

The Utility World Is Radically Transforming: Are Evaluators Up for the Challenge?

Bill LeBlanc
Chief Instigation Agent, E Source



E Source

IEPEC Denver 2019

August 2019

Who Is E Source?

- Research and advisory firm with 30 years utility experience
- Focused on utility-customer connections
- Membership-based with 80+% of N. American Utilities



E Source

E Source service territory



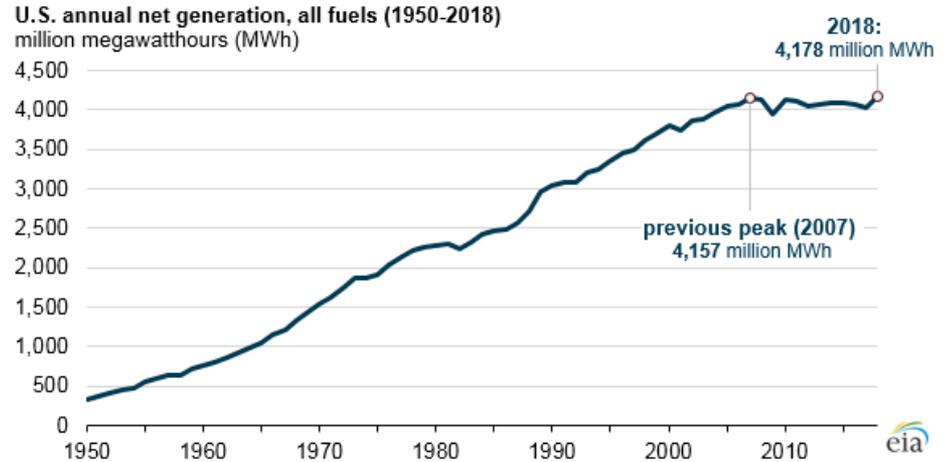
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Today's roadmap

- What is the **larger context** of our world of DSM?
- How does it fit into the **utility of the future?**
- How do we **design** for our customers so they care?
- How do we **define Electrification?**
- Key challenges for **Evaluators.**

Key challenges facing utilities

- Stagnant load growth
- Revenues being squeezed
- Increasing percentage of clean energy
- Brand strength and consumer preferences
- Expanding distributed energy resources (DERs)



Source: US Energy Information Administration



All images source: iStock

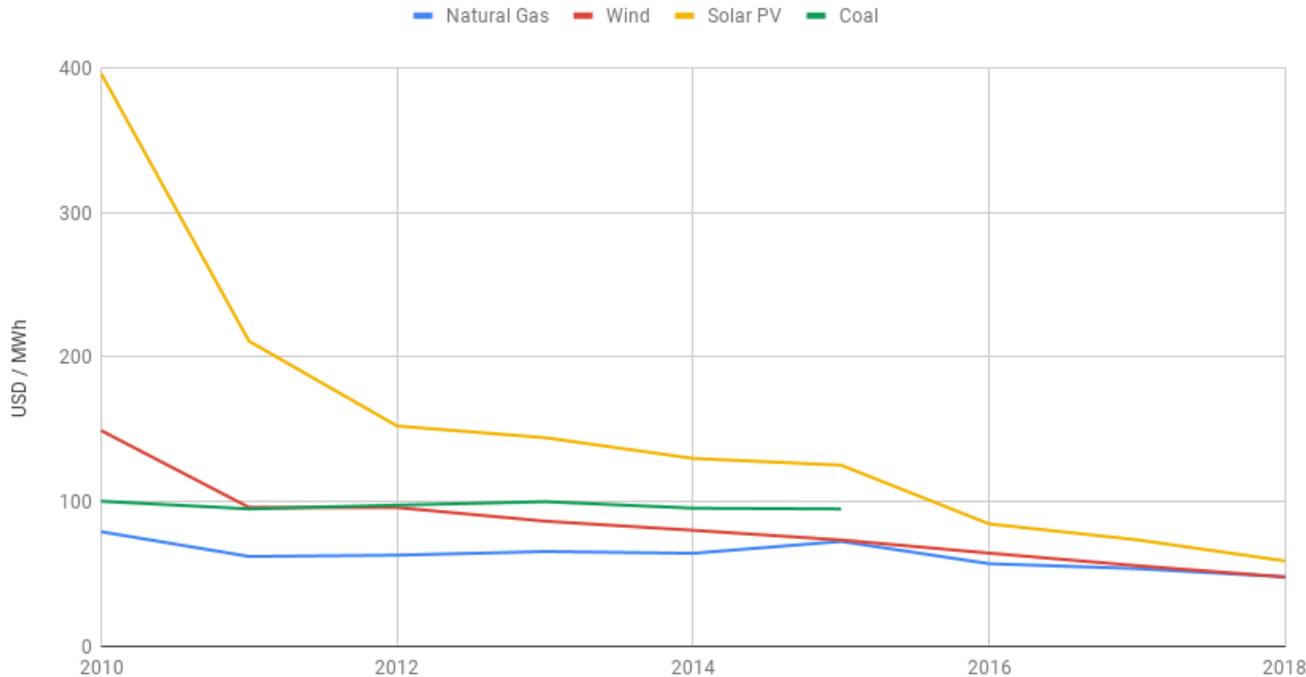
We will only green the world when we change the very nature of the electricity grid—moving it away from dirty coal ... to ... renewables. And that is a huge industrial project—much bigger than anyone has told you.

Finally, like the New Deal, if we undertake the green version, it has the potential to create a whole new clean power industry to spur our economy into the 21st century.

—Thomas Friedman (2007)

Rapid decrease in costs of wind and solar

Levelized Cost of Electricity By Source



Source: US Energy Information Administration

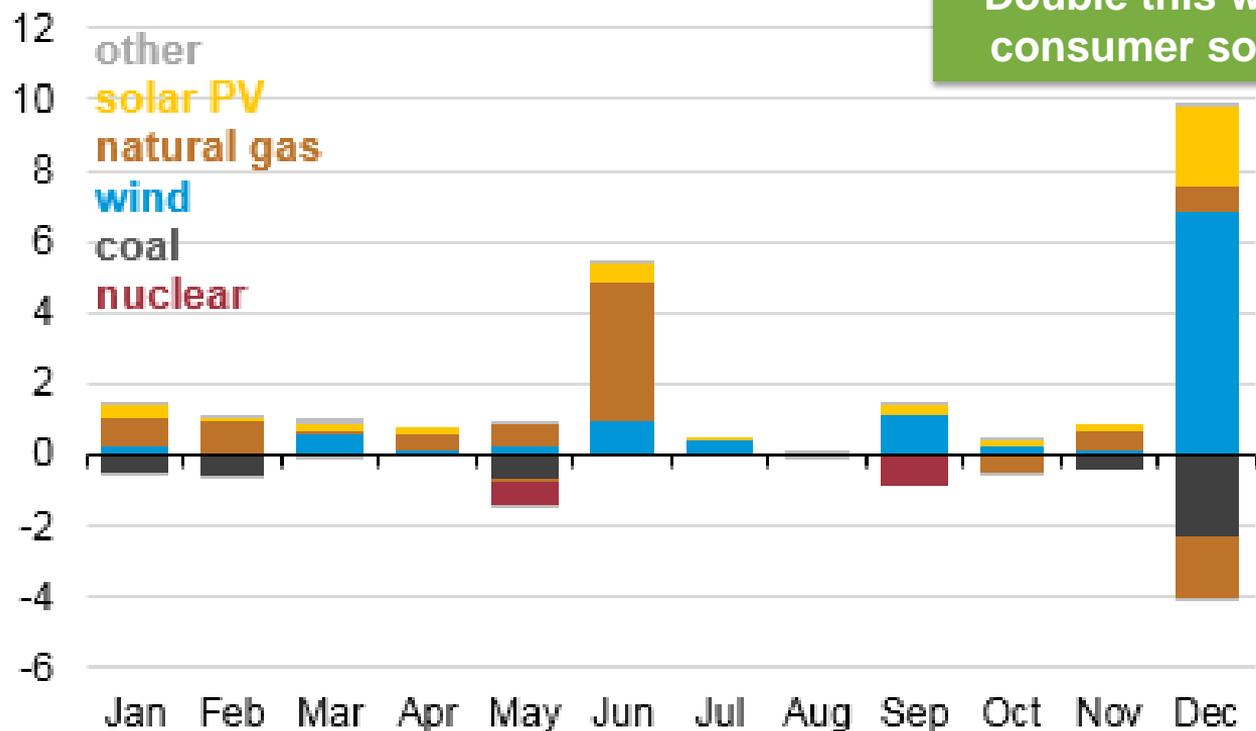
WIND: Now only 33% of the cost compared to 2010

SOLAR: Now only 17% of the cost compared to 2010

NATURAL GAS: Now 63% of costs compared to 2010

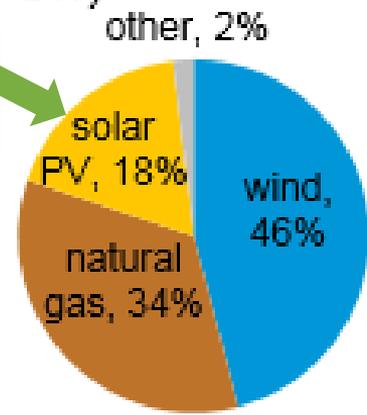
COAL: Now 97% of costs compared to 2010

U.S. electric capacity additions and retirements, 2019 gigawatts (GW)

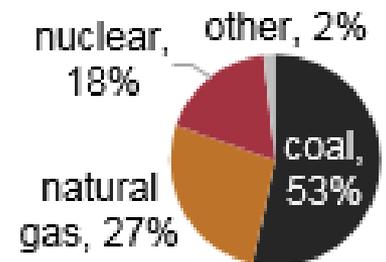


**Double this with
consumer solar**

planned additions (24 GW)



planned retirements (8 GW)



Source: US Energy Information Administration



How does EM&V change when the objective is carbon reduction of 80% to 100% in 20 years?



Note: EM&V = evaluation, measurement, and verification

All images source: iStock

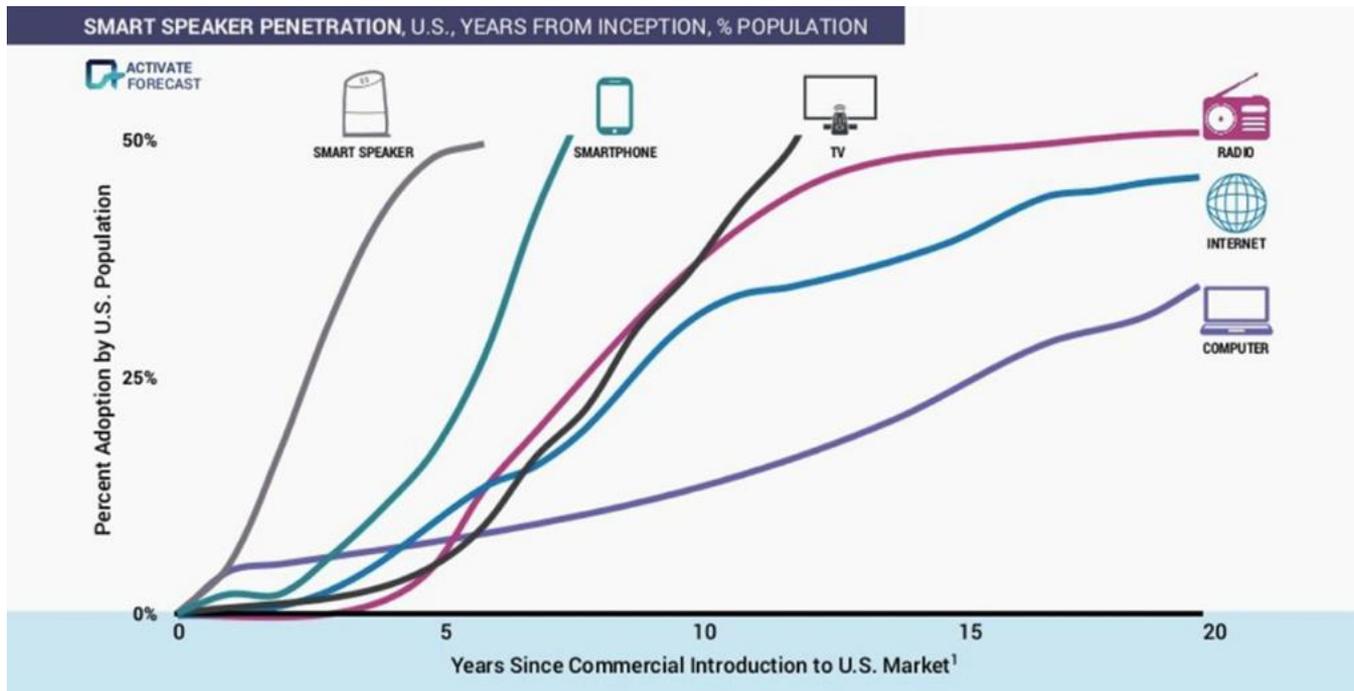


Growth in plug loads



All images source: iStock

Smart speakers are the most quickly adopted electronic devices in US history

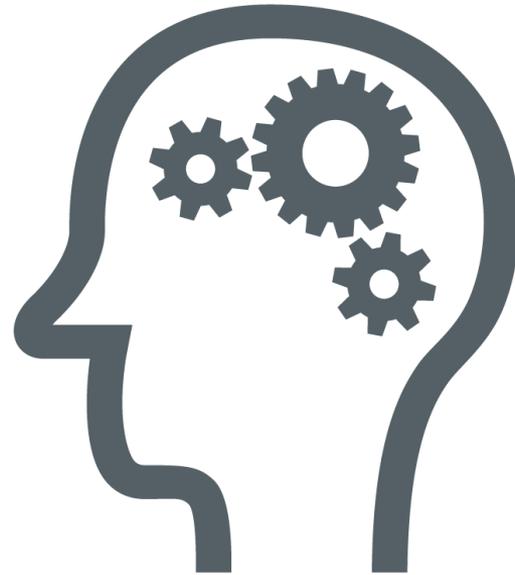


Source: [Consumer Adoption](#), XAPPmedia

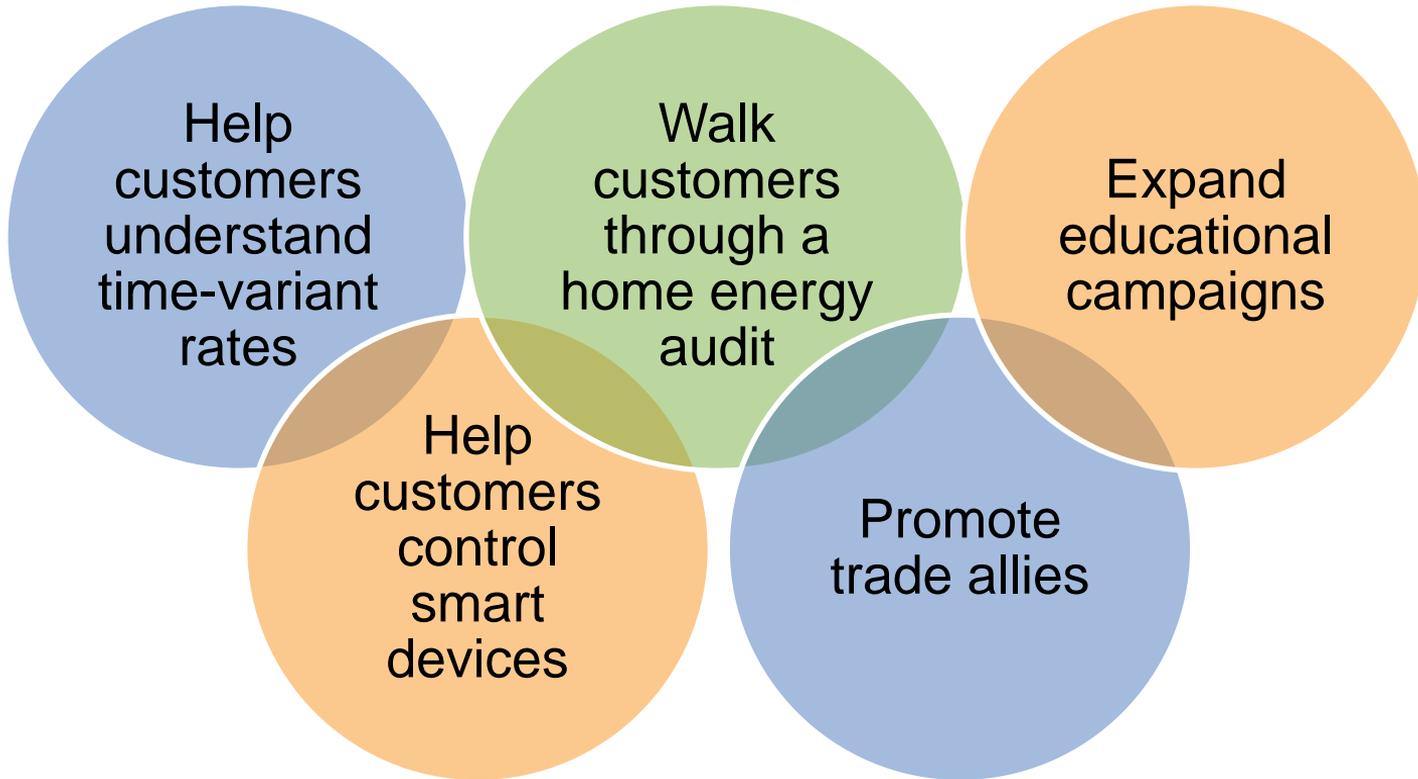
Customers actually want to engage with you on this channel

60% of smart speaker owners said they are “probably” or “definitely” interested in a utility app that utilizes voice-activated skills

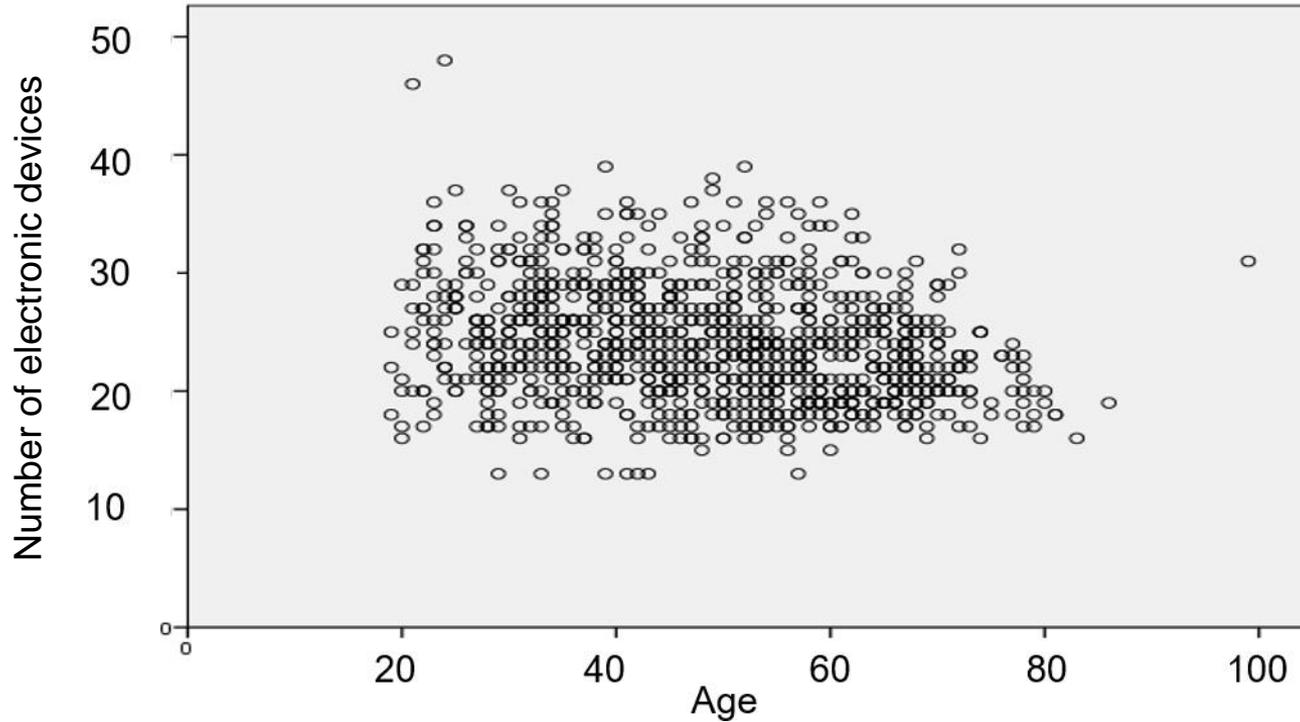
Data from the E Source Residential Utility Customer Survey



There's much more that could be done



Number of gadgets by age of consumer



Note: Electronic devices include cellphones, smartphones, TVs, game consoles, DVRs , laptops, etc.

© E Source (Residential Energy-Use Study)

The old utility success paradigm

20th-century model



Source: www.industcards.com/st-other-usa-oth.htm

- Increase sales
- Build and spend
- Enhance reliability

Why did the utility's position erode?

- The core product used to be the **most amazing technological feat** in history; now it's **taken for granted**
- Utilities have been rewarded for being **reliable and safe**, not for being innovative or customer-centric
- The rest of the world's leading companies have set a **high bar for innovation and speed**
- **Monopoly** has become a negative word in a world of competition; **people love choice**

The new utility success paradigm

20th-century model



- Increase sales
- Build and spend
- Enhance reliability



21st-century model

Source: monkeybusinessimages/Bigstock.com

- Increase value
- Products and services
- Greening the grid
- Transforming transportation



How might the evaluation community assist in the transformation from the old utility world to the new paradigm of DERs, electrification, and carbon reduction?

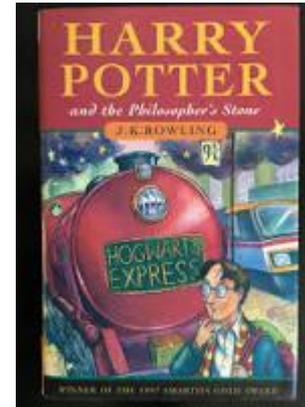
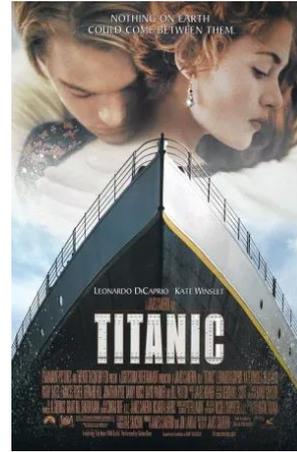
Quiz time! Name that year*

How fast have we evolved?

*Thanks to Scott Dimetrosky, Apex Analytics

1997 or 2017?

- *Titanic*, *The Lost World: Jurassic Park*, and *Men in Black* were the three biggest films of the year
- Princess Diana was killed in a car crash
- Steve Jobs started back at Apple
- The first iPhone was still 10 years in the future
- The Dow Jones average was soaring to over 7000
- *Harry Potter* was published



All images source: Google Images

1997 or 2017?

Practice one first:

Therm Impacts and Cost-Effectiveness of the 1992 Oregon Residential Building Code

1997

1997 or 2017?

Market Transformation: Measuring the Immeasurable

- Hossein Haeri, Sami Khawaja, and Jennifer Stout, Barakat & Chamberlin, Inc.
- Jamshid Hosseini, Marquette University

1997

1997 or 2017?

Product Identification, Partnership Formation, and Pricing Strategy: Methods and Results for Building Energy Performance Software

- Peter Benenson, Peter Benenson Consulting
- Tom L. Webster, Webster Consulting

1997

1997 or 2017?

Evaluating Programs of the Cities for Climate Protection Campaign

- Moderator: Fred Sissine, Congressional Research Service
- Panelists:
 - Ralph Torrie, Cities for Climate Protection Campaign
 - Phil Welker, City of Portland Oregon Energy Office
 - Doug Yoder, Department of Environmental Resources Management, Dade County, Florida
 - Barbara Bamberger, City of Chula Vista, California

1997

1997 or 2017?

Not All Spillover Is the Same—So Don't Treat It That Way!

- Ryan Bliss, Research Into Action

2017

1997 or 2017?

Generating a Statewide Baseline Market Characterization for Commercial and Industrial Customers

- James Leahy, DNV GL Energy

2017

Powerwalking = RCT

- Pick **random** people off the street
- Try to **control** my laughter when they say something funny
- **Trial**-and-error process to get the right mix of people

How do we portray ourselves?



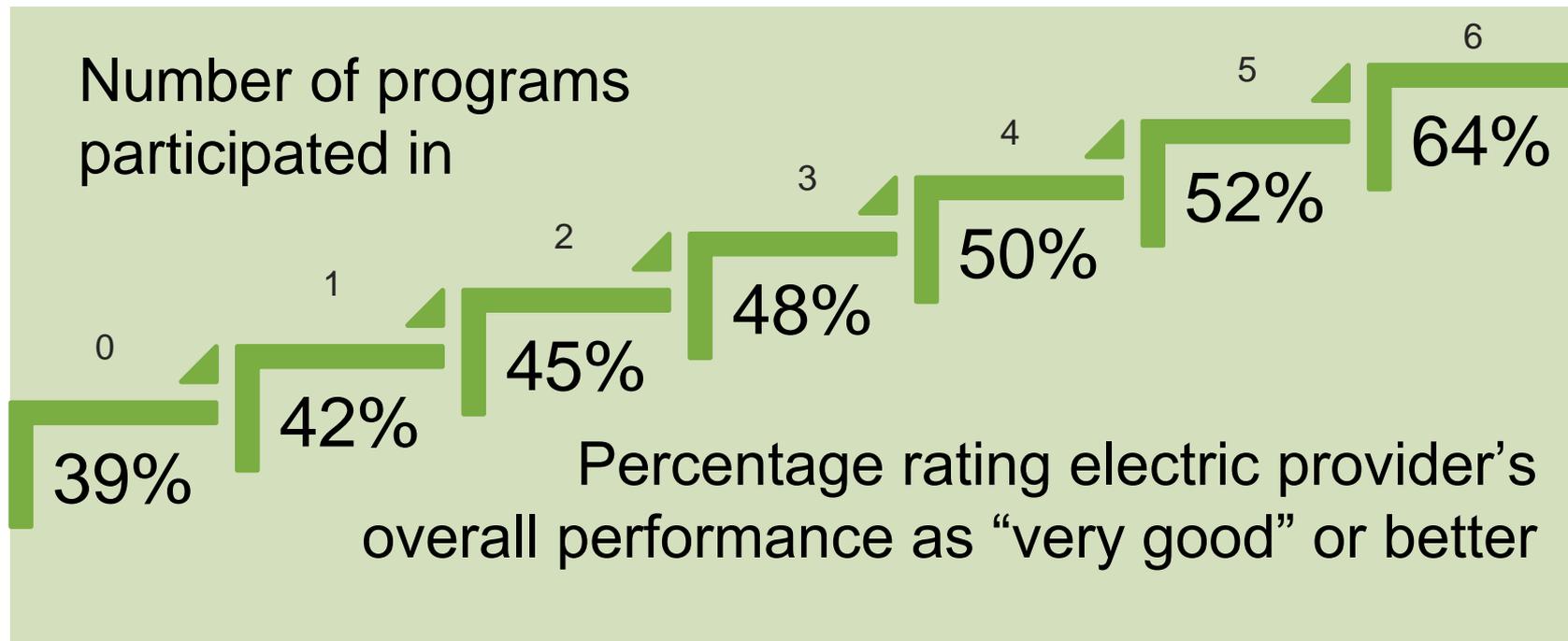
What are *non-energy benefits*?

- “When you don’t use energy in your house, you benefit from saving money.”
- “Like when a lazy person gets out of doing hard work?”
- “Sounds like ‘friends with benefits.’”

What's *net to gross* refer to?

- “That’s how much the government takes out of your paycheck each month, right?”
- “I have no idea. It sounds disgusting.”

What drives satisfaction and brand value?



© E Source; data from E Source Residential Energy-Use Study

The utility DSM budget of 2020

Budget category	Percentage of budget
Customer incentives	60.8
Admin	24.4
Delivery	12.0
Evaluation	1.0
Marketing	0.9
Design	0.2
Utility performance incentives	0.2
Other	0.4

Note: Percentages may not equal 100 due to rounding.

© E Source (DSM Insights)

What becomes “contagious” in the marketplace?

-  Social currency
-  Triggers
-  Emotion
-  Public / norms
-  Practical value

Adapted from *Contagious: Why Things Catch On* by Johan Berger (2013)

What becomes “contagious” in the marketplace?

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Adapted from *Contagious: Why Things Catch On* by Johan Berger (2013)

What is social currency?

- Knowing something others don't know
- Sharing something remarkable, different
- Being special, “in” crowd, “in” clubs, exclusivity
- Getting something in short supply, being first



<https://www.trustedreviews.com/best/best-iphone-3501342>

Why did the Prius win the battle?



Honda Civic Hybrid

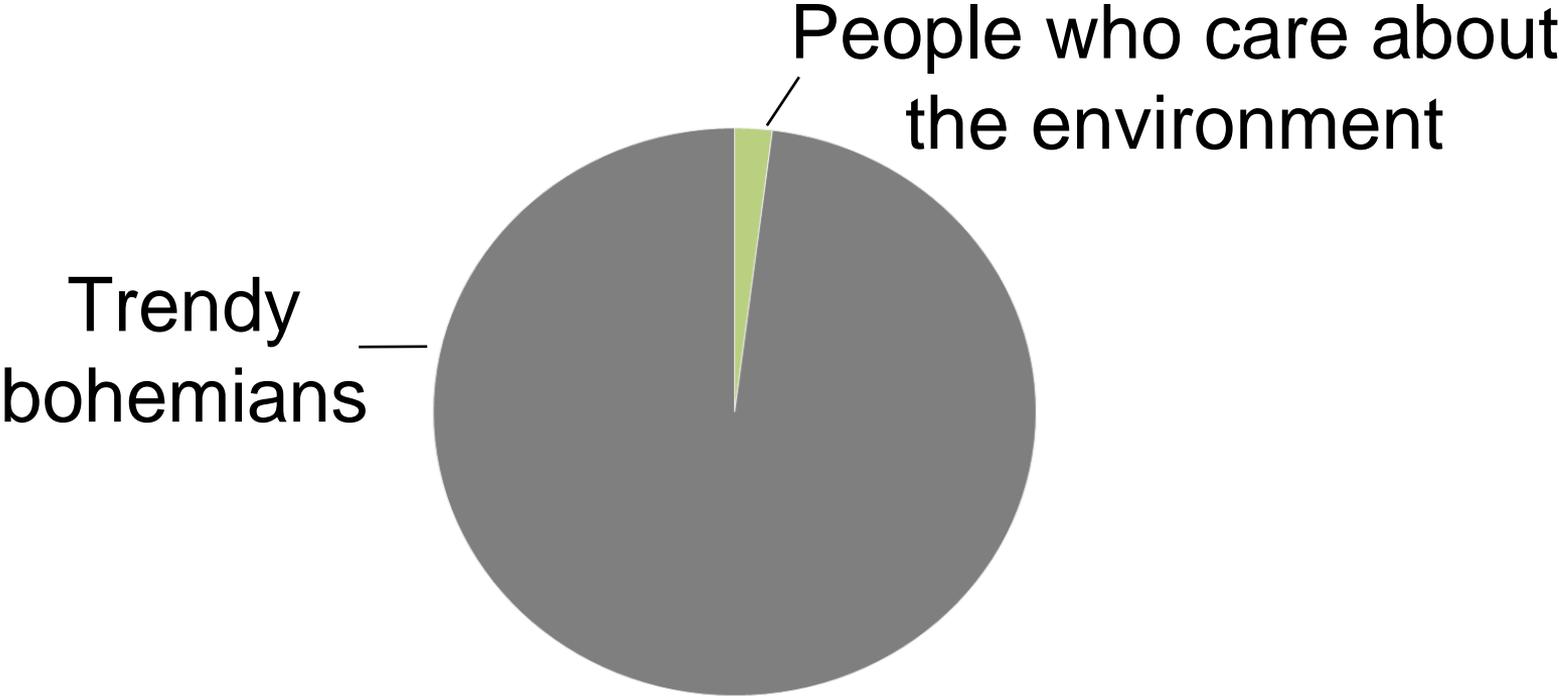
<https://www.edmunds.com/honda/civic/2005/hybrid/>



Toyota Prius

<https://www.motortrend.com/cars/toyota/prius/2006/>

Prius and Tesla owners in California



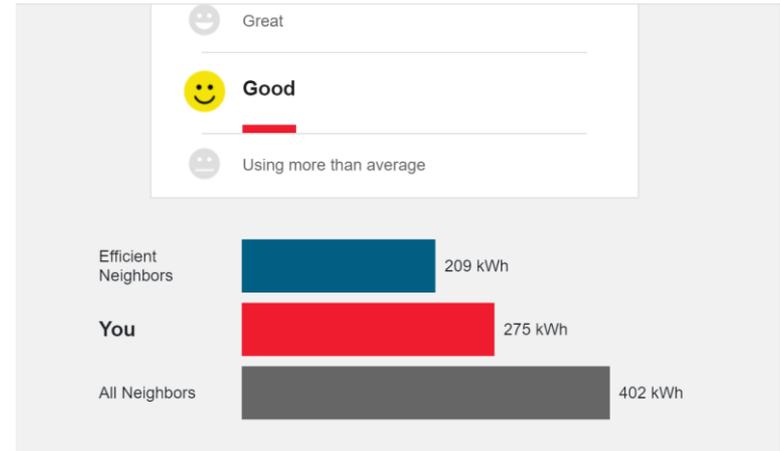
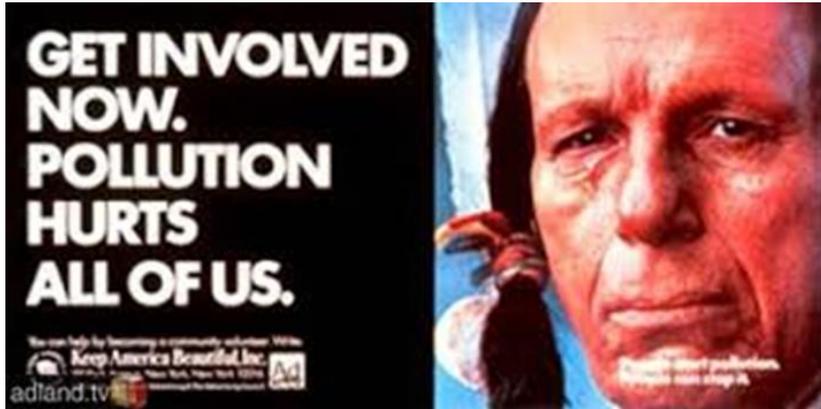
Adapted from The Onion

The power of social norms

Visible, demonstrate your actions

Subconscious desire to fit in

Milieu acceptance, avoid conflict



LeBlanc personal HER

<https://www.chicagotribune.com/opinion/commentary/ct-perspec-indian-crying-environment-ads-pollution-1123-20171113-story.html>

Products meeting “stickiness” factors

Product or service	Social currency	Trigger	Emotion	Social norms/ public	Practical value
Thermostat control via smartphone					
Electric vehicle programs and support					
Photovoltaic panel sales, leasing, and support					

Design thinking

Empathy



<https://travel.stackexchange.com/questions/3041/how-to-use-sinks-with-separate-hot-cold-taps>



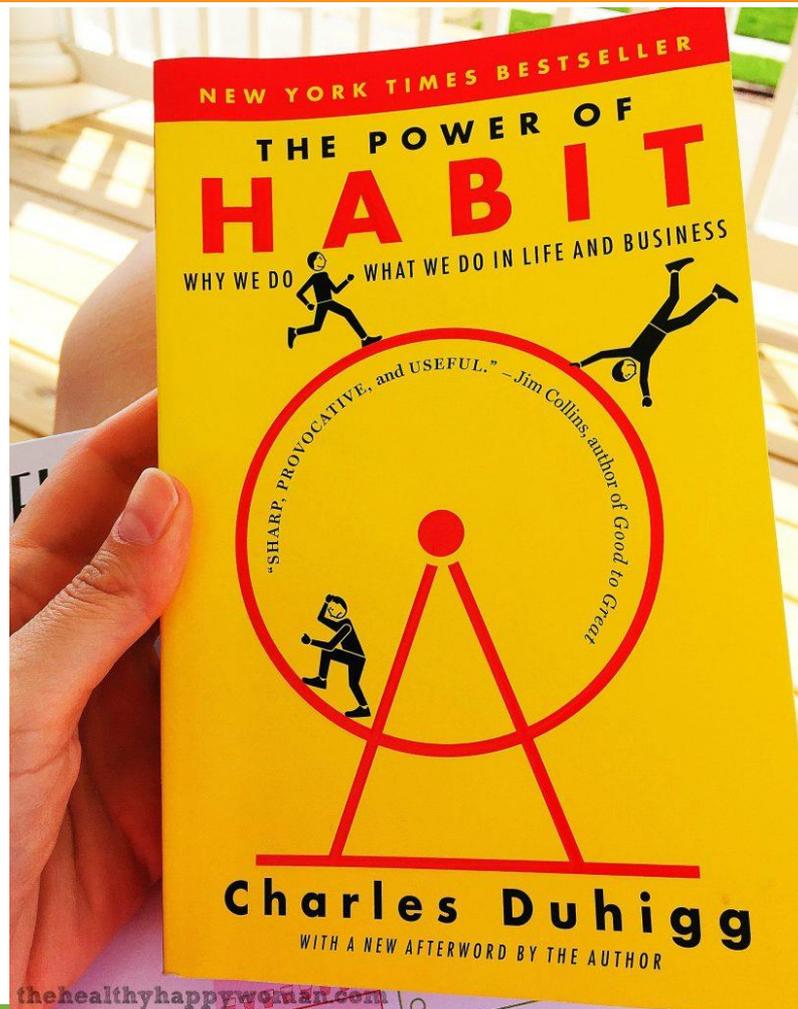
<https://travel.stackexchange.com/questions/3041/how-to-use-sinks-with-separate-hot-cold-taps>



<https://brightside.me/wonder-curiousities/3-reasons-why-people-in-the-uk-have-2-taps-326760/>

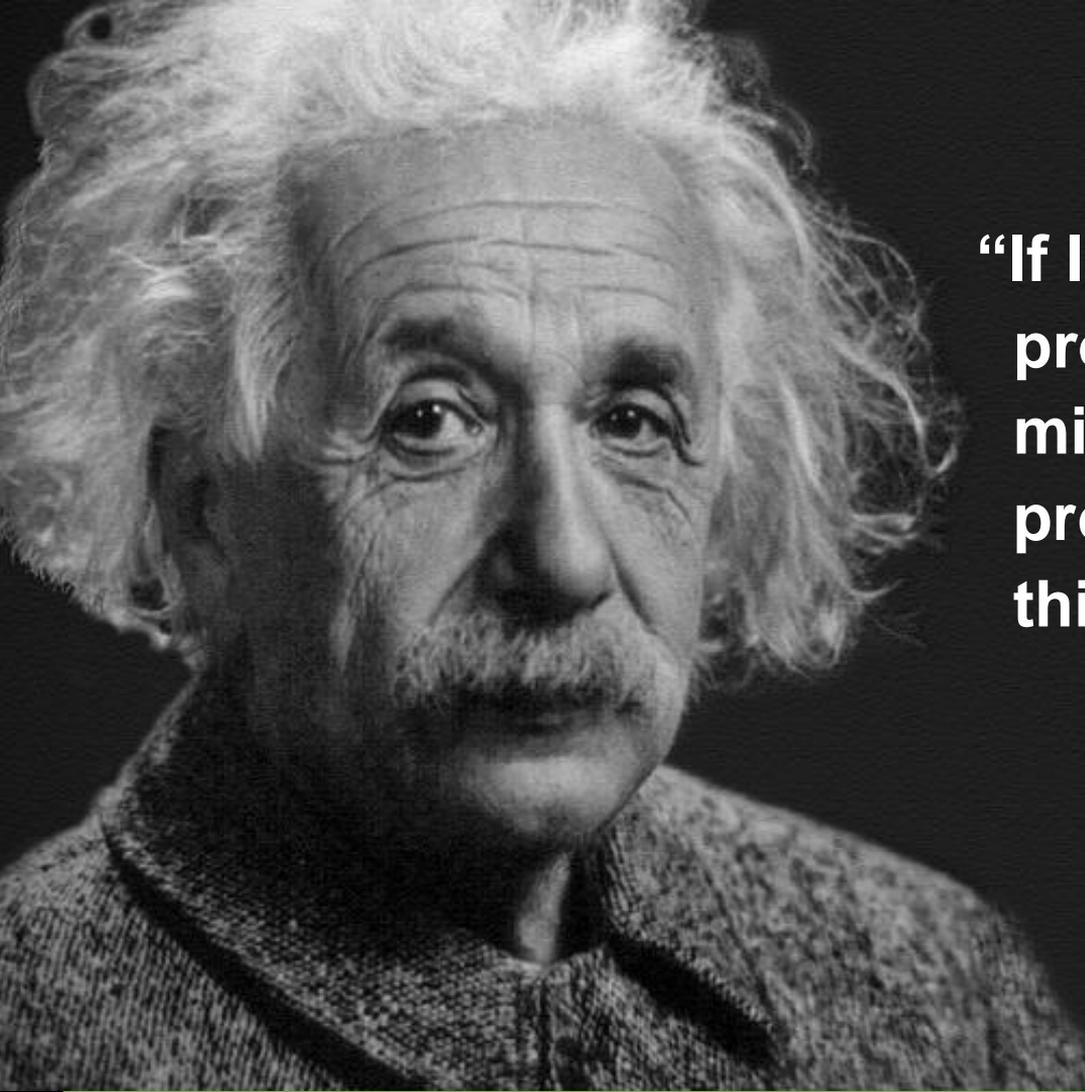


© E Source



Safety moment

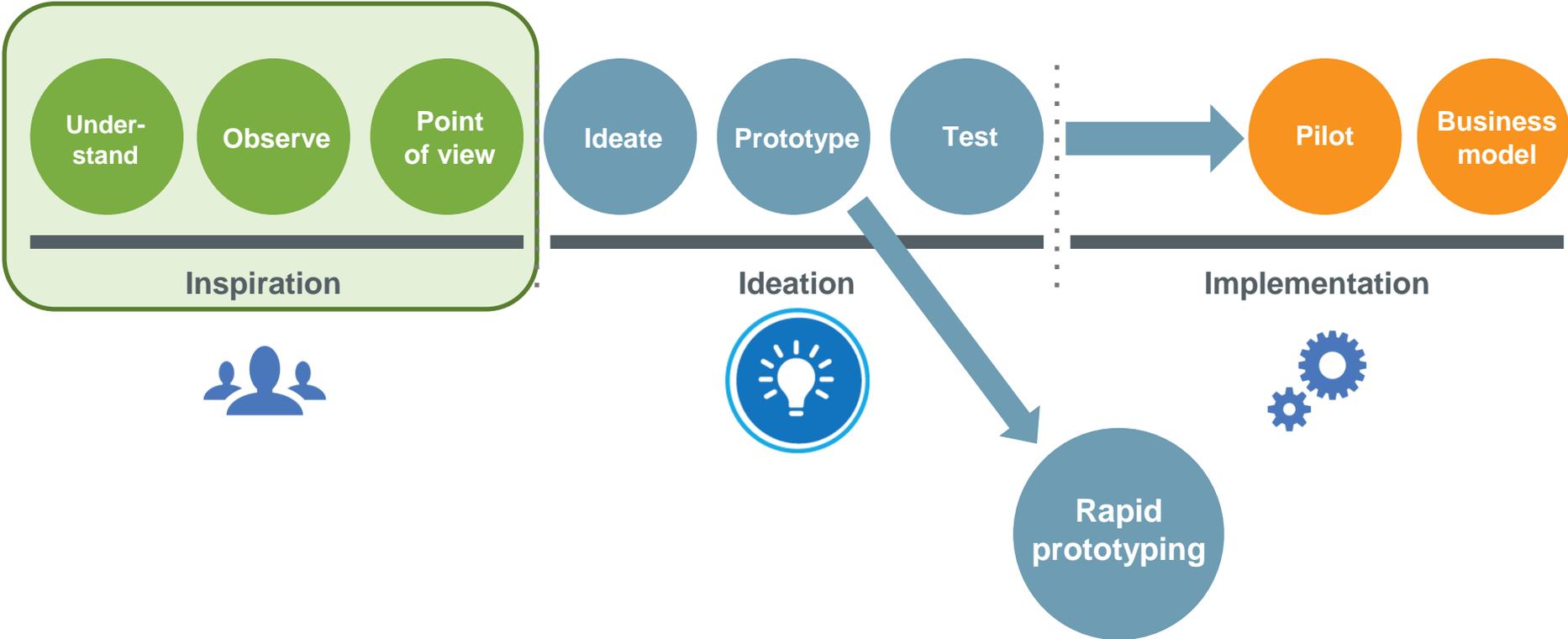
Innovation moment



“If I had an hour to solve a problem, I’d spend 55 minutes thinking about the problem and 5 minutes thinking about solutions.”

—*Albert Einstein*

Design-thinking approach to prototyping





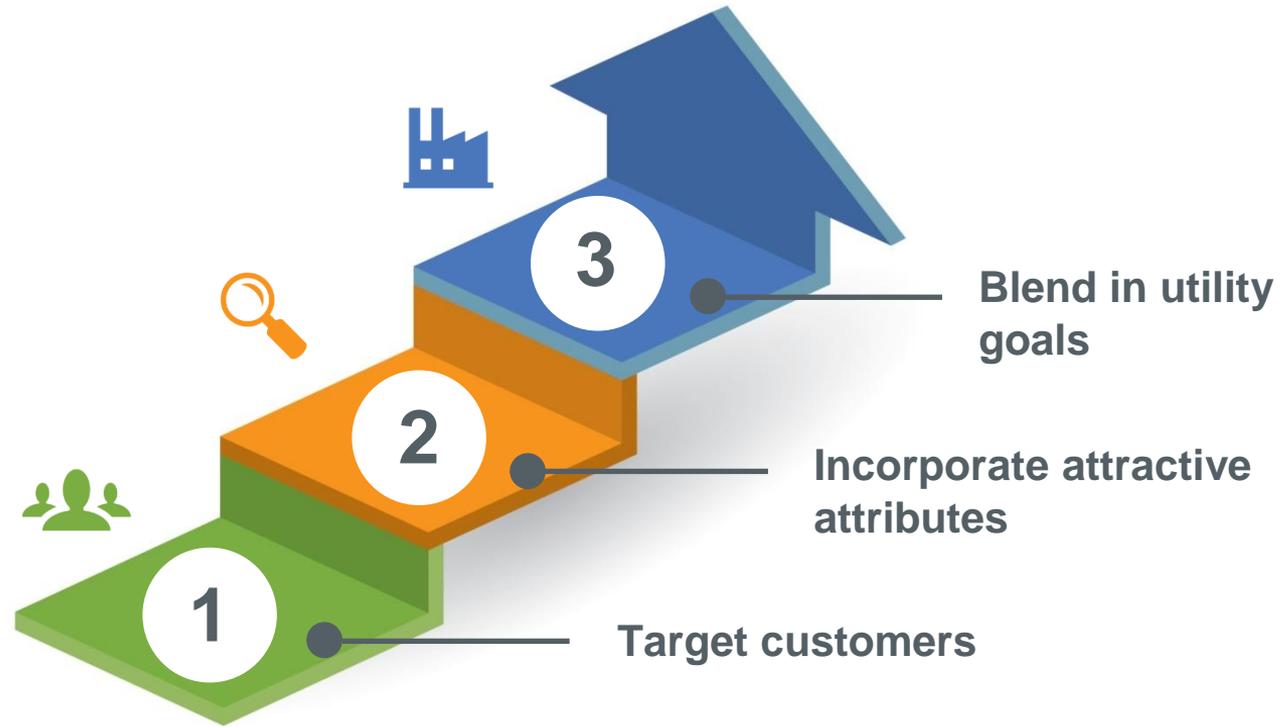
User experience

Design

Current program design and customer experience strategy: Typical method



Fundamental shift in program design and marketing strategy: Customer-first method



Change the vocabulary ...

“How might we ...”

“Yes ... and ...”

“Let’s figure out how to make that work.”

**These are all
“How we can succeed” statements.**

What were Airbnb's design challenges?



Design for Trust

Stranger.....Friend....Relative



13 Reviews ★★★★★

Summary

Accuracy	★★★★★	Location	★★★★★
Communication	★★★★★	Check In	★★★★★
Cleanliness	★★★★★	Value	★★★★★



Dave and Deb communication was perfect from the beginning. They are very attentive and helpful hosts. The place is absolutely nice and well equipped! It is so clean and so bright, I recommend it to anyone who visits Edmonton. Plus the location is really convenient! My friend and I will stay here again for sure ^_^

Source: Airbnb

Real-life design thinking example: Nest

- “It started as our frustration and the more we talked to other people, the more we heard their frustration. That was the tipping point.”
- “We brought in experts, interviewed contractors, and conducted meticulous research. We traveled and took pictures of people’s homes, their thermostat, and how it was installed. We built a library of ugly thermostats around the country.”
- “We installed every thermostat we could at our own homes to learn the frustrations that people have, the installation experience, everything.”



“Instead of saying: ‘let’s just make it easier to program,’ we believed there should be a better way.”

—Tony Fadell, former senior vice president, Apple

This is our only
regular
communication
with 90% of our
customers

17154 Butte Creek Rd, # 250
Houston, TX 77090
PUC License No. 10170

Questions or Comments
281-552-8390
1-888-545-4OUR(687)

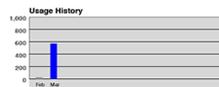
Email:
CustomerService@OUREnergyLLC.com
Web: www.OurEnergyLLC.com

For Outages / Emergencies Call:
Oncoor Electric Delivery 888.313.4747
(24 hours a day)

Outages and Emergencies
24 Hours/day 7 days/week
1-888-545-4687

Or call your local utility directly
ONCOR
888-313-6862

For more information
about residential electric
service please visit
www.powertochoose.com



17154 Butte Creek Rd, # 250
Houston, TX 77090

John Doe
John Doe
1234 XYZ DR
City, TX 75XXX

Act # : 1234567890 Bill # : B1503222222 Bill Date : 03/24/15

Page: 1 of 1

John Doe
John Doe
1234 XYZ DR
City, TX 75XXX

Service at ES1 ID #:100800000000
1234 XYZ DR
CITY, TX 75000-0000
Email: ABC@XYZ.com

Bill Date: 03/23/15 Bill Period - 02/19/15 thru 03/20/15

Previous Balance	New Charges	Payments/Adj.	Due Amount	Due Date
\$4.49	\$51.01	\$0.22	\$55.72	04/08/15

Meter	Type	Dates	Current Meter Read	Previous Meter Read	Multiplier	kWh Usage	kVa/kW Demand	Energy Cost
110000000L.G	ACT	02/19 - 03/20	22444	21873	1	571.00		See Details

Current Charges	Qty	Rate	Amount
Electric Service			
Energy Charge	571.00	0.04360	\$24.90
PASSCHG - TDSP Passthru Charge			\$24.30
Sales & Gross Receipt Taxes			
City Tax			\$0.75
Gross Receipt Reimb.			\$0.98
PUCA Reimb.			\$0.08

Payments and Adjustments	Amount
Previous Balance	\$4.49
Payments and Adjustments	
Late Payment Charges on 03/12/15	\$0.22
Total Payments/Adjustments	\$0.22
Total Current Charges	\$51.01
Total Amount Due	\$55.72

Contract Details	Usage kWh	Avg Rate	Amount
02/19/15 - 03/20/15 Fixed Rate (Base : 0.04360)	571.00	0.04360	\$24.90

The average price you paid for electricity this month is 8.616¢per kWh. If you believe this bill is incorrect please contact OUR ENERGY to dispute the charges. If we fail to resolve the problem to your satisfaction you may file a complaint with the Public Utility Commission of Texas, P.O. Box 13526, Austin, Texas 78711-3526. Call(888) 762-9477 toll free or in Texas call (512) 936-7100. Hearing and speech impaired individuals with text telephones (TTY) may contact the commission at (512) 936-7136. You have a contract valid from 02/18/2015 to 02/18/2016.

...Please return bottom portion with your payment...

Acct #: 1234567890	
Bill Date: 03/23/15	Bill #: B1503222222
Amount Due: \$55.72	Due by: 04/08/15
Amount Due After 04/08/15	\$58.18
Amount Enclosed : \$	
Make check payable to: Our Energy, LLC	
[] Yes, I would like to donate \$_____ to Our Energy Electricity Payment Assistance Program	

Our Energy, LLC
17154 Butte Creek Rd, # 250
Houston, TX 77090

Typical assumption on bill redesign

Assumption: Customers want to be able to read their bill more easily

Utility goals: Reduce calls, complaints, and late payments, and increase satisfaction

Customer goals: Core fears and desires are often not well known

Page 1 of 2

GEORGIA POWER
A SOUTHERN COMPANY

Customer Name: [REDACTED] Account Number: [REDACTED]

Please Pay By: Jul 10, 2013
Total Due: \$ 432.34

Service Address: [REDACTED] Service Period: May 22, 2013 - June 21, 2013

Billing Summary

Previous Bill Amount		\$ 329.91
Payment Received On 05/29/13	Thank You!	-329.91
Current Electric Service		+432.34
		Total Due \$ 432.34

Balances unpaid 7 days after the total due date are subject to a late charge of 1.5% of the amount due or \$2.00, whichever is greater.

Contact Us 24 hours a day, 7 days a week
georgiapower.com
Account Number: [REDACTED] Web Access Code: [REDACTED]
Customer Service: 1-888-660-5890 Power Outage Reporting: 1-888-891-0938

Payment Options
Online: Just visit georgiapower.com/mypayment
Login to your account using the following:
Account number: 07396-67077
Web access code: 223804
By Mail: Georgia Power Payments, 96 Annex

Usage Information

Total Used: 3,277 kWh
Next Scheduled Read Date: On or after July 22, 2013

	1 Year Ago	Last Month	This Month
Total kWh Used	3,147	3,308	3,277
Average Daily kWh	102	114	109
Days in Billing Period	31	29	30

07396-67077-16
PLEASE KEEP THIS PORTION FOR YOUR RECORDS.

Our business offices will be closed on Thursday, July 4th in observance of Independence Day. In case of an emergency, please call us at the number printed on your bill 24 hours a day, 7 days a week.

Want to see your bill before it comes in the mail? With My Power Usage from Georgia Power, you can view your projected bill long before it arrives in the mail, which helps you to budget and eliminates end-of-the-month surprises. You can also track your daily energy costs, set up email notifications and receive money-saving tips. Just visit georgiapower.com and log in to your account today.

At Georgia Power, we want to help you stay cool all summer long, while helping you save as much as you can. Want to discover great ways to save through our energy efficiency tips? Visit us at georgiapower.com/save.

Source: Georgia Power

HOW MIGHT WE deliver the bill as a communications tool about the **value** they have received **instead of** the money that they **owe**?



HOW MIGHT WE deliver the bill that **reduces anxiety** that many people feel in anticipation of receiving, opening, and paying their bill?



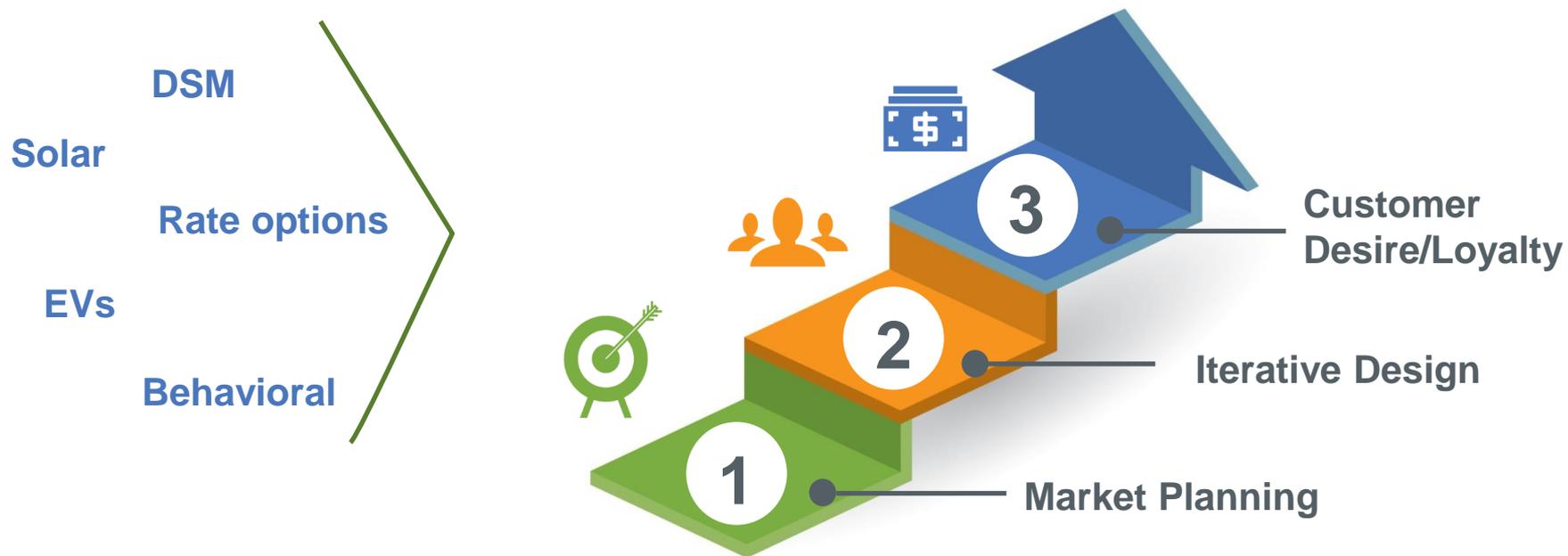
All images source: iStock

Bill

redesign

Billing experience redesign

#1: Build evaluation into a truly integrated workflow for customer programs ...



How many of you use this metric?

**Return on
evaluation investment
(ROEI)**

Potential ROEI metrics

- Lowering program acquisition costs
- Lowering costs of delivery
- Lowering costs of field problems, fixes, and complaints
- Increasing customer satisfaction
- Increasing behavioral actions
- Increasing Net Promoter Scores

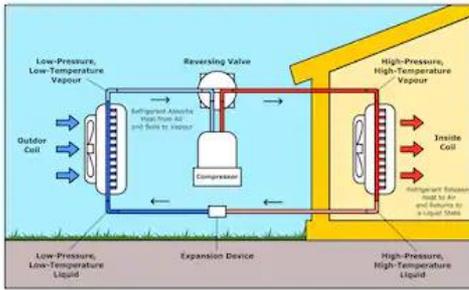
#2: Consider the Objective of Carbon Reduction of 80-100% in 20 Years



#3: Move quickly to adopt EM&V techniques for Electrification



Air Source Heat Pumps Heating Cycle



shutterstock.com • 622693838

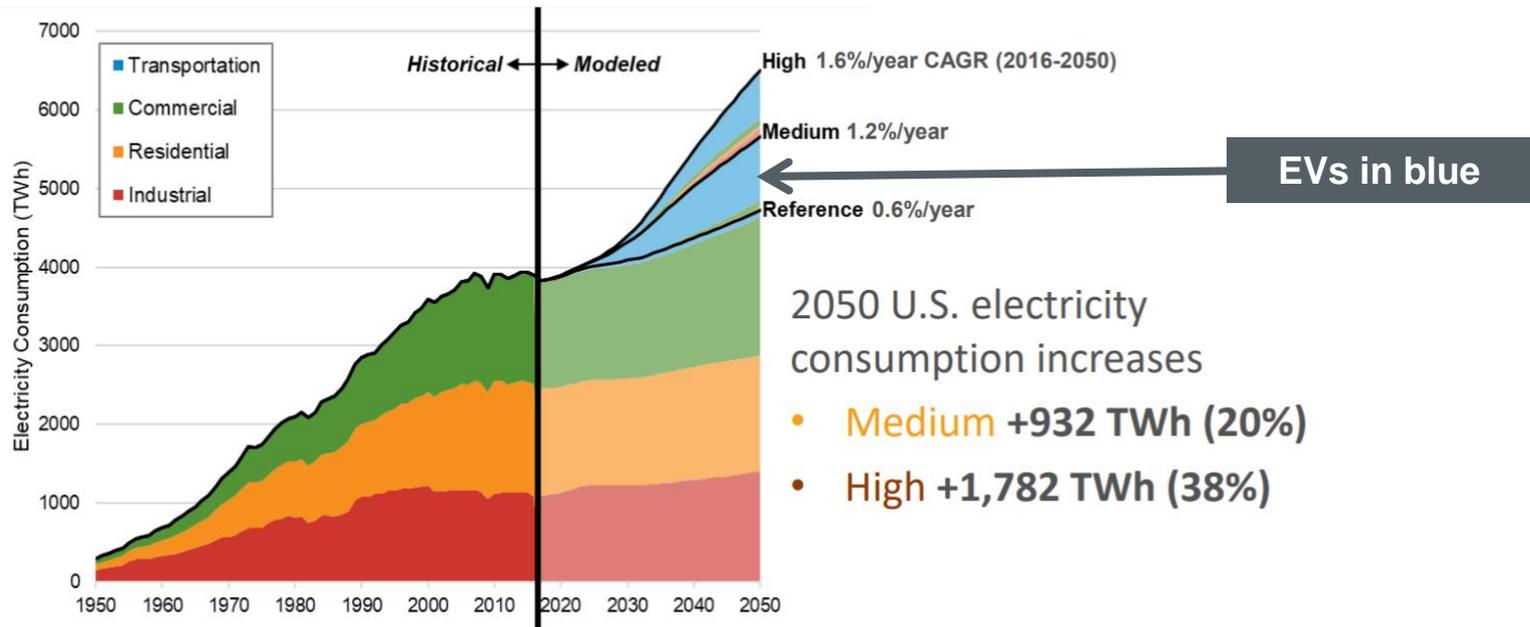
Source http://www.smart-precision.com/saxc_1.htm

Nail down:

- Winners and losers
- Cost effectiveness tests
- Human factors
- Regulatory incentives/PBR
- Carbon measurement

NREL electrification model: EVs dominate

Vehicle electrification dominates incremental growth in **annual** consumption



Source: National Renewable Energy Laboratory

Defining beneficial electrification

Carbon, rates, and bills are all reduced

Less carbon and lower rates for nonparticipants

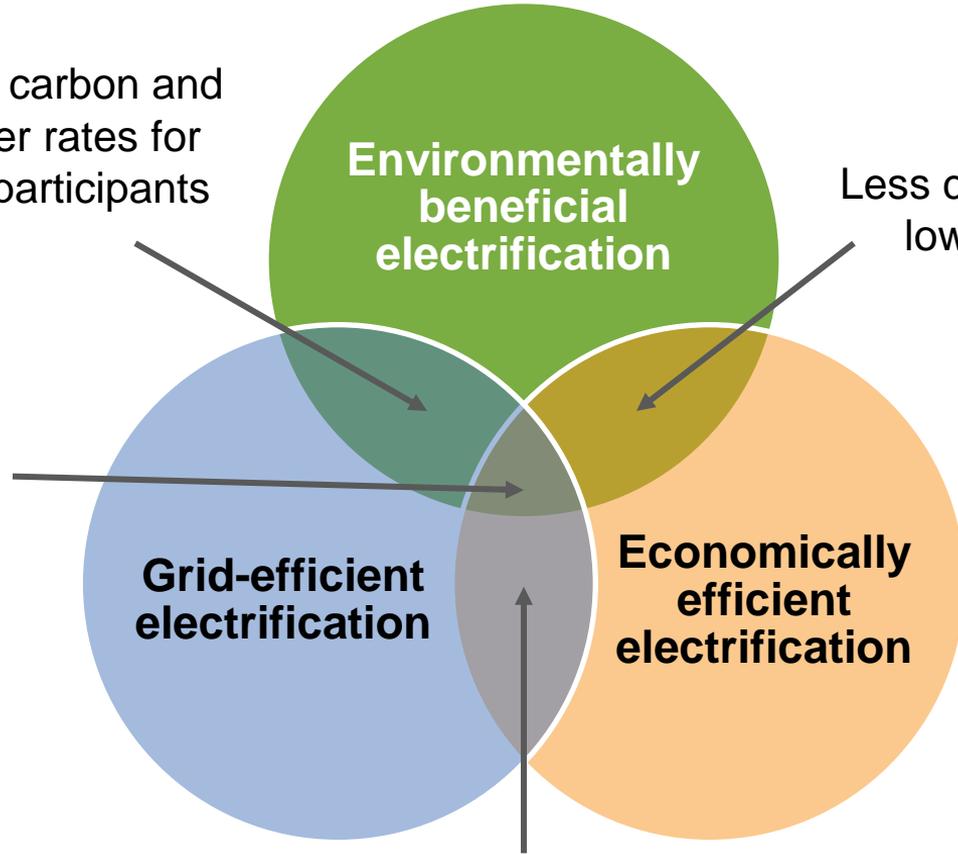
Environmentally beneficial electrification

Less carbon and lower bills

Grid-efficient electrification

Economically efficient electrification

Lower rates and lower bills



Revamping cost-effectiveness tests

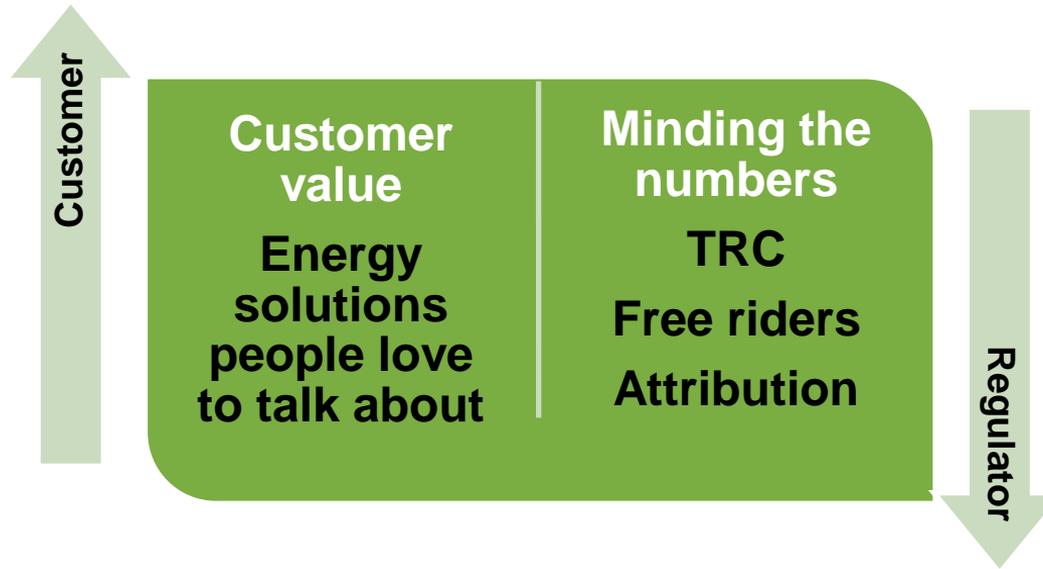
	Costs	Benefits
Included in Total Resource Cost Test and Electrification Test	Incremental cost of a new air source heat pump over a gas furnace and/or central air-conditioning unit	Avoided cost of fossil fuels (oil or gas not used because of switch to electricity)
	Increased cost of electricity	Lower customer operations and maintenance costs
	Increased cost of generation capacity (if applicable)	
	Increased transmission and distribution (if applicable)	
Included only in the Electrification Test	Increased CO ₂ e emissions from increased electric generation	Decreased CO ₂ e emissions from reduction in oil- or gas-fired heating
		Air quality improvements from displaced fuel and related public health savings

Is it time for Electrification regulatory profit incentives for investor-owned utilities?

- Cost recovery of program costs
- Incentive to drive rates lower by electrification programs
- Incentive for net efficiency gains (reducing overall Btus for same “work”)
- Incentive for accelerating adoption of new technologies adopted (e.g., EVs)
- Incentive for meeting environmental goals
- These all can include sliding-scale bonuses

#4: Focus on customer value

Imagine what your job would be in the absence of regulation, then ...





For more information



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