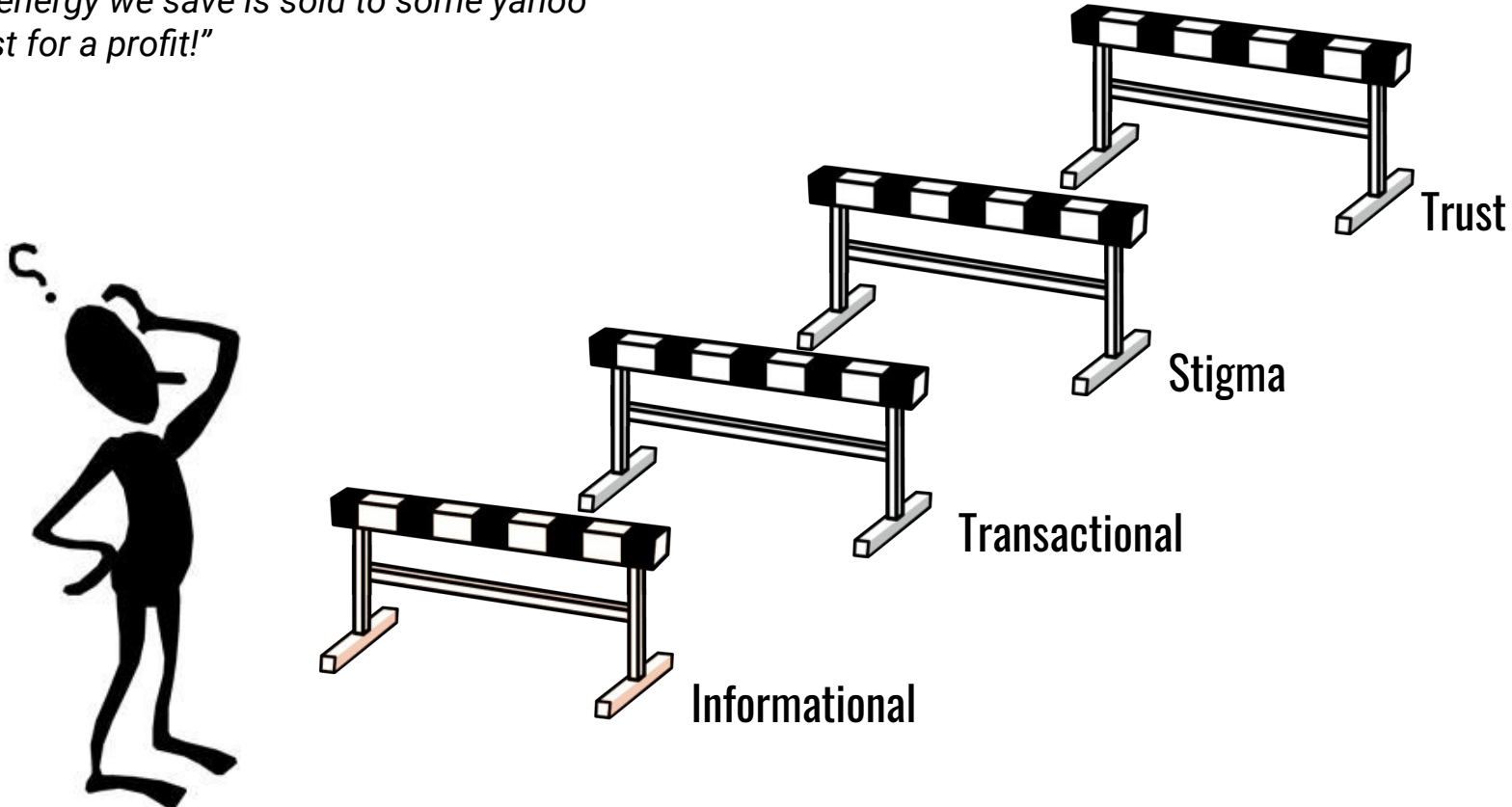


Trust Barriers



Profile #1: The Frequent Flyers

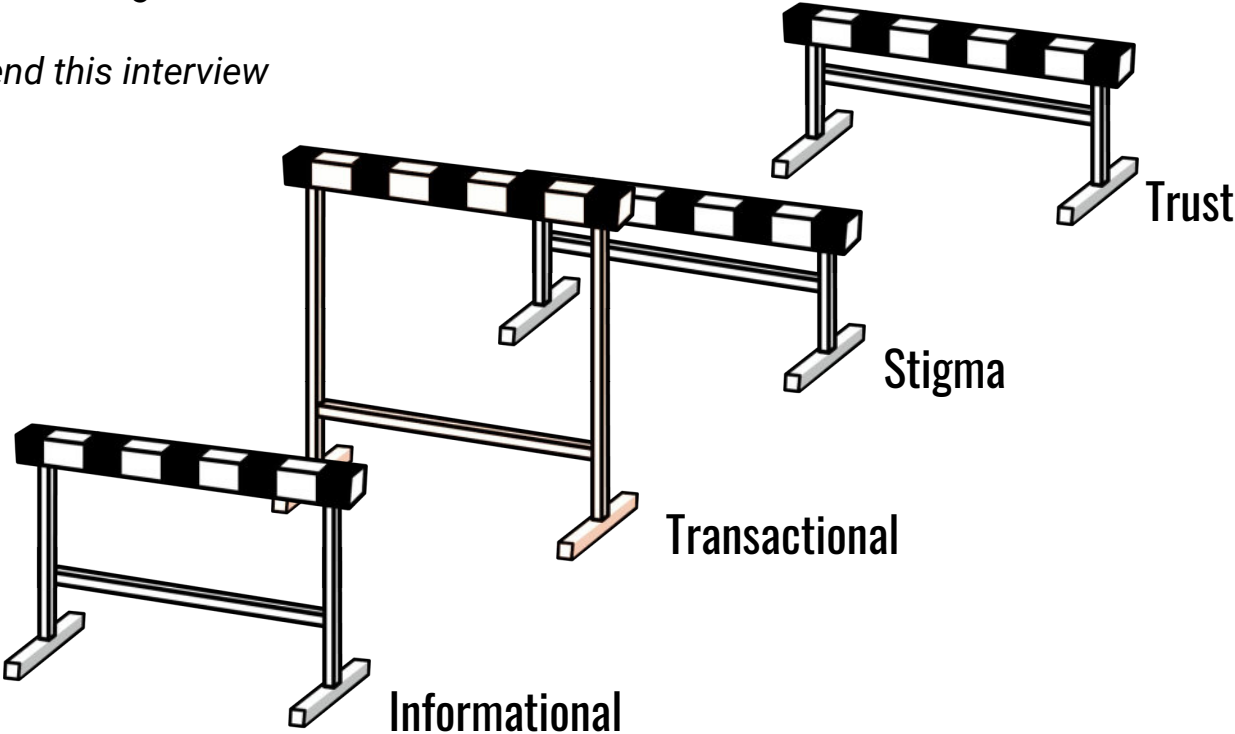
"I heard all the energy we save is sold to some yahoo out on the coast for a profit!"



Profile #2: The Hand Holders

"I don't have all this paperwork they're asking for"

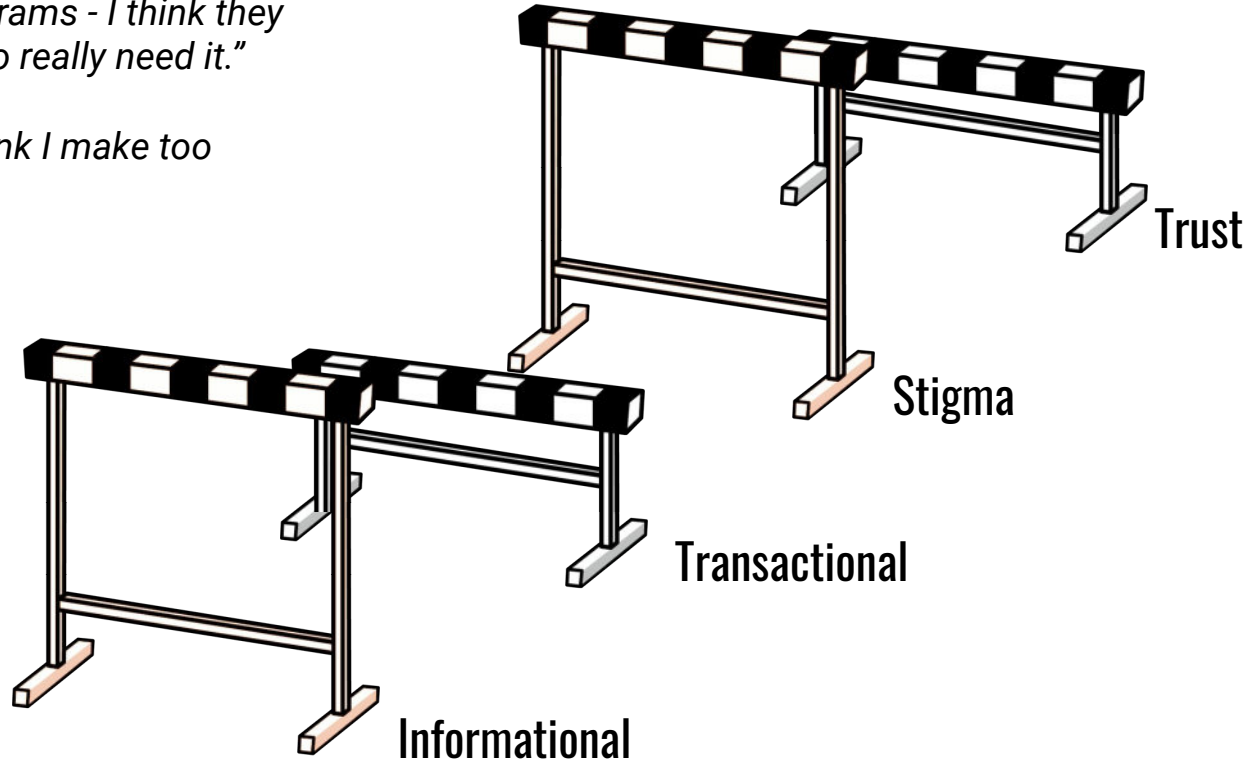
"I can't take time off work to go attend this interview for a \$15 bill credit every month"



Profile #3: Pride and Perception

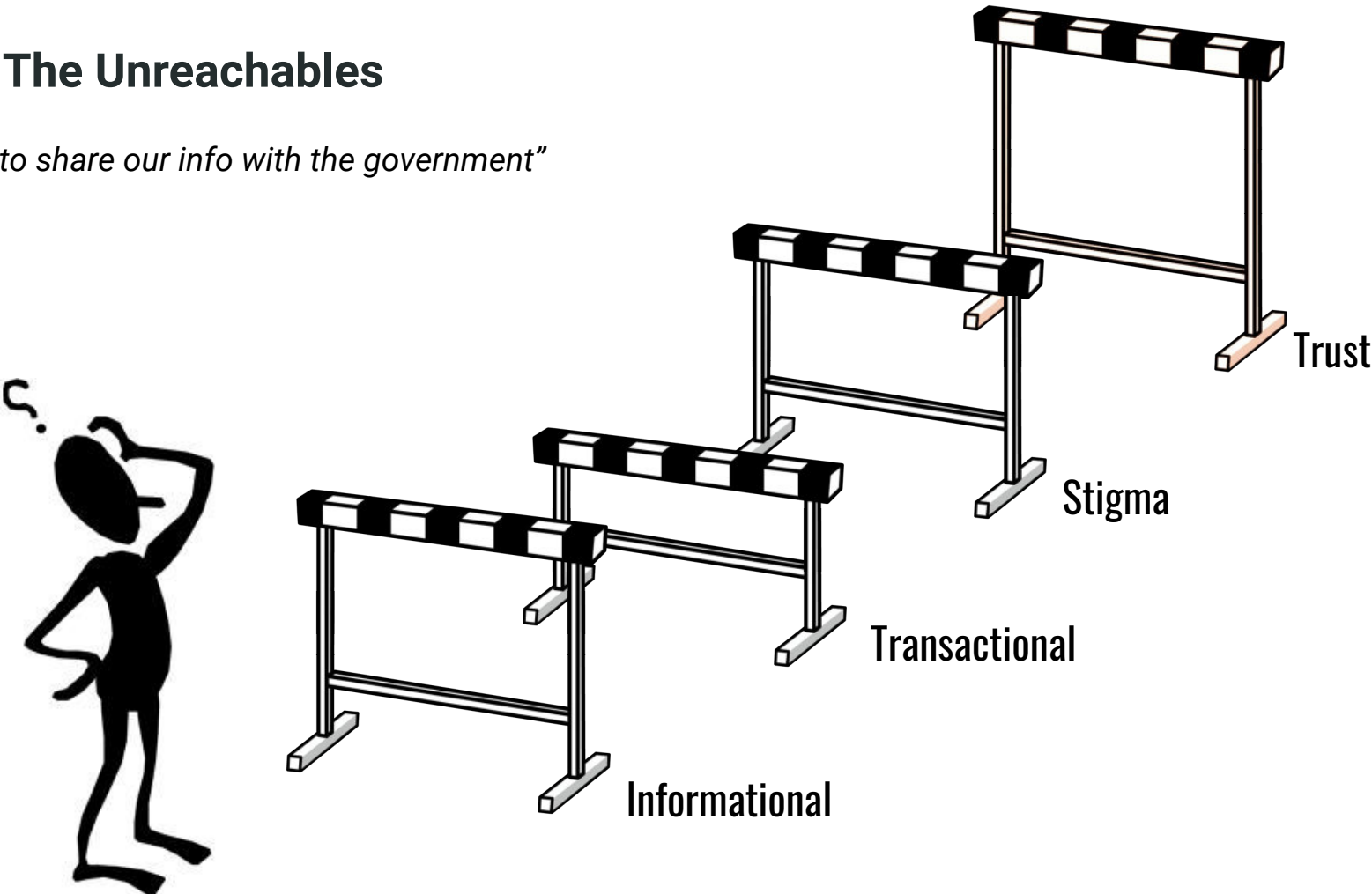
"I would never apply for these programs - I think they should be saved for the people who really need it."

"I don't qualify for assistance - I think I make too much"

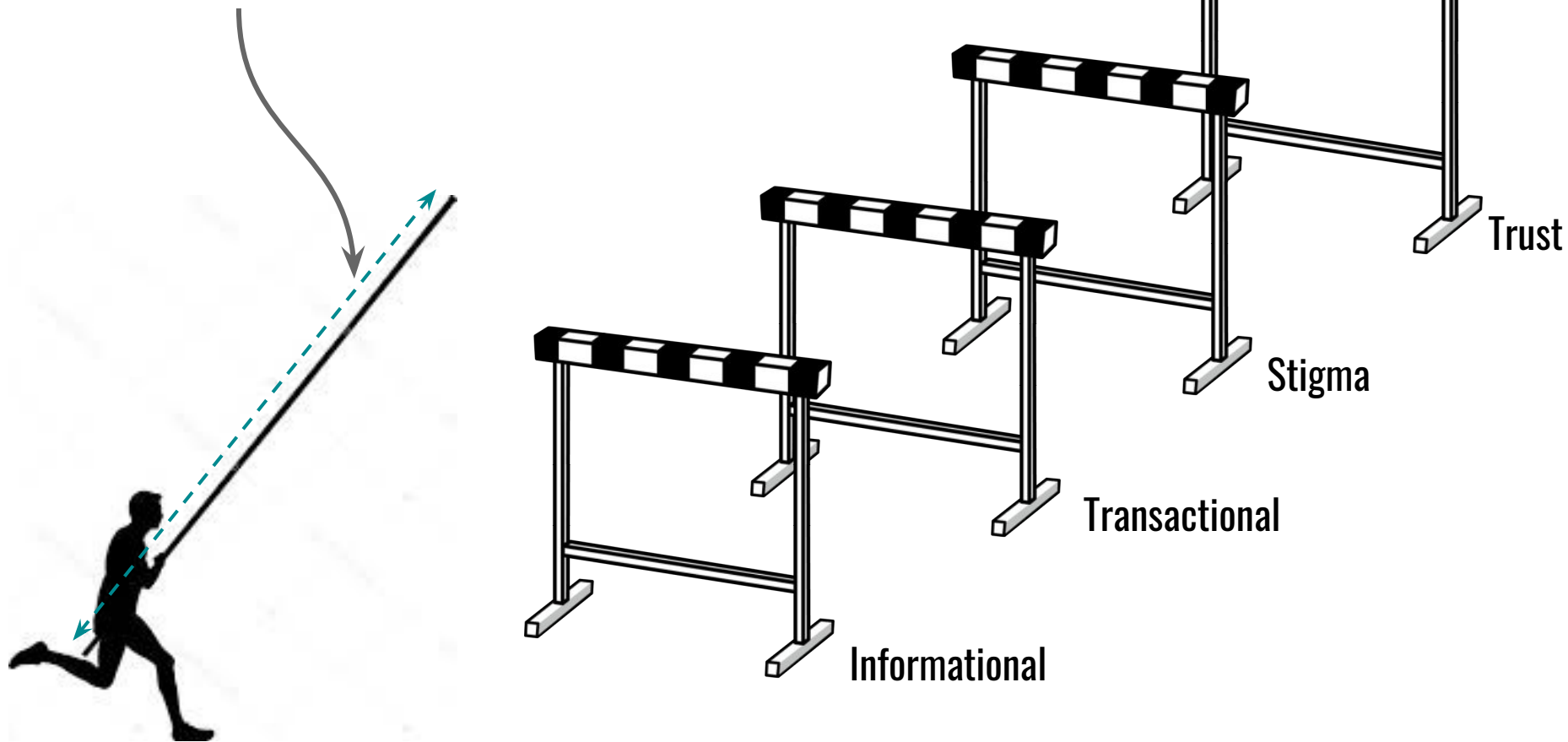


Profile #4: The Unreachables

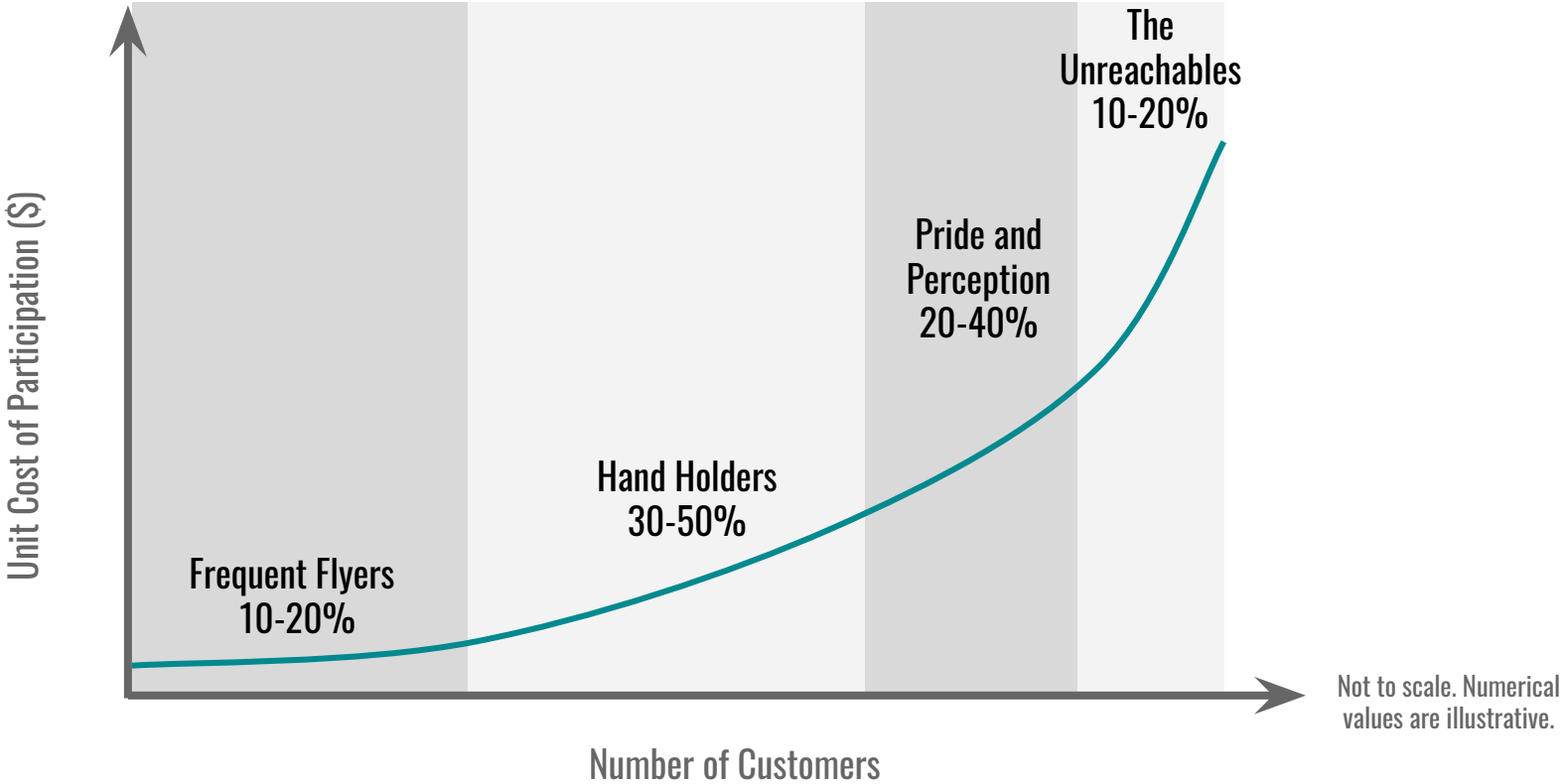
"We don't want to share our info with the government"



Cost of Participation = incentives + outreach + marketing



Cost of Participation



Potential to Save Energy

- Energy use profile
- HVAC system types
- Estimated measure savings



Propensity to **Disconnection**



- **Bill payment patterns**
- **Late fees or past due notices**
- **Service disconnections**

How significant are energy expenses to the customer?
How urgently does the customer need assistance?
What kind of program would help them the most?
What would drive the customer to participate?

**Energy Burden + Urgency + Program Impact Potential +
Psychometric Profile =**

Program Personalization

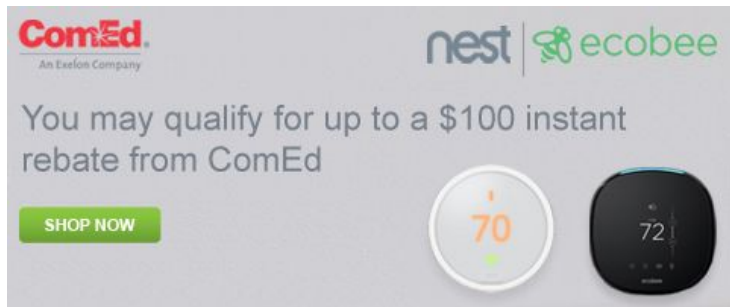
+

Better Participation Projections

+

Better Program Design and Budgeting

Implication on regular EE programs: **Dynamic Incentives**



vs.

Frequent Flyers

Send us a receipt for your attic insulation and you'll **enter a draw to win a free smart thermostat**

Hand Holders

30 second application to receive an instant **50%** discount off a smart thermostat

Pride and Perception

Help your community save energy - **75%** off a smart thermostat. 90% of your neighbors have one

The Unreachables

Rev. Thomas recommended we get in touch with you. We can send a technician to install a smart thermostat free of charge...

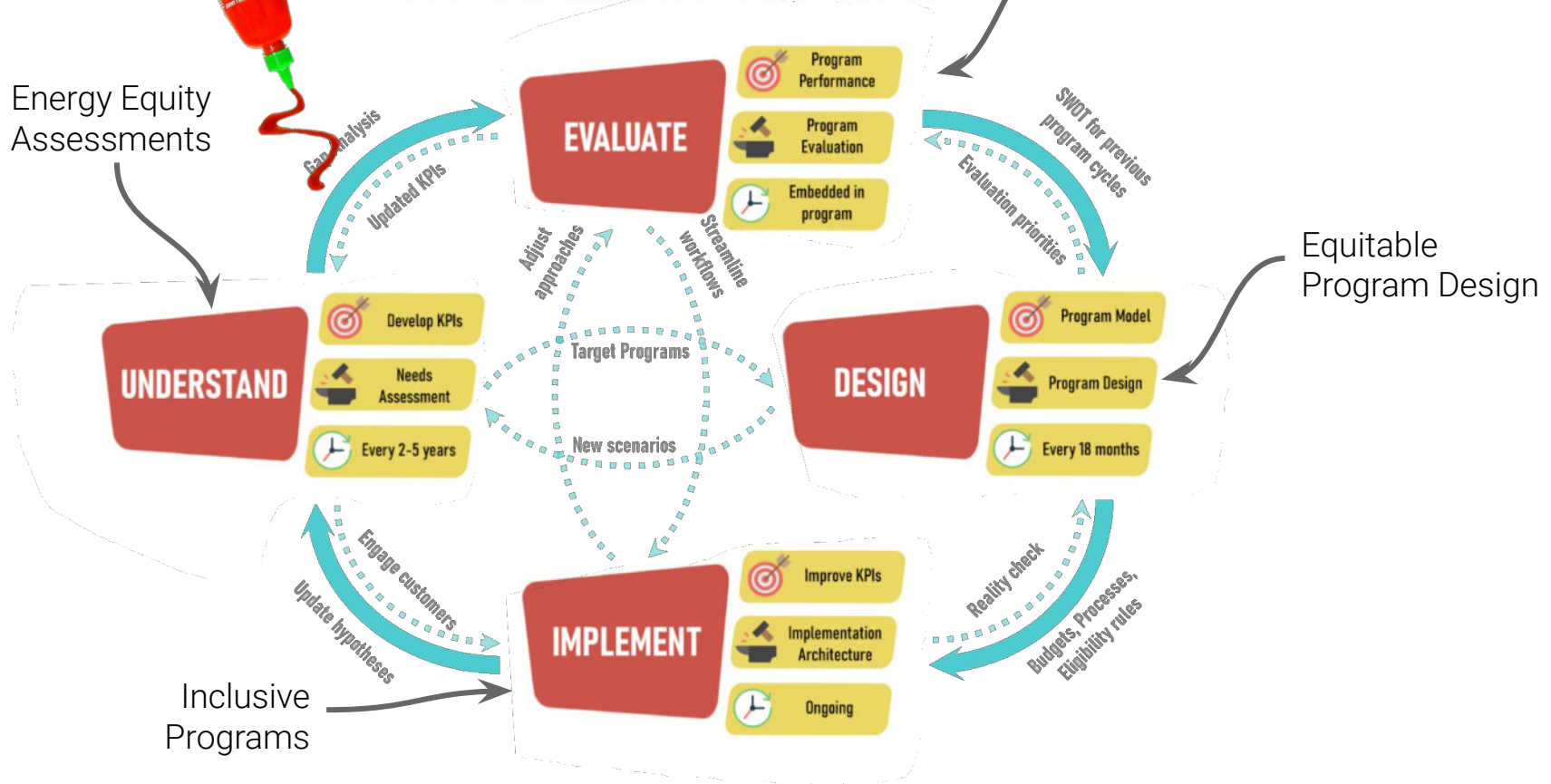
Equity Sriracha



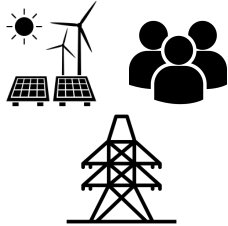
THE PROGRAM FLYWHEEL

Equity-Aware Program Evaluations

Energy Equity Assessments



Takeaways



The next generation of utility programs have to balance clean energy, equity and the utility business case.



Utilities should start with **energy equity assessments** across all programs (low-income or non-low-income) to identify gaps, set goals for reducing energy burden and monitor progress over time.



The equity data problem has (mostly) been solved. The goal now is to move from static demographic segments to dynamic psychometric and behavioral customer profiles.

empower dataworks



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