The Changing Landscape of Electrical Contracting

(Why BD Should be Priority #1)

Josh Bone
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- McKinsey: Corporate longevity, In the late 1950s, companies on the S&P 500 enjoyed an average tenure of 61 years; by 2020, this had decreased to 20 years, showcasing the rapid pace of innovation and market adaptation
- Corporate leaders are increasingly focused on building and scaling up new businesses, with eight in ten executives considering it a top five agenda priority.
- They're right to prioritize it! Companies that focus on building new businesses significantly outperform their peers.
- We believe now is time for industry incumbents to embark on business building strategies. Mobility trends indicate that industry has reached an inflection point that fosters growth due to the accelerated changes to ecosystems.

The Current State of Electrical Contracting

(Mega Projects & Workforce)

The Impact of Past Construction Booms on NECA/IBEW Market Share

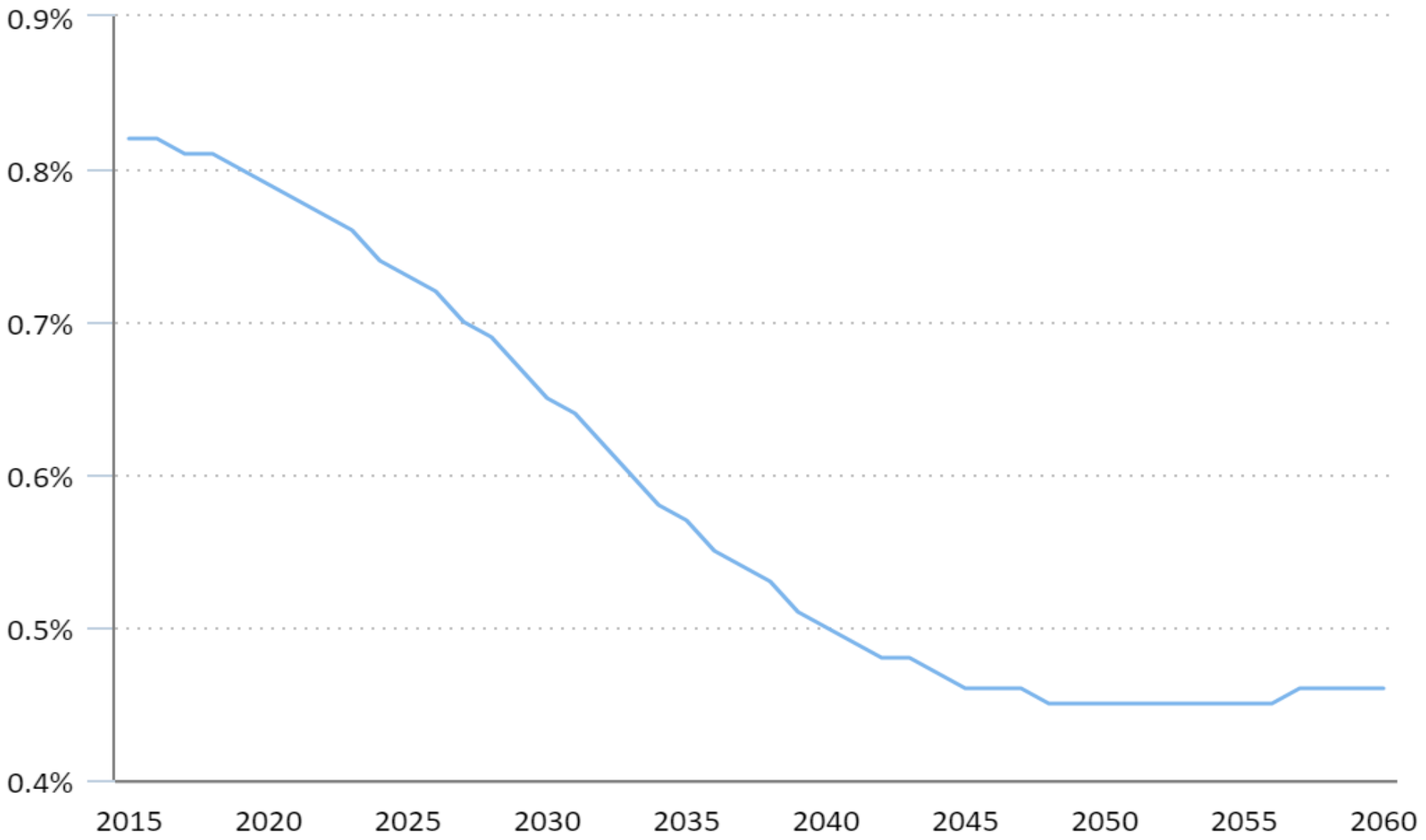
04-26-23

The U.S. needs 80,000 new electricians a year. One solution? Recruit more women

Women represent just 2% of electricians in America.

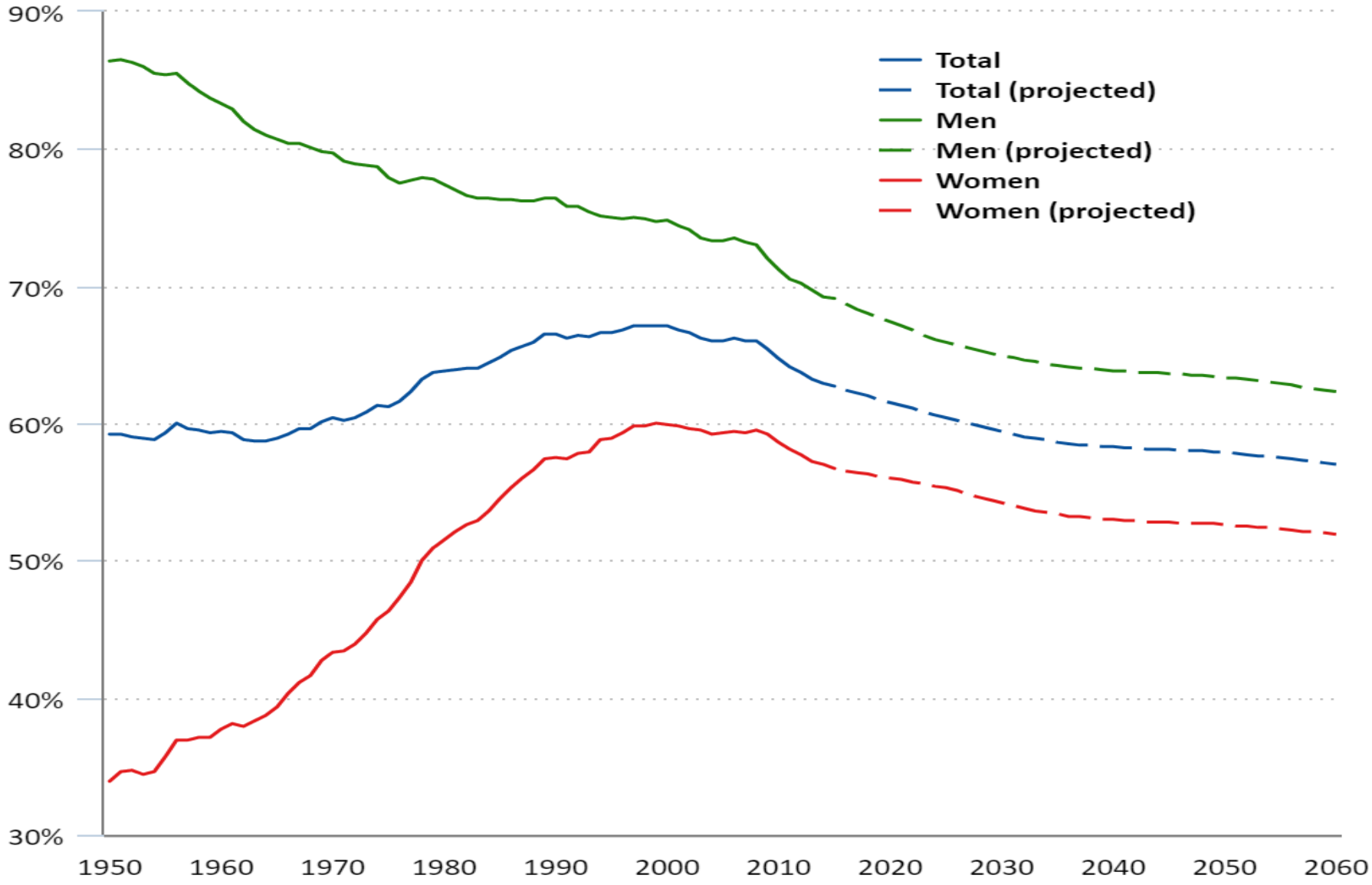
"There are 80,000 openings for electricians each year on average over the next decade just to replace workers who either retire or transition to different jobs," said Sam Calisch, Rewiring America's head of research. "That is all before the IRA"—the Inflation Reduction Act, Biden's signature climate bill, which is expected to increase demand for electricians by creating incentives for Americans to electrify their homes and buy electric vehicles.

Percentage change in U.S. resident population (projected)



Click legend items to change data display. Hover over chart to view data.
Source: U.S. Census Bureau

Labor force participation rates are projected to decline



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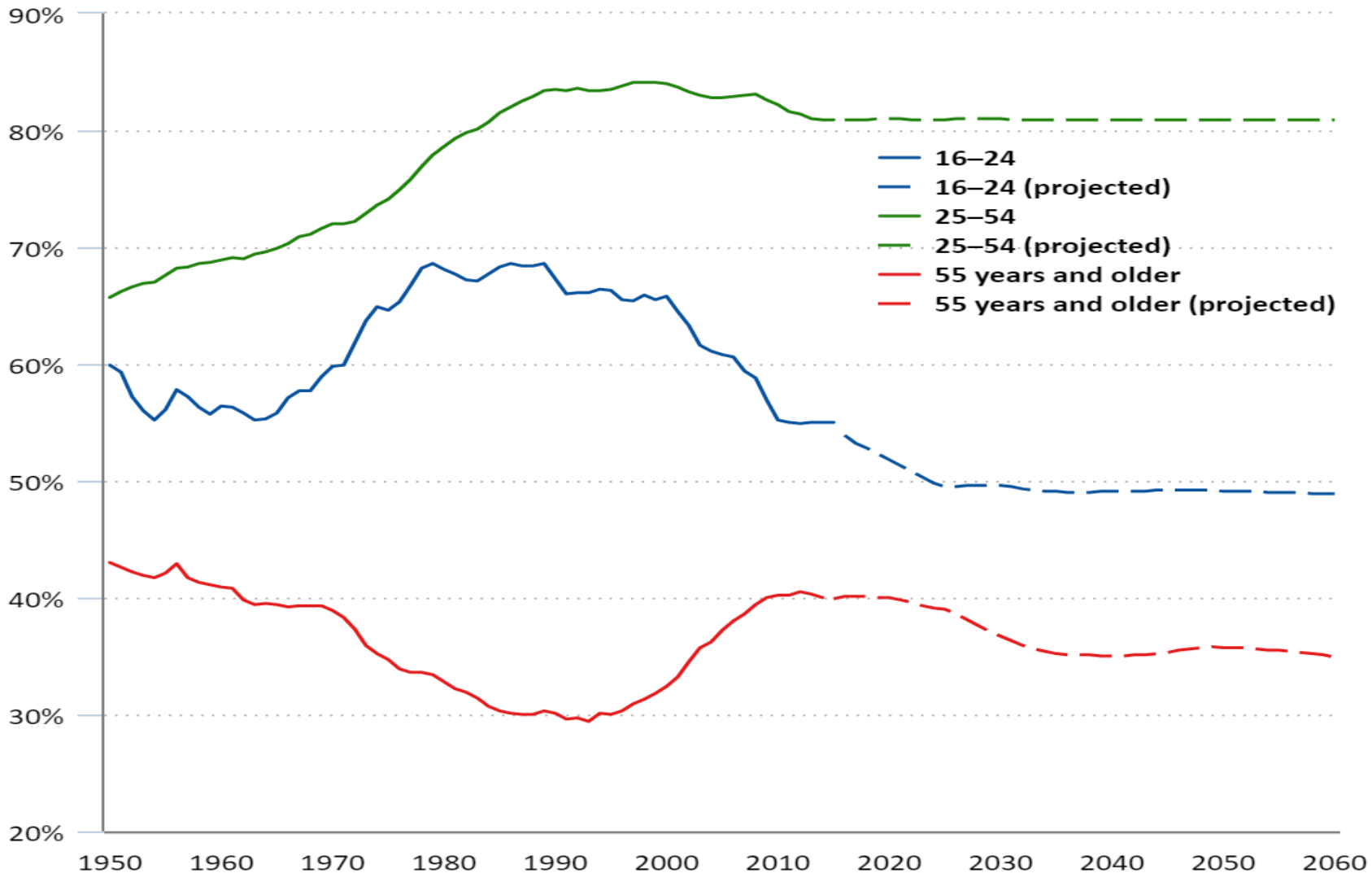
Source: U.S. Bureau of Labor Statistics

Labor force participation rates of all age groups are projected to decline



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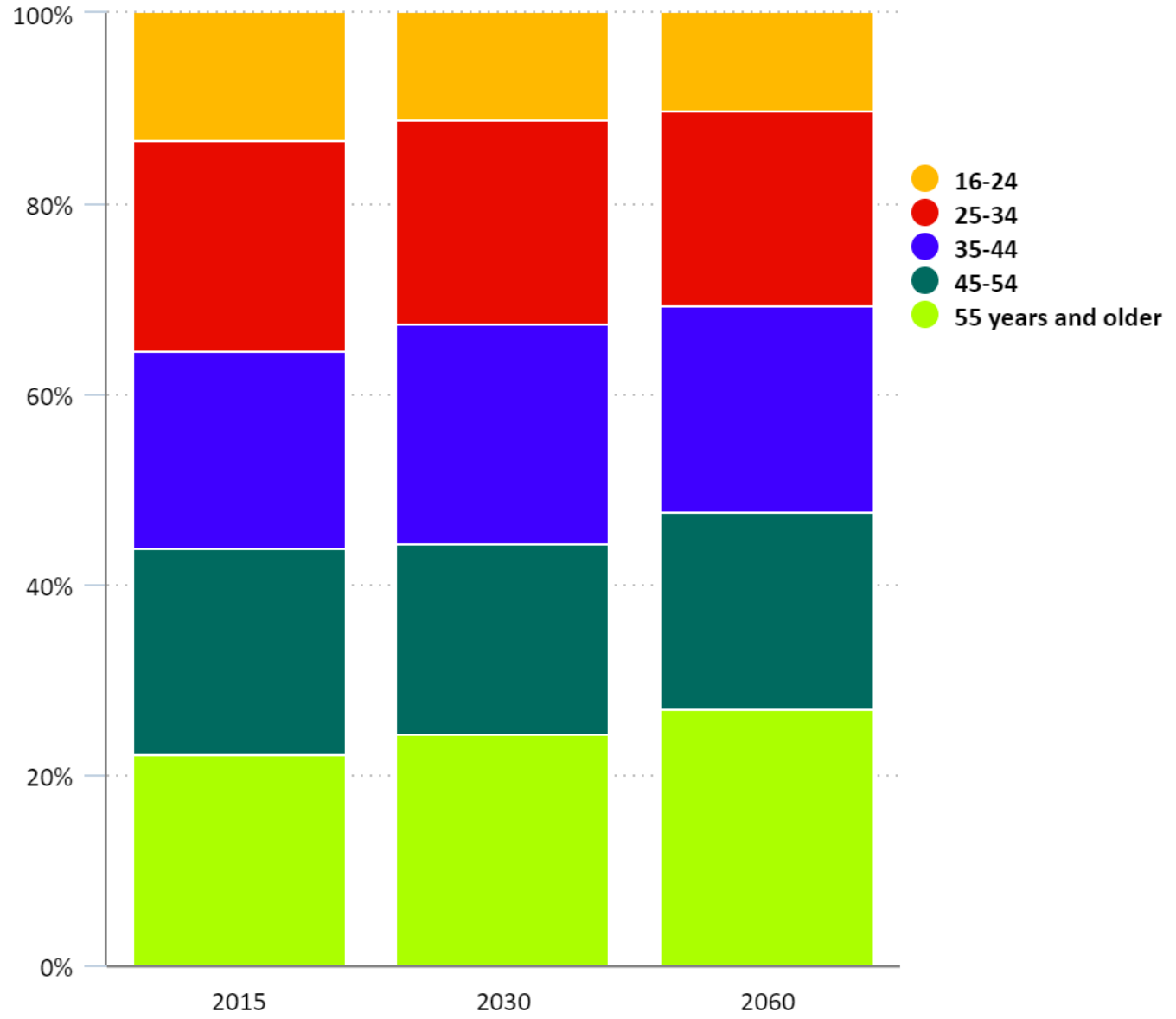
Source: U.S. Bureau of Labor Statistics

Labor force is getting older

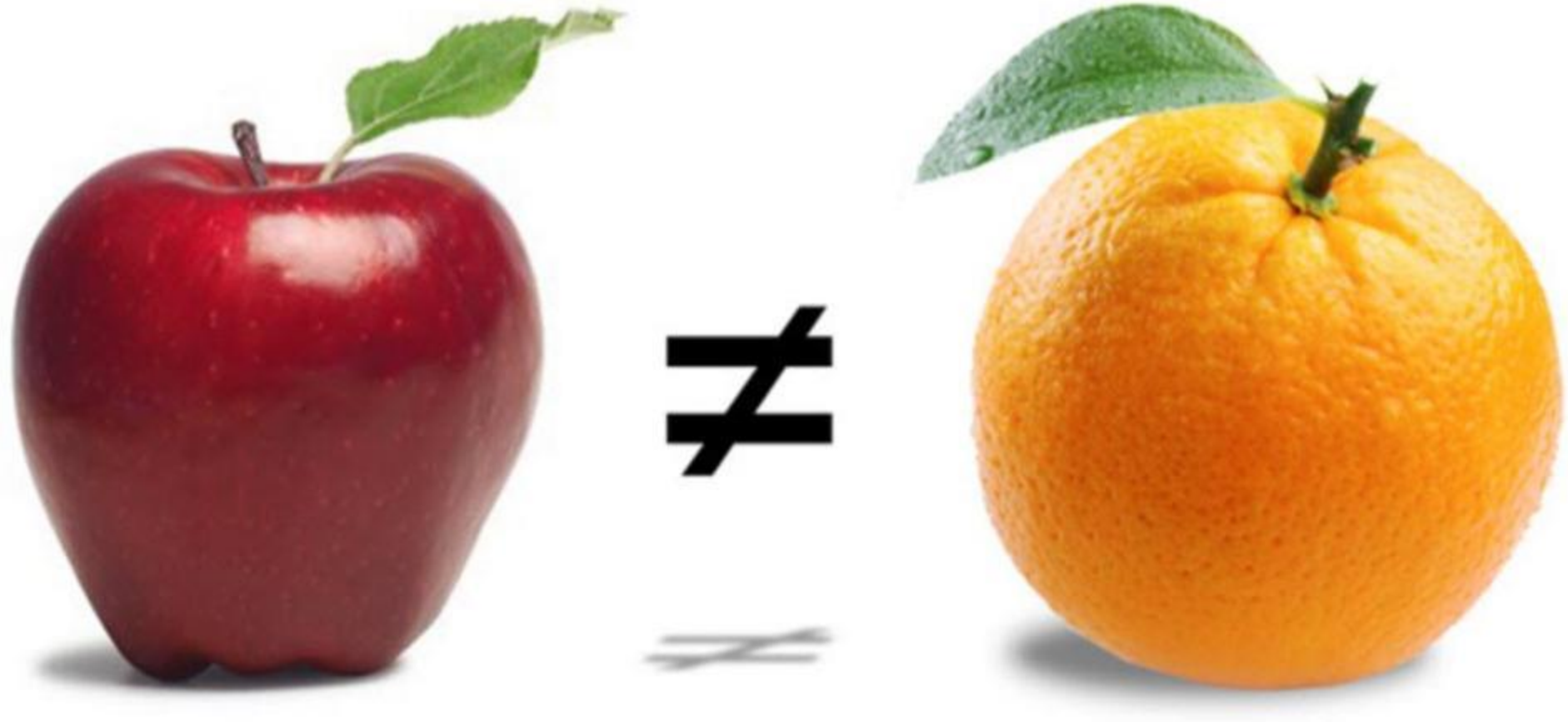


Click legend items to change data display. Hover over chart to view data.
Source: U.S. Bureau of Labor Statistics

The Future of Our Locals

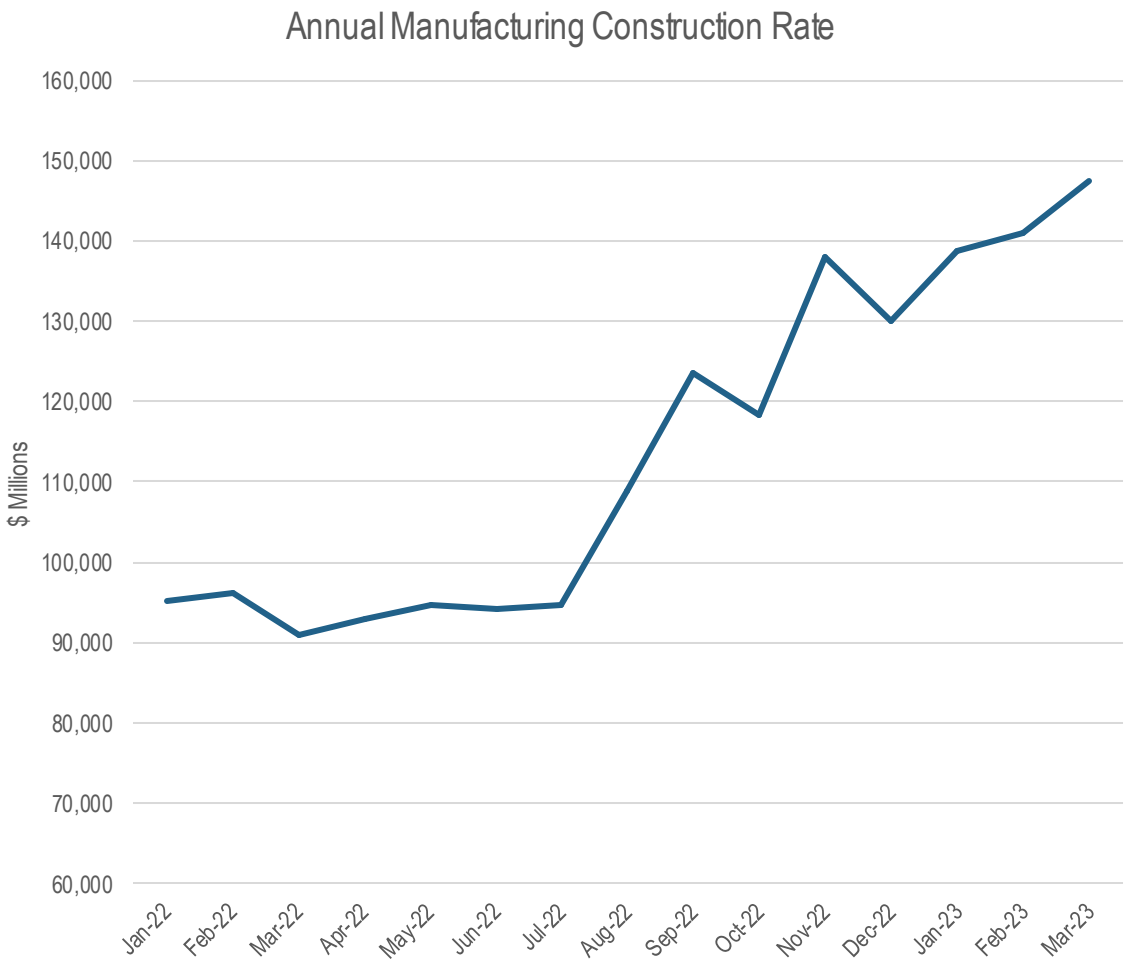
JW	Apprentices	Ratios	CW-CE/Others	JW's Over 50	Percent Over 50
1,905	261	7 : 1	104	793	42%
992	352	3 : 1	474	226	23%
1,059	238	4 : 1	126	352	33%
2,770	1,162	2 : 1	948	1,022	37%
356	129	3 : 1	67	247	69%
271	145	2 : 1	230	191	70%
411	57	7 : 1	24	320	78%
495	96	5 : 1	0	215	43%
985	481	2 : 1	436	363	37%
727	340	2 : 1	377	290	40%
3,195	1,017	3 : 1	180	1,212	38%
916	379	2 : 1	174	423	46%
1,941	418	5 : 1	247	1,163	60%
1,272	600	1 : 5	143	449	35%

Workforce Challenges



Industrialized Construction - The industrialization of construction is the process through which construction aims to improve productivity through increased mechanization and automation. The process commonly involves modularization, prefabrication, preassembly, and mass production

Manufacturing Construction

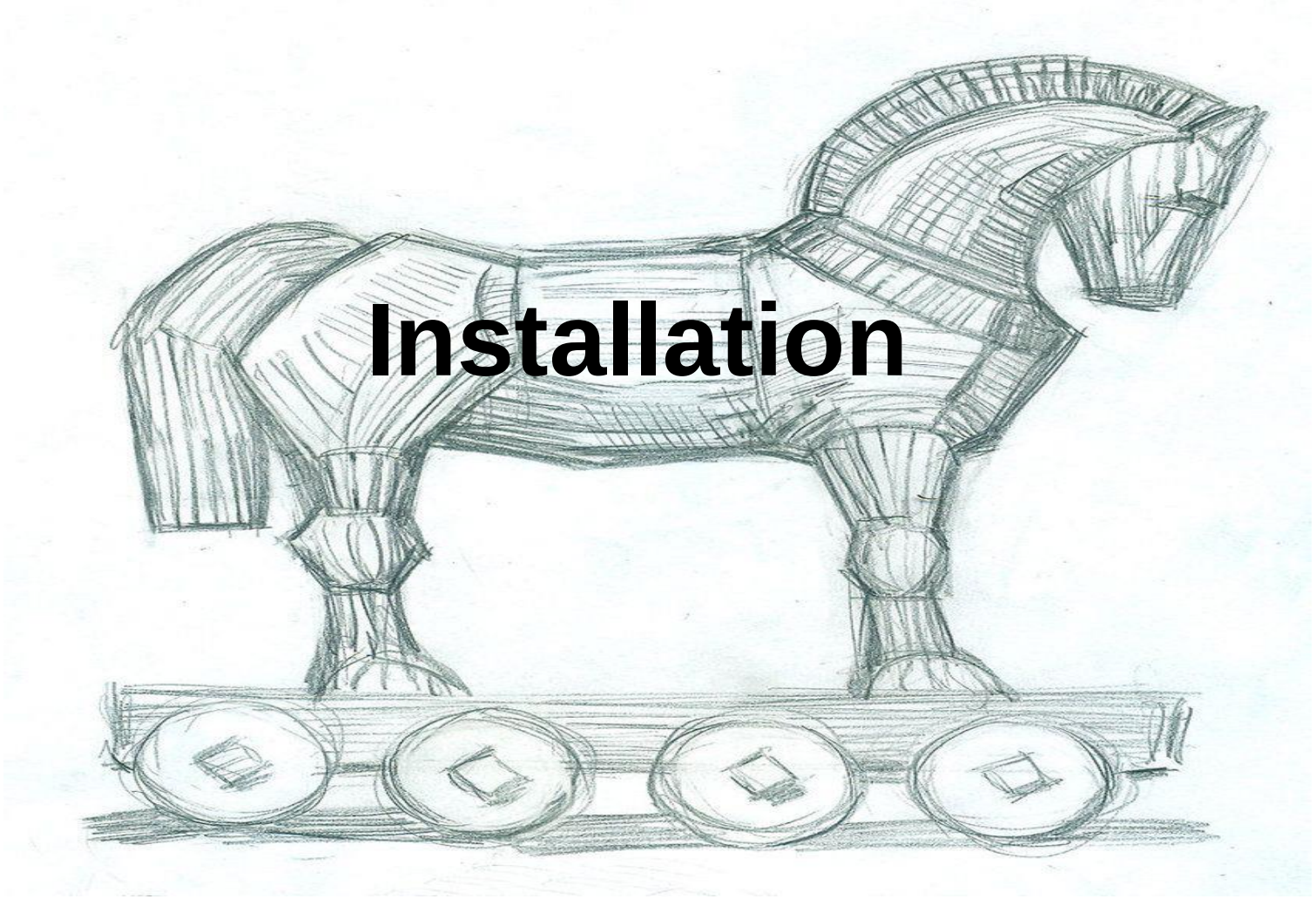


Source: census.gov

- The annual rate of manufacturing construction put in place took another leg up between February and March 2023 increasing by $6.5 billion to $147 billion annually.
- For perspective note that two years ago the annual rate of manufacturing construction was $69 billion
- The rapid rise in spending began in August 2022 indicating many projects that drove this increase are now 8 months into construction

CONTINUUM Advisory Group

Our Ability to Install is Our Trojan Horse



The Energy Revolution (EoE) Electrification of Everything

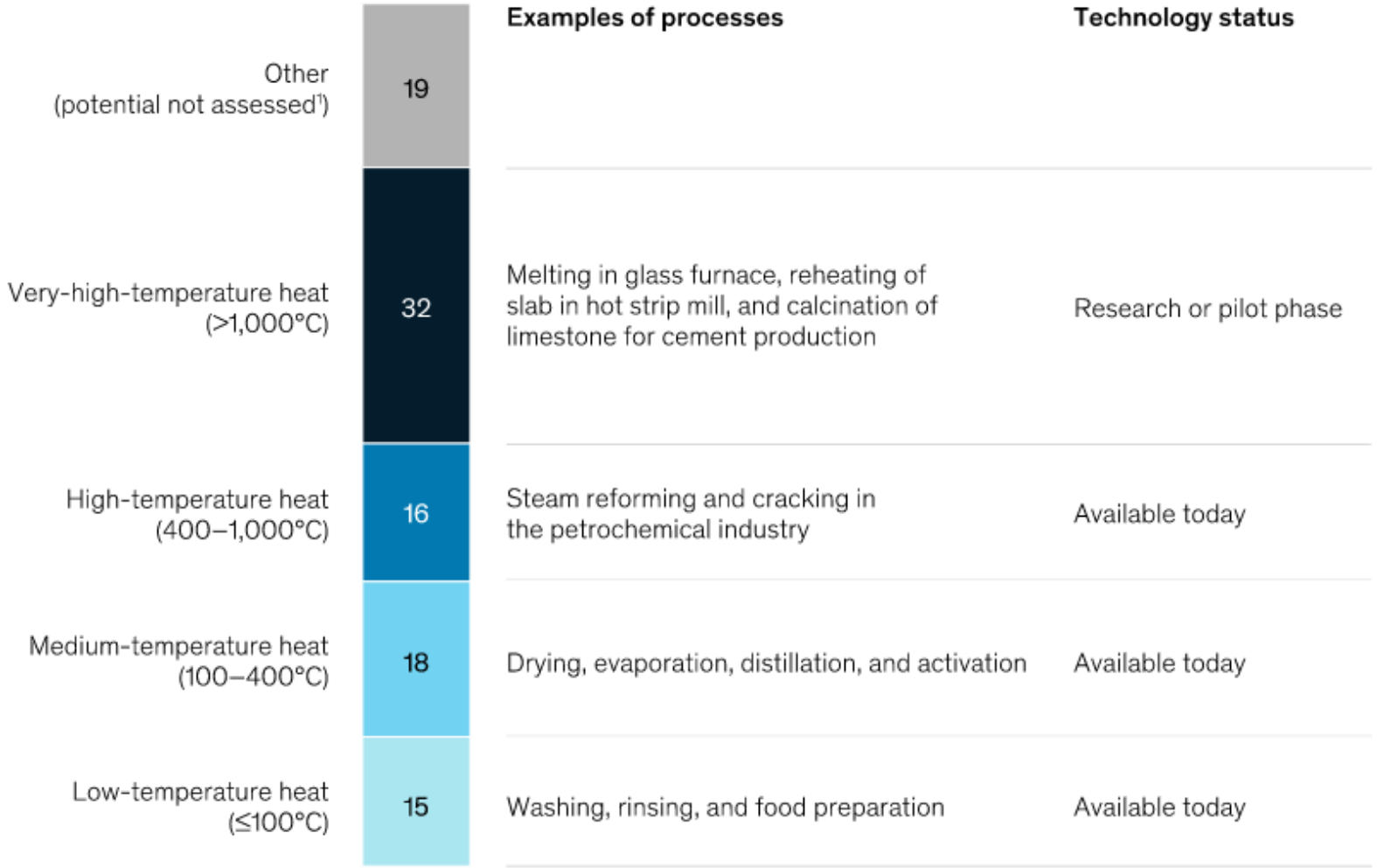
The Impact of Electrification on Electrical Contracting

- Of all the fuel that industrial companies use for energy, we estimate that almost 50 percent could be replaced with electricity, using technologies available today

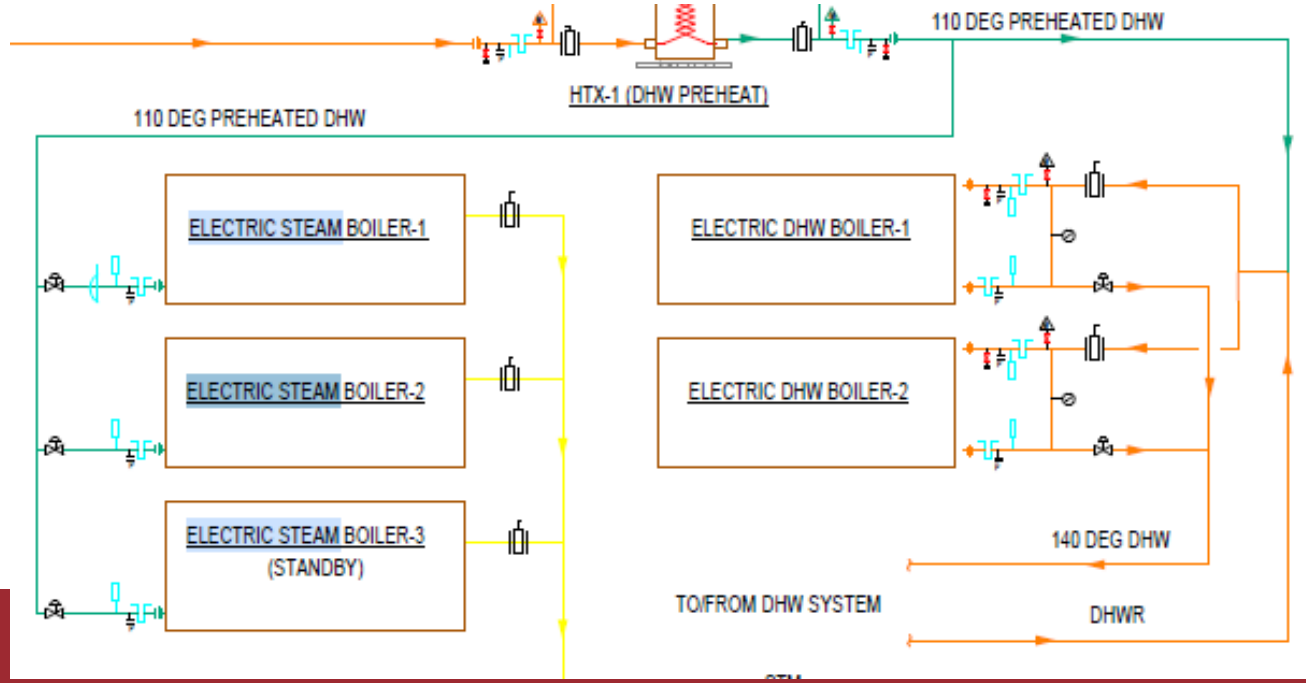
- Electrification of the fuel that industrial companies use for energy has several benefits. Generally, electrically driven equipment is only slightly more energy efficient than the conventional option, but it has lower maintenance costs, and, in the case of the industrial boiler, the investment cost of the electrical equipment is lower. And, if zero-carbon electricity is consumed, the greenhouse-gas emissions of the industrial site lower significantly.

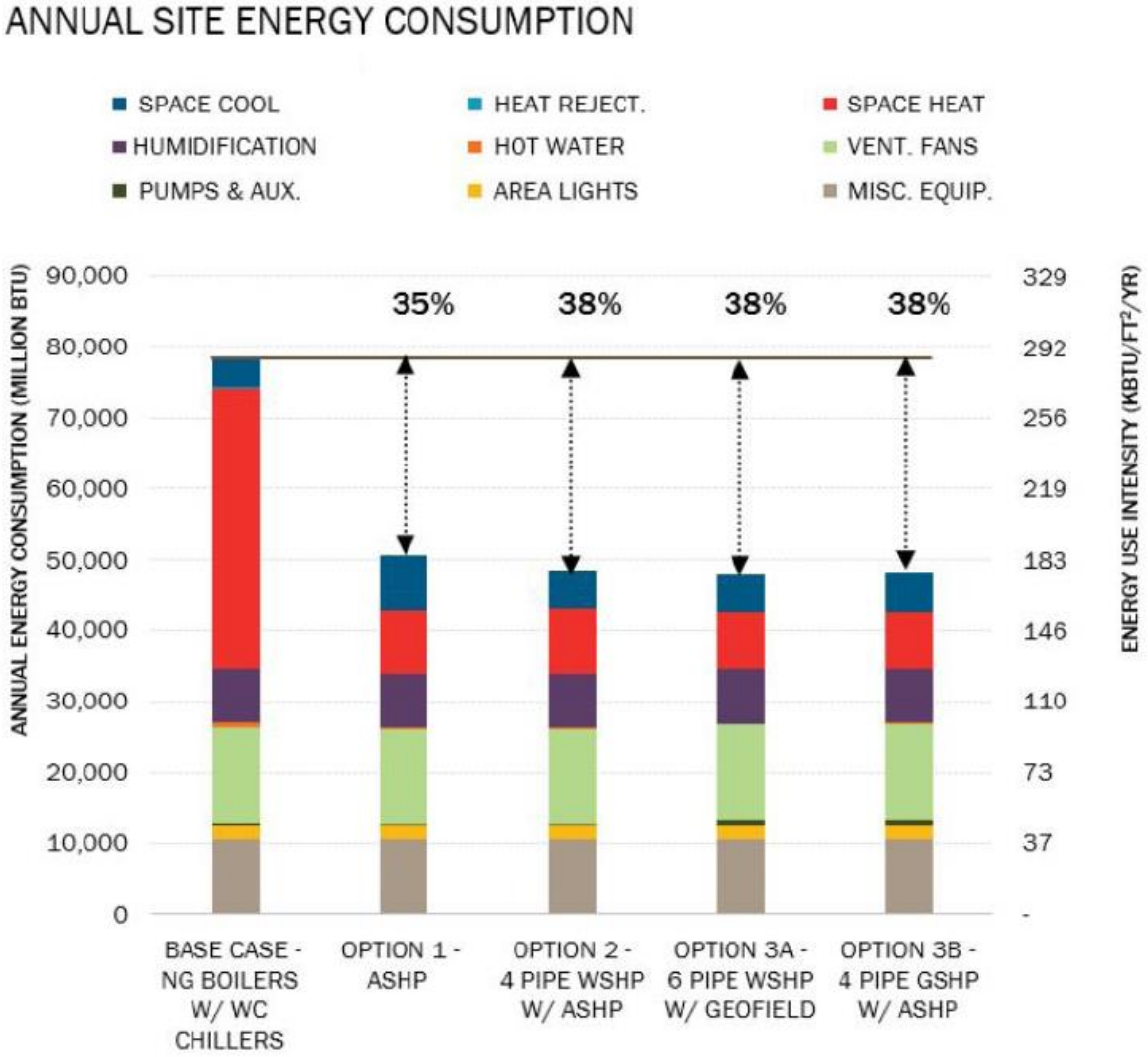
Almost half of fuel consumed for energy can be electrified with technology available today.

Share of total estimated fuel consumption for energy, 2017, %



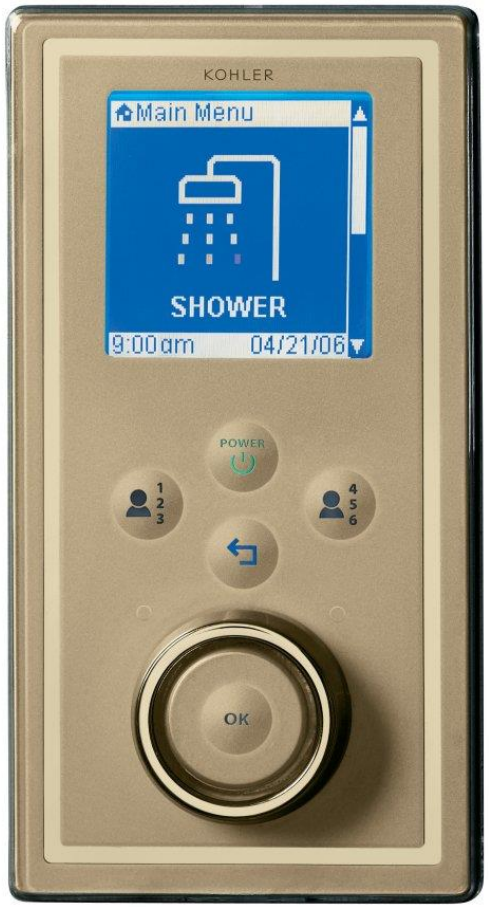
created a whole building energy model during the pre-concept phase of the project to support the design team's commitment to benchmark the performance of each proposed system option. The model was used to investigate annual heating and cooling load profiles, part-load conditions, compare peak sizing to the engineer's assumptions, and ultimately explore different all-electric options for the HVAC plant compared to a business-as-usual design (with natural gas heating). The five systems tested were:





H2Wise™+

Smart water-monitoring system



Rheem Releases 120V Plug-In Heat Pump Water Heater That Can Be Plugged Into Typical Outlet

Managing Power Demand

EMS = Energy Management Services

Electrical Contracting to Energy Contracting

Efficient, optimized energy costs less. A lot less.

Every Watt Matters helps customers dramatically reduce their energy use and cost by installing energy savings technologies to your existing equipment and installing roof-top solar systems. Save energy cost with zero capital investment and zero maintenance.

Save 20%-35% over your current energy costs while we take care of all system monitoring and maintenance.

Every Watt Matters brings expertise and a turnkey process to substantially reduce the energy consumption of commercial, industrial and government facilities. Through a mix of conservation and production measures, we execute energy efficiency projects across the globe, using the following proven project procedures to reduce, produce and store the energy your business consumes.

Capture significant energy savings

Our intelligent energy monitoring and management system, and other energy saving measures will immediately reduce your energy costs.

Changing Occupant Behavior

Identifying Invisible Energy Waste

Tuning Building Controls

Optimizing Existing Equipment

Verifying New Technologies

Automating Meter Reading

best.energy

Scenario – Small estate of ten quick-service restaurants (fast food). Full energy saving project using Best.Energy technologies.

Option 1 – CapEx

Equipment Cost*	$66,540.00
Gross Energy Bill	$556,000.00
Savings @ 20%	$111,200.00
CapEx Fee to Client @ 60% Profit Margin	$166,350.00
Plus Installation Costs @ 3 Days / Site	$18,000.00
Your Total Fee	**$184,350.00**
Client Savings (5 Years)	$556,000.00
Client Net Gain (5 Years)	$371,650.00
Client ROI	19.89 Months

In this scenario, instead of the client paying up-front, they pay monthly on a Pay-As-You-Save basis. From day 1, their energy savings are greater than their fees.

Option 2 – PAYS (Pay As You Save)

Equipment Cost*	$66,540.00
Gross Energy Bill	$556,000.00
Savings @ 20%	$111,200.00
CapEx Fee to Client @ 60% Profit Margin	$166,350.00
Plus Installation Costs @ 3 Days / Site	$18,000.00
Asset Finance Costs @ 6.7% APR (5 Years)	$32,071.20
Client Savings	$556,000.00
Client Net Gain (5 Years)	$339,578.80
Your Monthly Fee	$3,607.02
Monthly Client Savings	$9,266.67
Monthly Client Net Gain	$5,659.65

CUES
CHILLED UNIT ENERGY SAVER

Refrigeration Energy Saving

The problem with refrigerators has been exactly the same for 100 years or more - they use air temperature as the signal to control their refrigeration cycle (ie. when the fridge starts and stops).

But we buy refrigeration units to cool food, not air! And switching this focus in a Client's fridges can make a huge difference to their energy consumption, because air changes temperature much more rapidly than food. The air in a unit may have warmed and need cooling, but if the food is still at the perfect temperature then that energy is wasted!

What is CUES?

CUES (Chilled Unit Energy Saver) is an NSF approved technology that changes the way refrigerators work. Using a non-toxic wax food simulant in a protective enclosure to mimic food temperature, it sends signals to control the refrigeration cycle in a far more efficient way.

Typically, that means the average cycle lasts longer, but is 80% less frequent. With no compromise to food temperature or safety, the client can enjoy up to 33% energy savings.

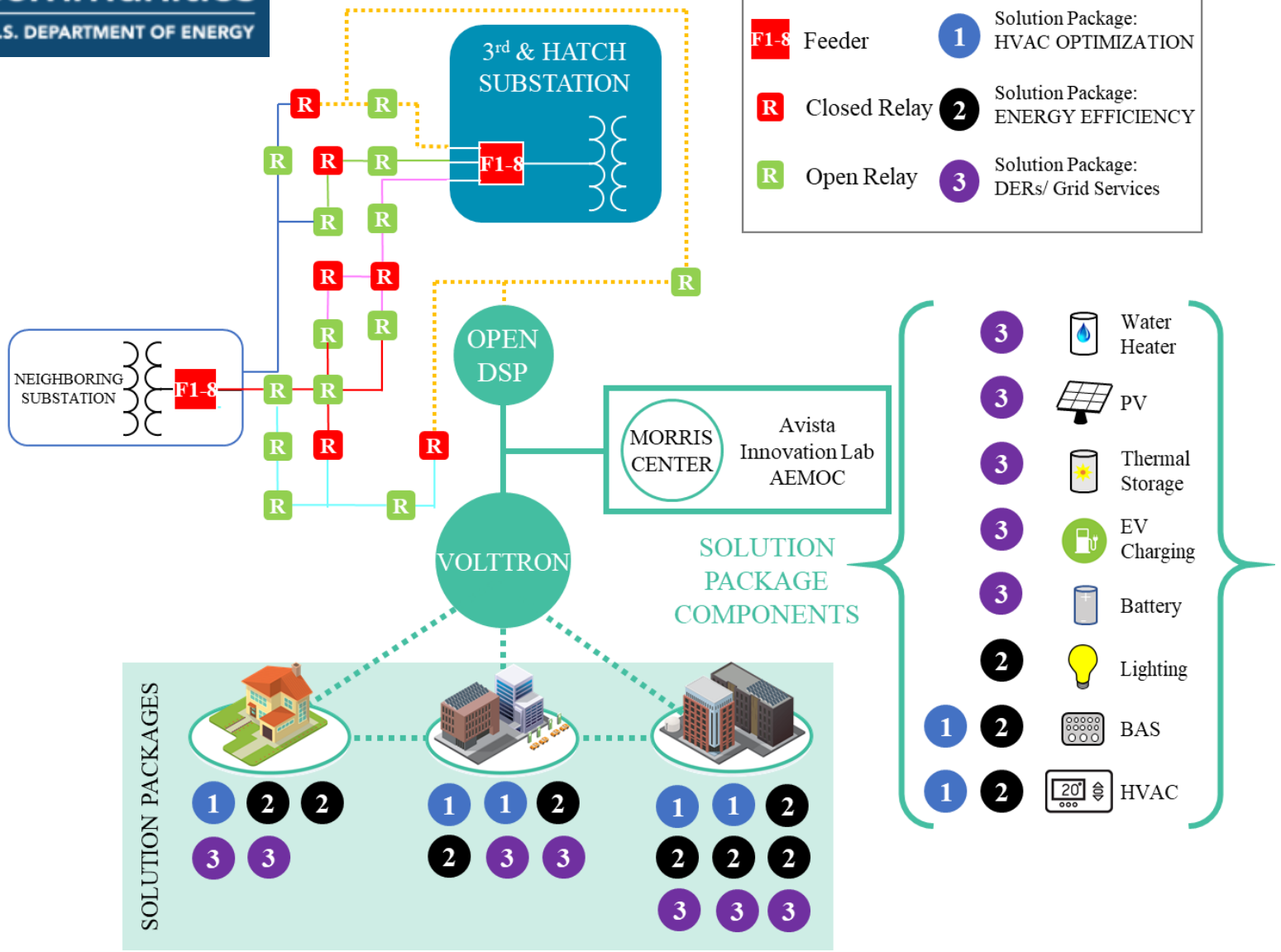
Quick Case Study

Miss Maud s pastry houses installed CUES on chillers and freezers in their stores. In this case, results actually exceeded our usual levels and savings were 43%! With a government grant provided as well, and savings of $15,600 a year, the client was rather pleased.

"Almost 12 million people are employed worldwide in the refrigeration sector, which consumes about 17% of the overall electricity used worldwide."

International Institute of Refrigeration

Connected Communities
U.S. DEPARTMENT OF ENERGY



LEGEND

- F1-8 Feeder
- R Closed Relay
- R Open Relay
- 1 Solution Package: HVAC OPTIMIZATION
- 2 Solution Package: ENERGY EFFICIENCY
- 3 Solution Package: DERs/ Grid Services

SOLUTION PACKAGE COMPONENTS

3			Water Heater
3			PV
3			Thermal Storage
3			EV Charging
3			Battery
	2		Lighting
1	2		BAS
1	2		HVAC

Technology Impact on Resiliency

Pick one of two ways to participate

SmartAC thermostats

- Requires a compatible smart thermostat
- Enroll with an existing smart thermostat and receive $75; or get $120 off a new smart thermostat
- Get $25 each year for participating, through 2023

SmartAC switches

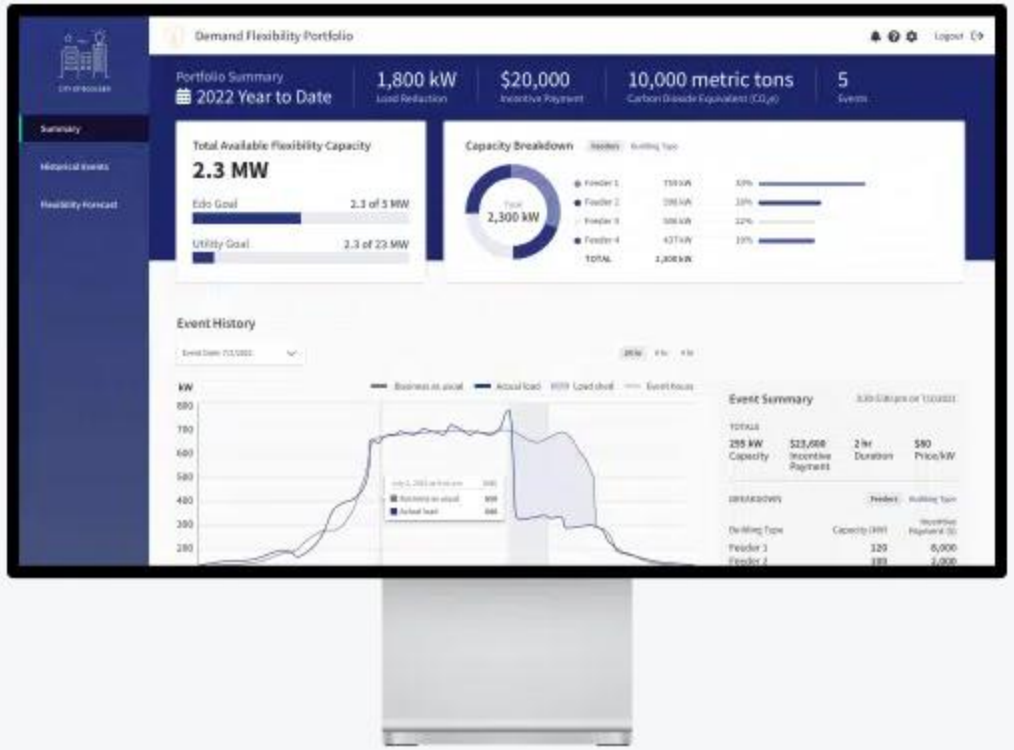
- Requires a PG&E contractor to install a switch at your home
- Get $50 for enrolling
- Free troubleshooting for AC issues

edo

Power your energy evolution

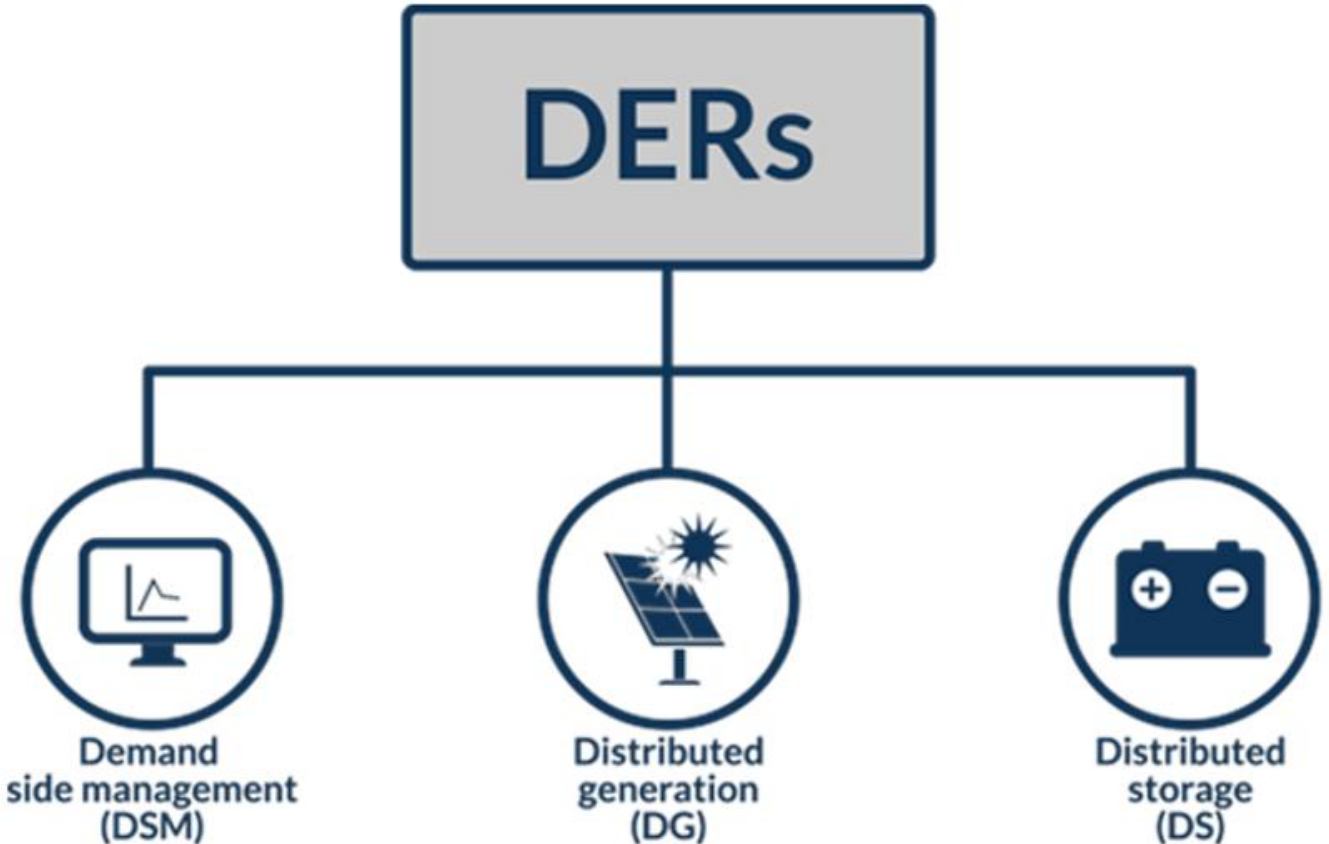
Provide your customers with innovative demand optimization solutions

Edo offers a turn-key demand side management platform for commercial buildings that integrates building and grid operations. We provide our utility customers with a white-label advanced energy efficiency and demand flexibility solution. This solution enables utilities to strengthen customer relationships and engage hard-to reach customers.



DERs = Distributed Energy Resources

Distributed energy resources (DERs)—including renewable energy technologies, storage (such as batteries), and combined heat and power (CHP)—can provide a variety of benefits for federal sites. DERs can help agencies meet goals and mandates, deliver cost and energy savings, and provide environmental benefits



DERs = Distributed Energy Resources

Rapidly growing U.S. microgrid market achieves 10 GW in 2022

Driven by a rising demand for uninterrupted services, corporate ESG goals, and military resilience plans, Wood Mackenzie estimates the U.S. microgrid market has seen a 47% increase in solar and storage capacity in 2022 compared to 2017 levels.

FEBRUARY 6, 2023 ANNE FISCHER

US microgrid market to grow 19% annually through 2027, Wood Mackenzie projects

Annette Clayton · 2nd
CEO Schneider Electric North America
16h ·

+ Follow

Today we announced another round of innovation in #microgrid technology with our EcoStruxure Microgrid Flex solution. This solution differs from an engineered and custom microgrid in that it's standardized, faster, and simpler to commission. Plus, it can meet the resiliency, efficiency, and #sustainability needs of customers. We've deployed more than 300 microgrids in the U.S. alone and believe the demand for them will continue to grow. This rings especially true as distributed #energy resources are projected to account for 40% of U.S. electricity generation by 2050. More here: https://lnkd.in/gWsTxZh5#overviewi

208 1 comment · 9 reposts

How a microgrid saved Pittsburgh International Airport $1 million

One year ago, Pittsburgh International Airport became the first airport in the nation to get all of its power from a solar and natural gas microgrid. Today, it's got $1 million to show for it.

Digital Twins

What is a Digital Twin?

Represents assets in the physical world with a digital model

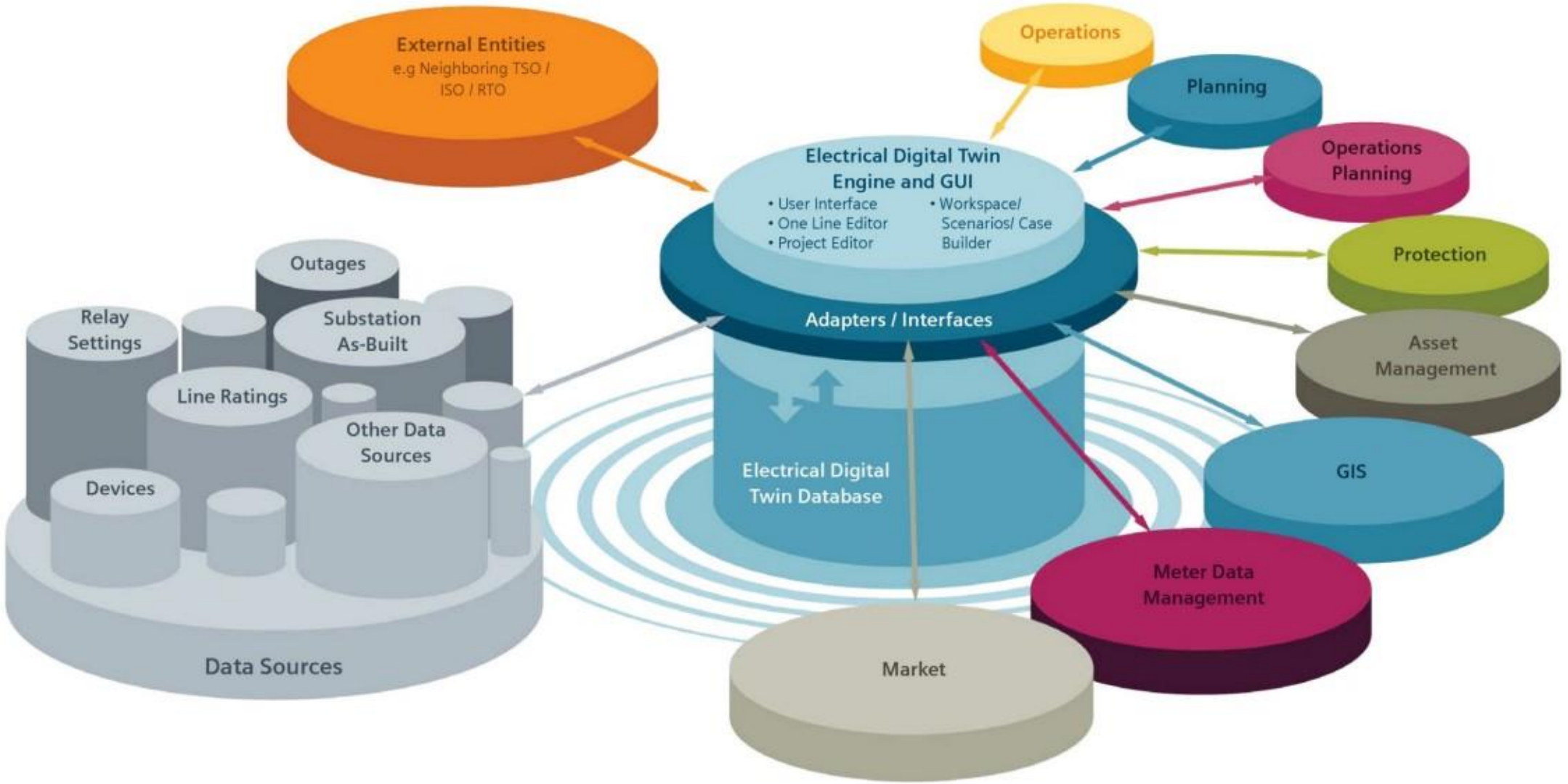
Is NOT just a data model. It must include relational interaction

Looks and feels like the real environment

Connects with relevant time data to ensure the model mirrors reality

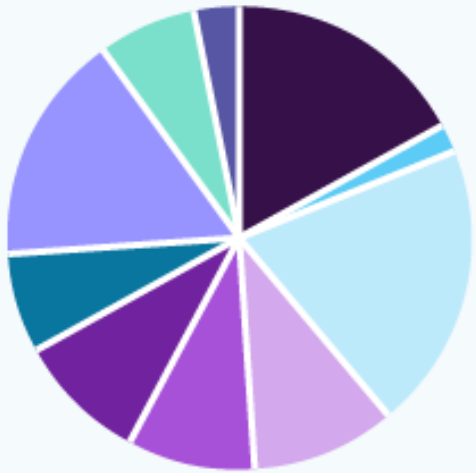
Simulates models forward with varying degrees of fidelity

What is an Electrical Digital Twin?



Global Digital Twin Market

share, by end-use, 2022 (%)



Manufacturing
Agriculture
Automotive & Transport
Energy & Utilities
Healthcare & Life Sciences
Residential & Com
Retail & Consumer Goods
Aerospace
Telecommunication

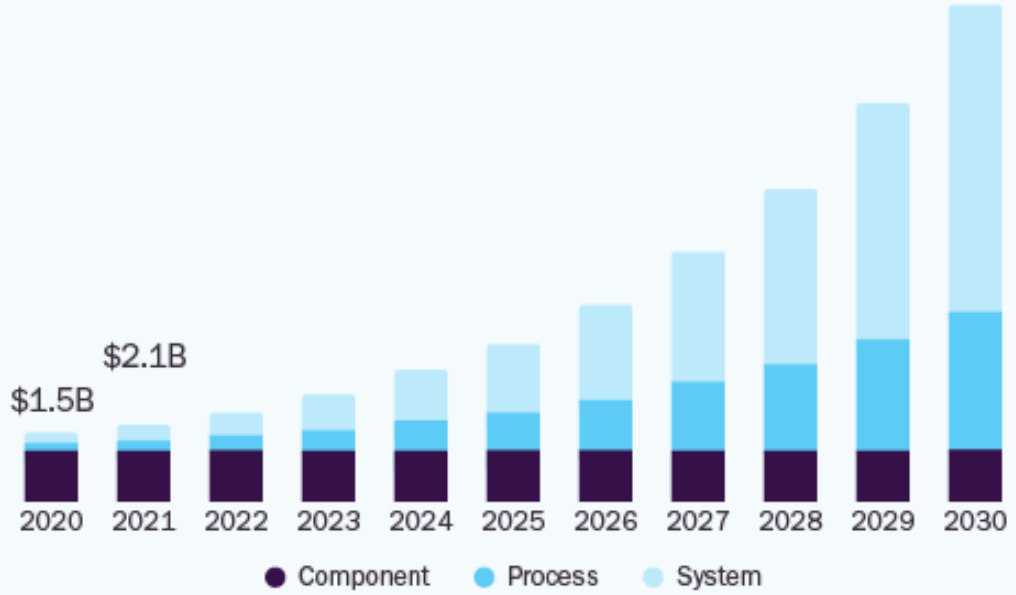
GRAND VIEW RESEARCH

$11.1B

Global Market Size, 2022

U.S. Digital Twin Market

size, by solution, 2020 - 2030 (USD Billion)



GRAND VIEW RESEARCH

35.1%

U.S. Market CAGR, 2022 - 2030

Source:
www.grandviewresearch.com

Building Lifecycle Opportunities

Go digital to boost productivity and grow your business

Despite a wide variety of different jobs electrical contractors perform, their businesses face remarkably similar challenges in the face of accelerating technological change

Recent events have shown us that relentless, even turbulent change, is now the new normal.

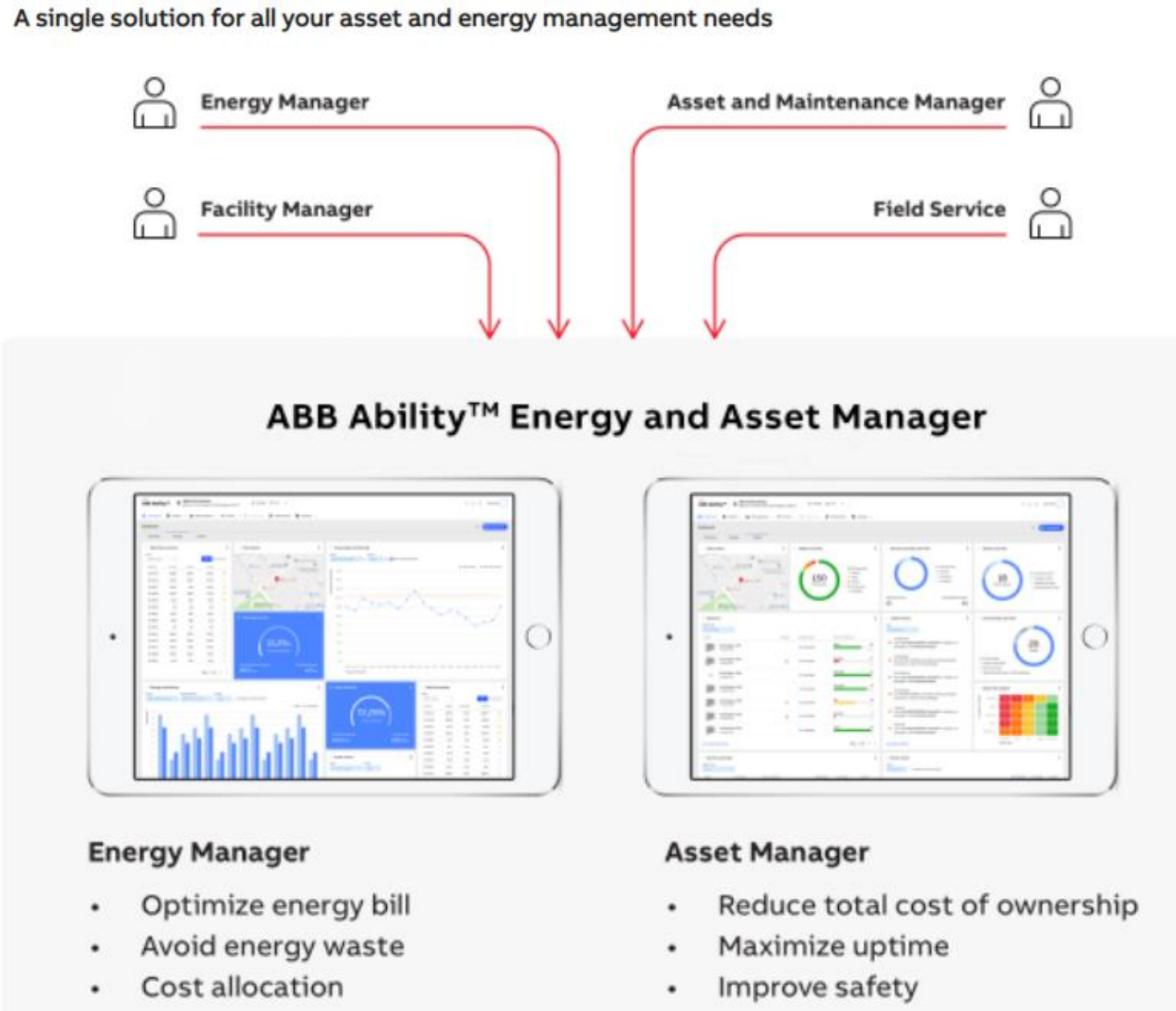
Embracing emerging trends, building a relationship of mutual trust, and benefit with clients are ways to boost competitiveness, gain recurring revenue, and grow your company.

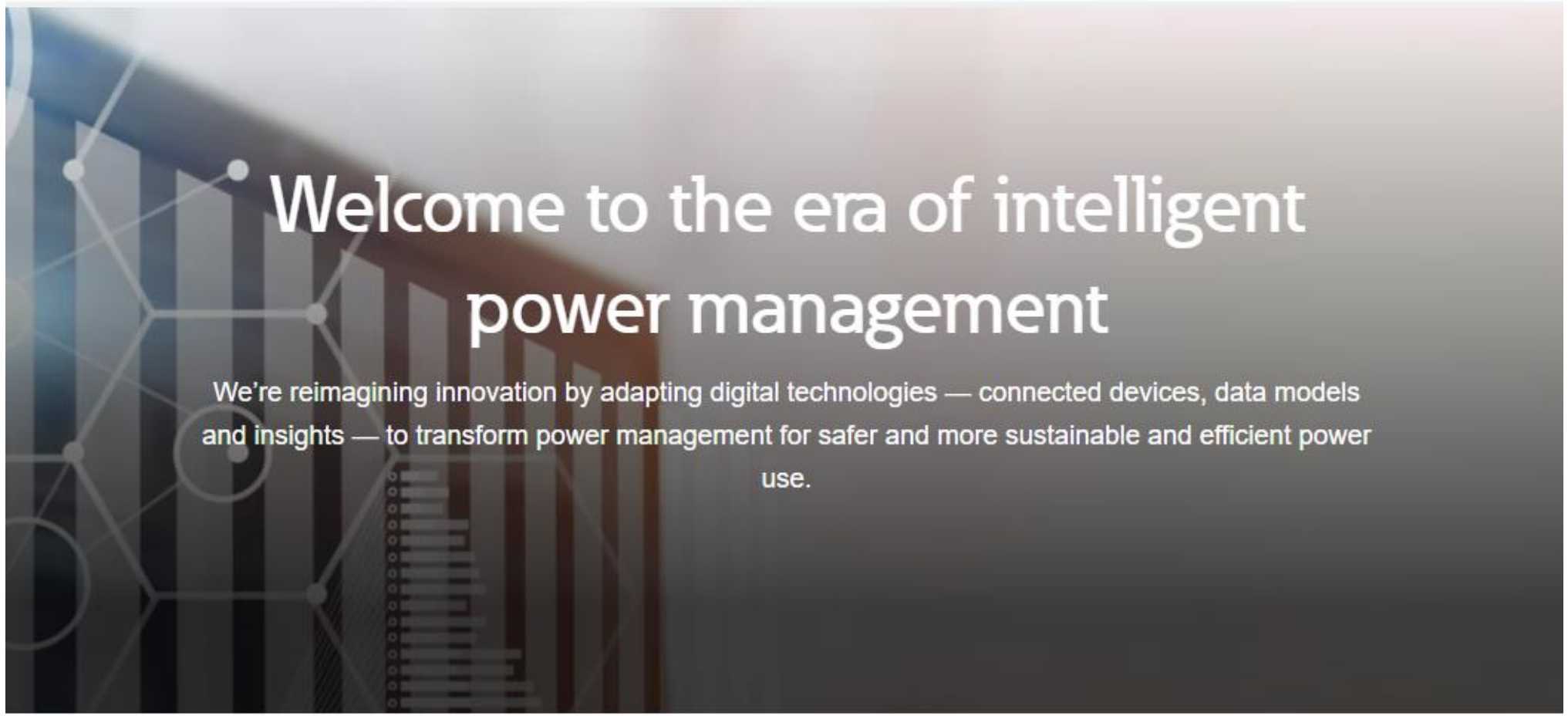
Mastering digital tools **establishes you as a service provider** instead of simply their installer

Digital adoption helps overcome construction industry hurdles, without compromising safety

Taking steps to digitize your manual processes can result in **efficiency gains between 14-15%**

ABB Ability Energy & Asset Manager integrates energy and asset management in a single dashboard. Providing remote visibility of asset and electrical-system behavior. Providing insights that help minimize cost and risk and maximize performance and safety across your operations.





Our approach to digital innovation

From optimizing digital solution development and delivery to improving the ways you access data from assets in the field, we embrace digitalization through four digital pillars that drive our strategy:

SIEMENS

Search

Literature Download

Edge or Cloud - Your choice now or in the future

Sm@rtGear™ IE allows you to analyze data at the machine or pre-process it quickly for uploading to cloud or another system. Control and configuration can be exclusively local while monitoring and enhanced analytics, regional performance comparisons, fleet management, and more can be cloud based.

Features and benefits:

Safety

Reliability

Connectivity

Flexibility

Energy Contractor

Shift from Cost to Value

More ON this Business
Less IN the Business

Smart Buildings and Smart Infrastructure

13% of the cost of a building is in design/construction phase

Vs.

87% of the cost of a building is operating and maintaining the building over life span.

Preventive maintenance

Maximize the safety and reliability of your electrical assets.

NFPA 70B is changing from a recommended practice to a standard in 2023, which will require an electrical maintenance program (EMP). An EMP outlines an acceptable condition of maintenance for electrical equipment to address personnel, property, and process safety measures.

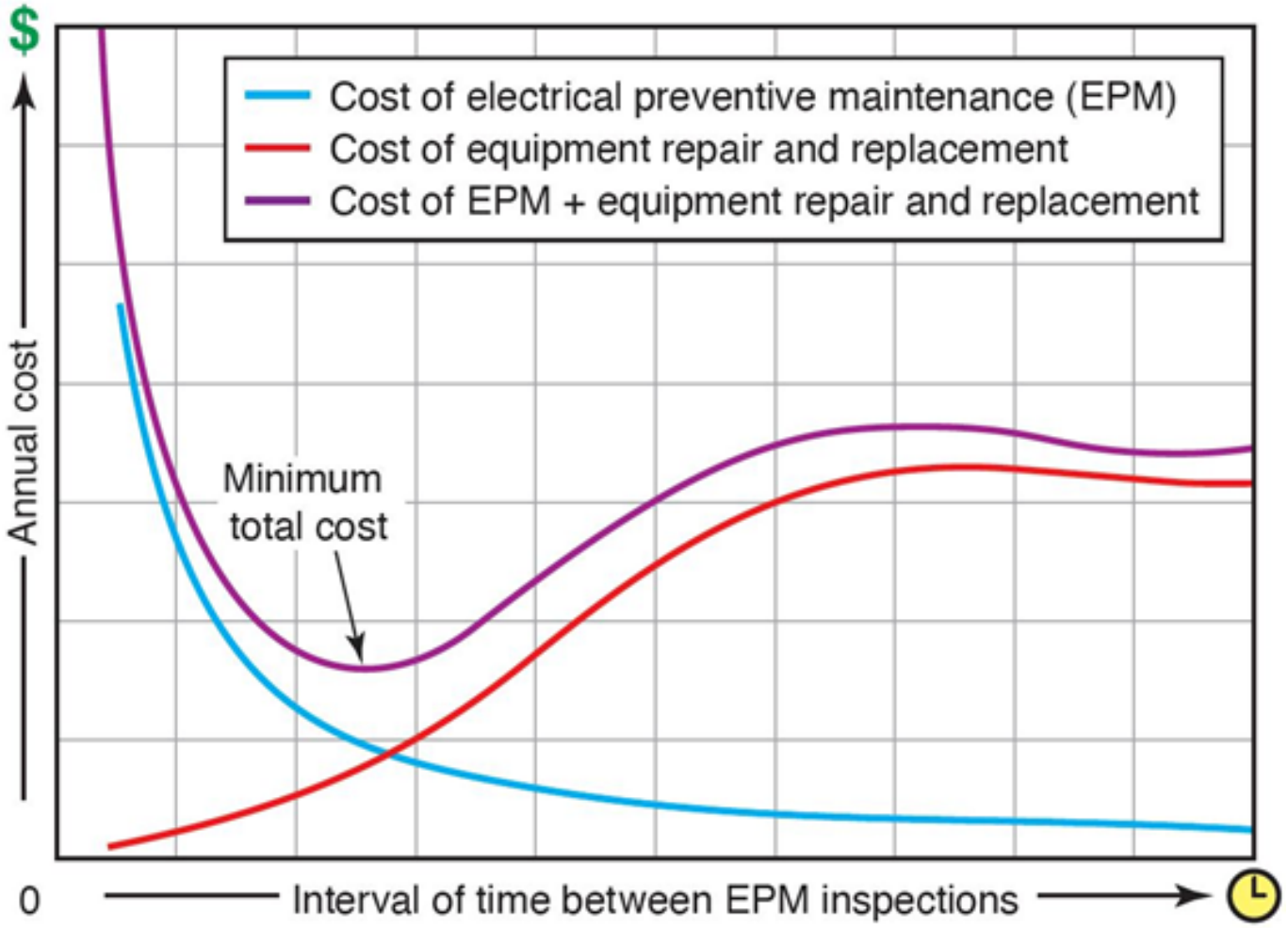
Why preventive maintenance?

Electrical equipment requires systematic maintenance to ensure maximum performance and in-service life. For normal operating conditions, an initial inspection is recommended after 6 months of service to determine the frequency of maintenance.

Is preventive maintenance required

Yes. Maintenance for certain equipment is recommended in the National Electrical Code, NFPA 70E, NFPA 70B, NFPA 99 Health Care Facilities Code and NFPA 110 Standard for Emergency and Standby Power Systems.


S
•Service
L
•Level
A
•Agreement

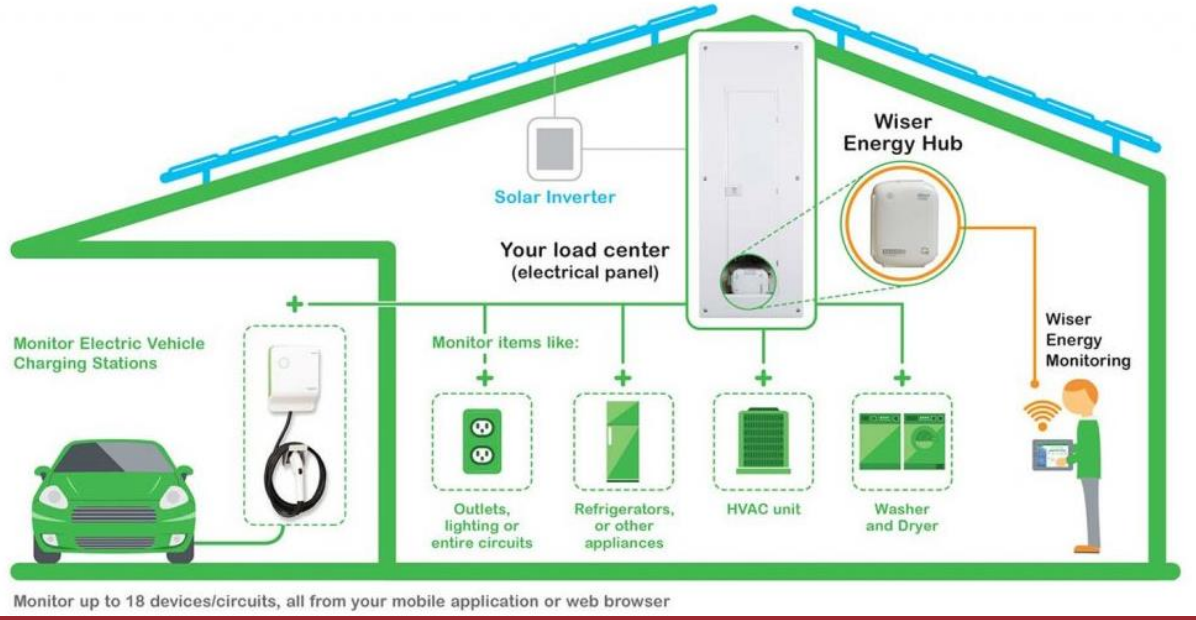

$
Annual cost
Cost of electrical preventive maintenance (EPM)
Cost of equipment repair and replacement
Cost of EPM + equipment repair and replacement
Minimum
total cost
0
Interval of time between EPM inspections

Smart Exit Signs

Increase Workplace Safety & Compliance Solution All in One with the Willard Smart Exit™

Willard Smart Exit™ meets NFPA regulations, as well as regulations established and overseen by the Joint Commission on Accreditation of Healthcare Organizations. Our Smart Exit Sign is powered by the IBM Cloud. Additional value is provided by utilizing device omnipresence and known location.

4x Growth in Residential
$20k to $30k per home



The Competition is Changing

CTSI Expands Security Integration Capabilities With Acquisition

CTSI acquired the Integrated Security Solutions division of Electrical Controls & Maintenance (EC&M), a commercial electrical contractor.

Green energy has a problem: There aren't enough electricians. Here's one solution.

Michelle Ma Nexus Media News/Reasons to Be Cheerful

Published 6:00 a.m. ET Jan. 15, 2023

Before he joined the Civilian Climate Corps, Robert Clark assumed building and electric work was all low-skilled labor, akin to "working at McDonald's," he said. That was before he learned to install electric heat pumps, maintain electric vehicle charging stations and perform 3D image modeling of spaces about to get energy upgrades.

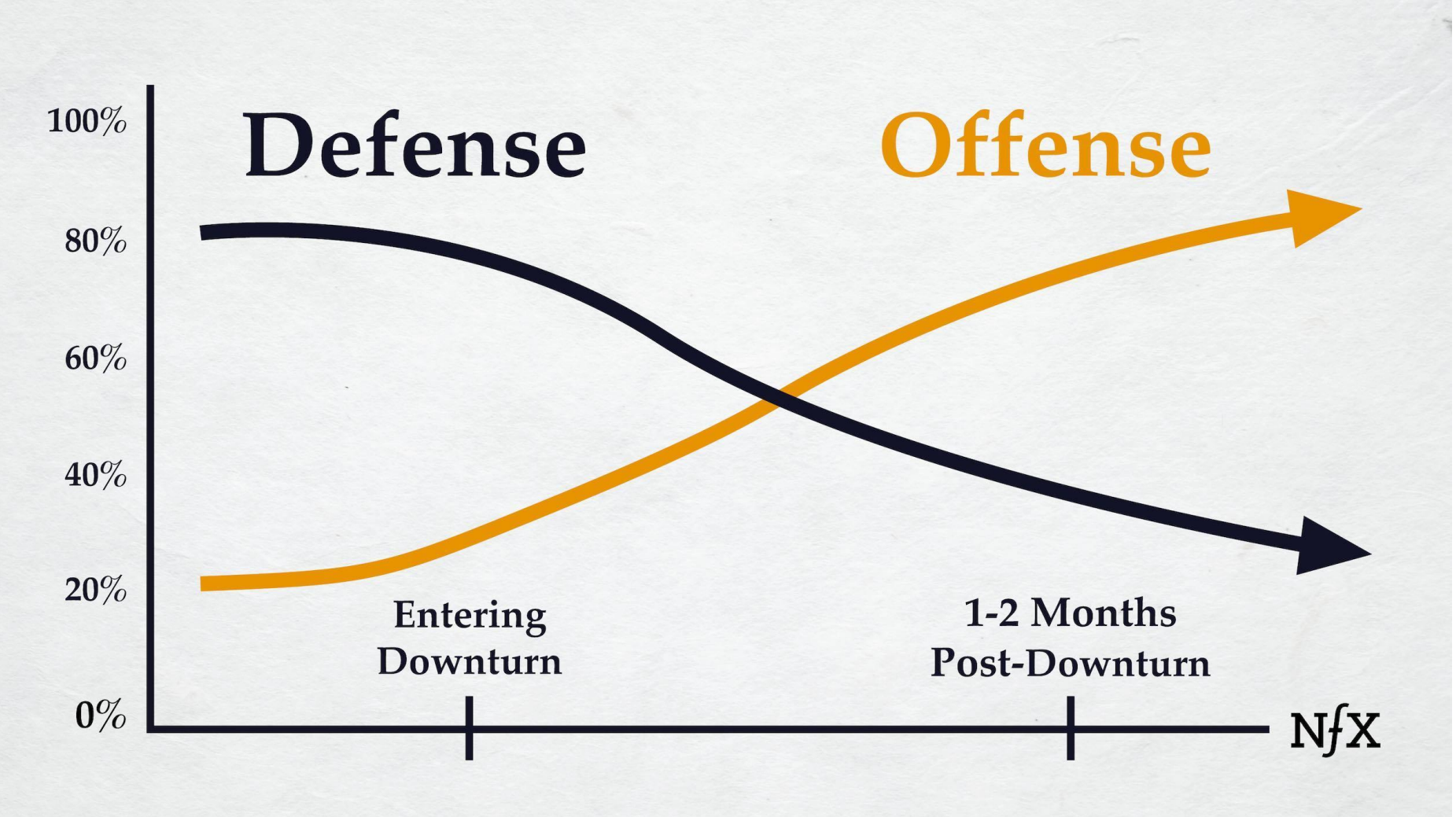
The apprenticeship program has been life-changing, Clark said. Before joining, he struggled to find work, in part because of a felony conviction for burglary. "It's a no-brainer," he said of joining the Civilian Climate Corps, which pays him $20 per hour to learn skills and receive the certifications that he needs to get work. He hopes to go back to school to become an engineer.

Private Equity

EBITA

Earnings Before Interest Taxes and Amortization

It's Time to Think Outside the Box

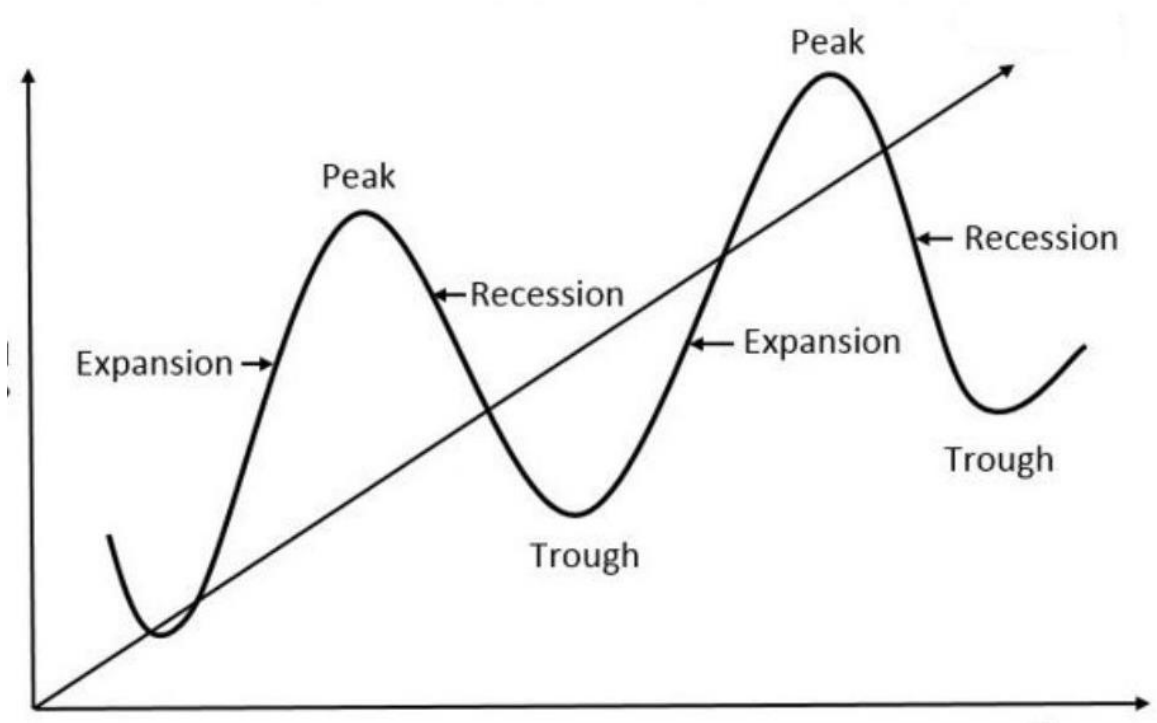


It’s is Going to Take Everyone

- Dedicated Joint BD Initiatives
- Legislative Influence
- Supporting/Educating Contractors
- SLAs – Service Level Agreements
- Performance Based Contracts / OPex vs CAPex
- Market Growth Strategy
- Retraining Workforce
- Speed to Market

Why Service is Future?

Cyclical Revenue



Reoccurring Revenue

Systems Integration / Low Voltage / Limited Energy / VDV / Telcom-Data

THE EXPONENTIAL DECADE

ConTech is on the verge of going exponential on the technology S-curve.

ELECTRI INTERNATIONAL

Research and Education for the Electrical Construction Industry

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Executive Director
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