Item 3: Committee Education on Current Issues Confronting Finance and Audit Committees: The Finance Function in the Utility of the Future

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Finance & Audit Committee Meeting

ERCOT Public
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The Finance Function in the Utility of the Future

Baker Tilly presentation to the ERCOT Board of Directors

Russ Hissom, CPA, Partner

10 8 18

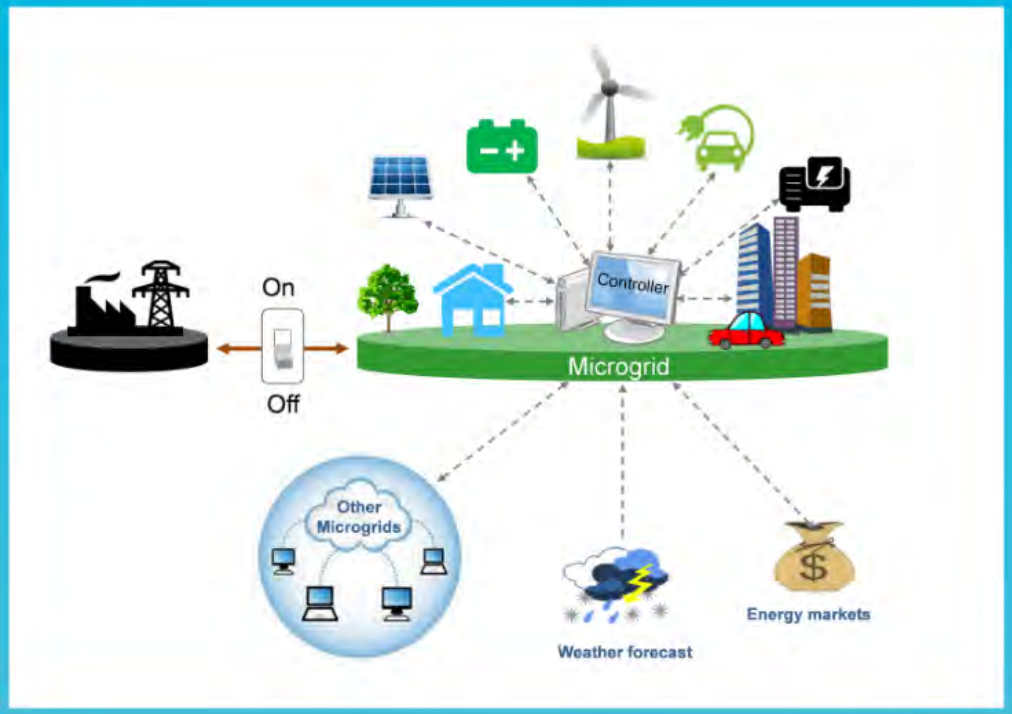
Introduction

What might be the utility of the future?

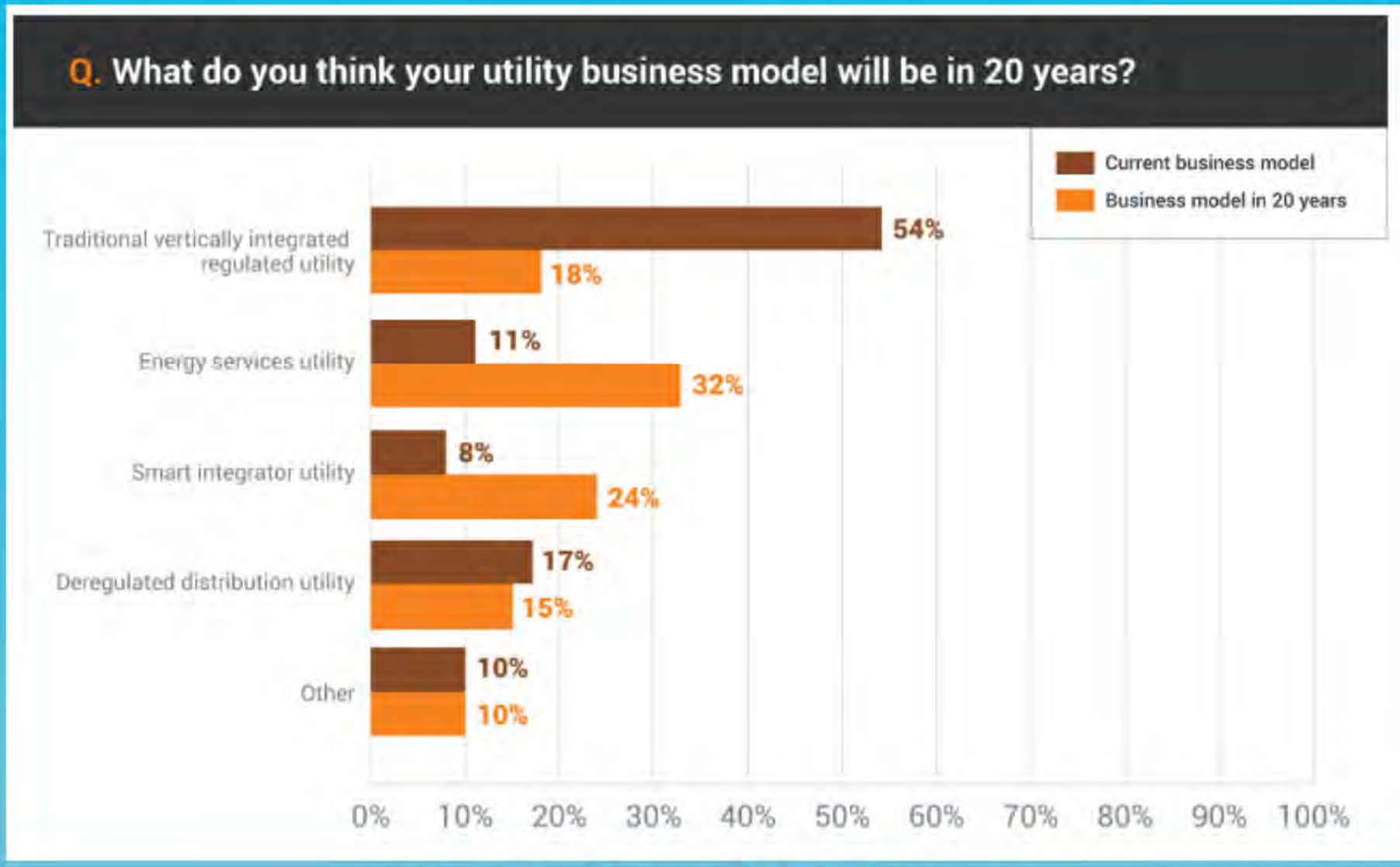
Think of your utility as a battery

What is a microgrid?

A Microgrid is a localized group of electricity sources and loads that normally operates connected to and synchronous with the traditional centralized electrical grid (macrogrid), but can also disconnect to "island mode" — and function autonomously as physical and/or economic conditions dictate.



Microgrid – a growing force

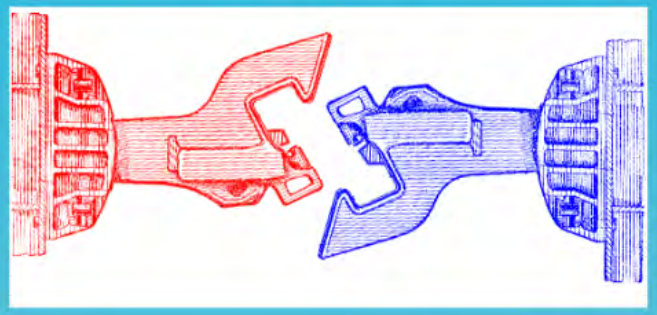


The utility of the future

Key takeaways

- The utility of the future will have to consider rate recovery of both current and future infrastructure
- Our systems will need to evolve to meet future use of data in managing the utility
- Developing rates will become more refined
- Use of automation will be a tool for efficient service delivery and cost control

Financial Reporting



Decoupling

"I love you, utility"

"I love you less, utility. Maybe we should see others."

Distributed generation and open access customers

Decoupling

Focuses specifically on stabilizing utility revenues

Allows for recovery of areas where decreased unit sales must be shared across the full spectrum of customers

Common mechanisms:

- **Lost Revenue Adjustment Mechanism (LRAM)**
- **Fixed Variable Pricing**
- **Decoupling True-up/Reconciling Clause**

Lost Revenue Adjustment Mechanisms

Focuses on estimating revenues that would have been billed absent Demand Side Management programs or distributed generation

Benefits

Can be implemented as rate riders and implemented between rate cases

Mitigates the recovery of revenue requirements not met due to unmet sales targets built into revenue requirements

Lost Revenue Adjustment Mechanisms - Example

1. Lost retail sales of 1,000,000 kWh in Year 1 due to conservation programs and distributed solar generation not forecasted

2. Rate = $0.10/kWh x 1,000,000 kWh = $100,000

3. Lost revenues/Total kWh sales = Surcharge

4. $100,000/10,000,000 kWh = $0.01 kWh

Fixed/Variable Pricing

Ensure rates recover full fixed costs of service in the monthly customer charge or demand charge

How would a fixed meter charge of $75/month for a residential or commercial customer go over in your utility?

True-up/Reconciling Clauses

1. Reconciles revenues to base cost of power in revenue requirement

2. Tracks differences and applies a surcharge to customer rates that recovers revenues that were less than base cost and returns revenues that were over base cost

Financial and Operational Presentations

Governance Reporting

- Management's perspectives should be shared with the governing body:
  - Internal reporting
  - Status of strategic initiatives and the strategic plan
  - What keeps management up at night
- What is driving current performance
- What indicators will help predict future financial and operational performance

What should be in the Board Book?

- Traditional financial statements
- Key summary financials
- Budget reporting - Operating and Capital
- Forecasts
- Metrics and key performance indicator dashboards
- Performance based reviews

Less words/ More graphics

High level quality, not detail

Tracking Performance through Metrics and Key Performance Indicator Dashboards

- Ratings agency metrics
- Activity metrics
- Other financial metrics
- Budget metrics

Tracking Performance through Metrics and Key Performance Indicator Dashboards

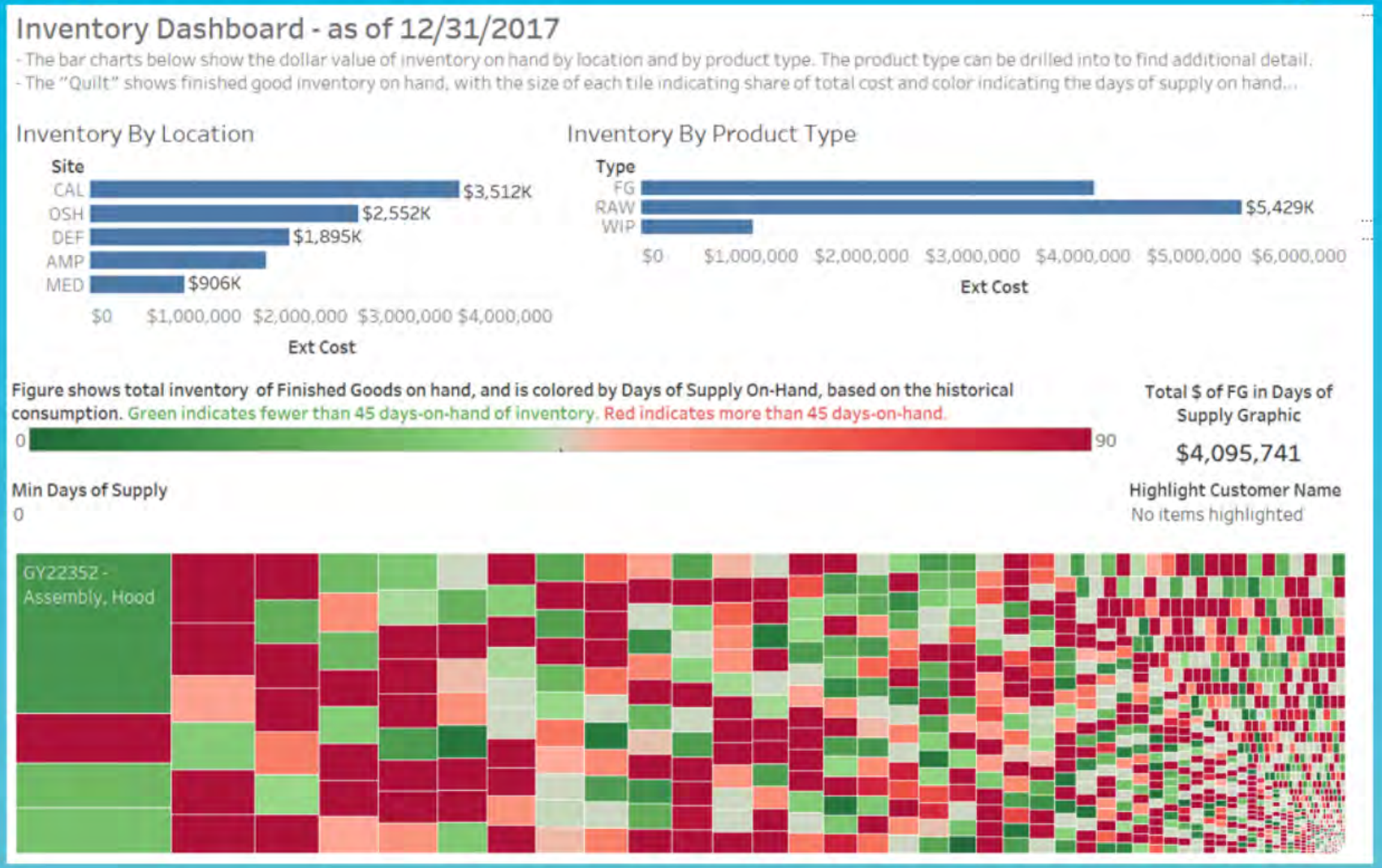
- Employee engagement surveys
- Customer satisfaction surveys
- Safety
- Sustainability measures
- Reliability

Tracking Performance through Metrics and Key Performance Indicator Dashboards

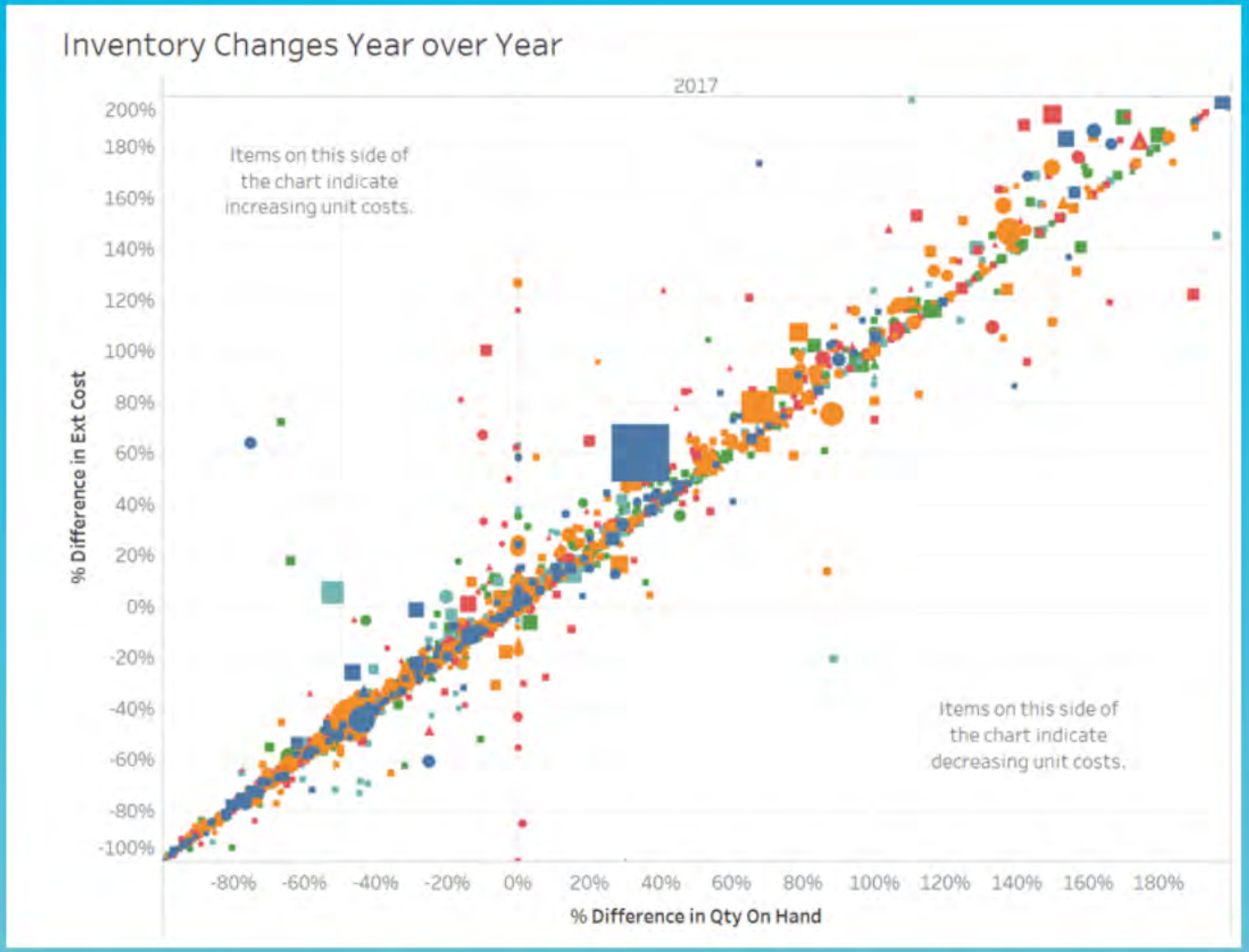
- Distributed generation loads
- Productivity measures
- Key risks - Enterprise Risk Management reporting
- Peer comparables

Supply Chain and Inventory Management

Managing Inventory Requirements

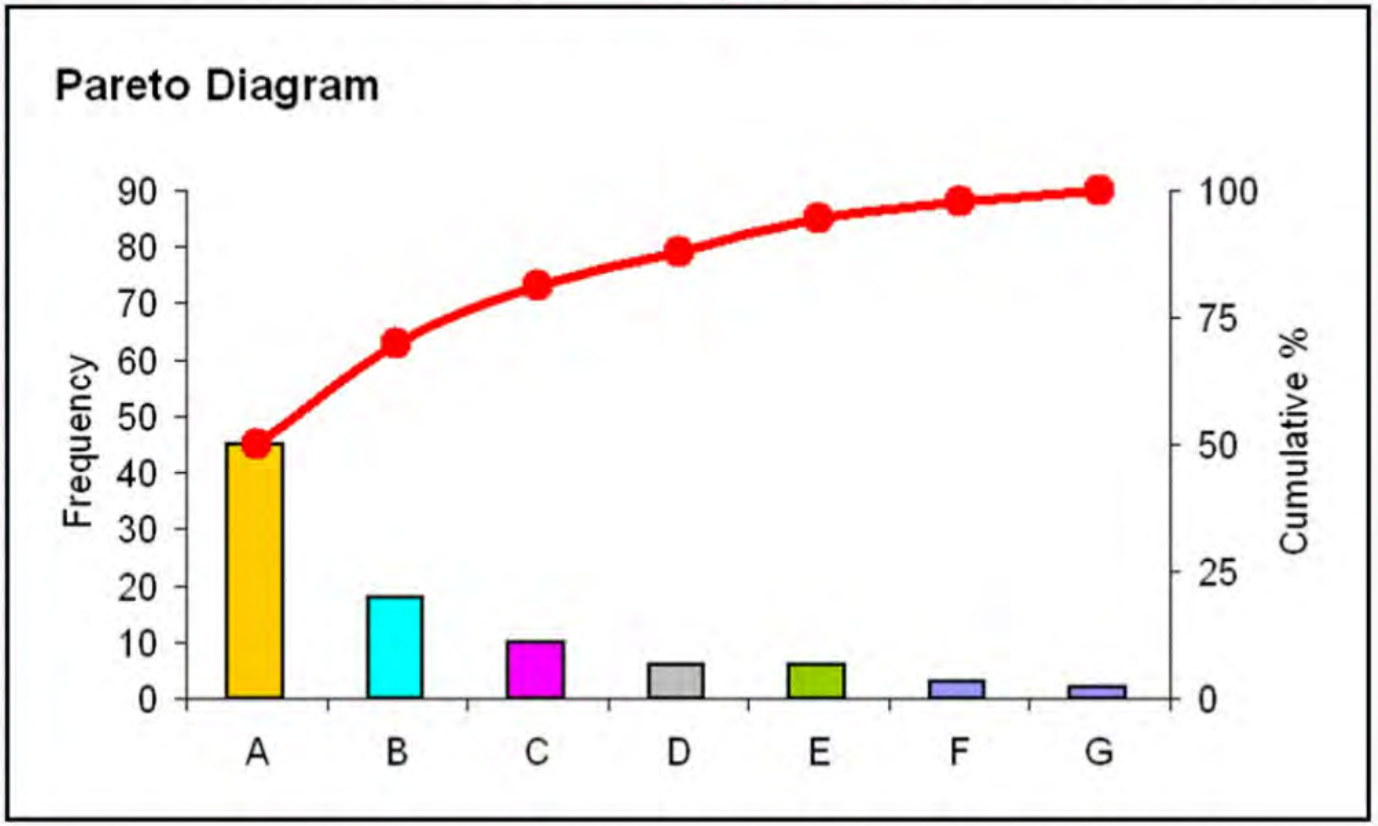


Data Analytics and Inventory



Managing Inventory Costs

Pareto Diagram

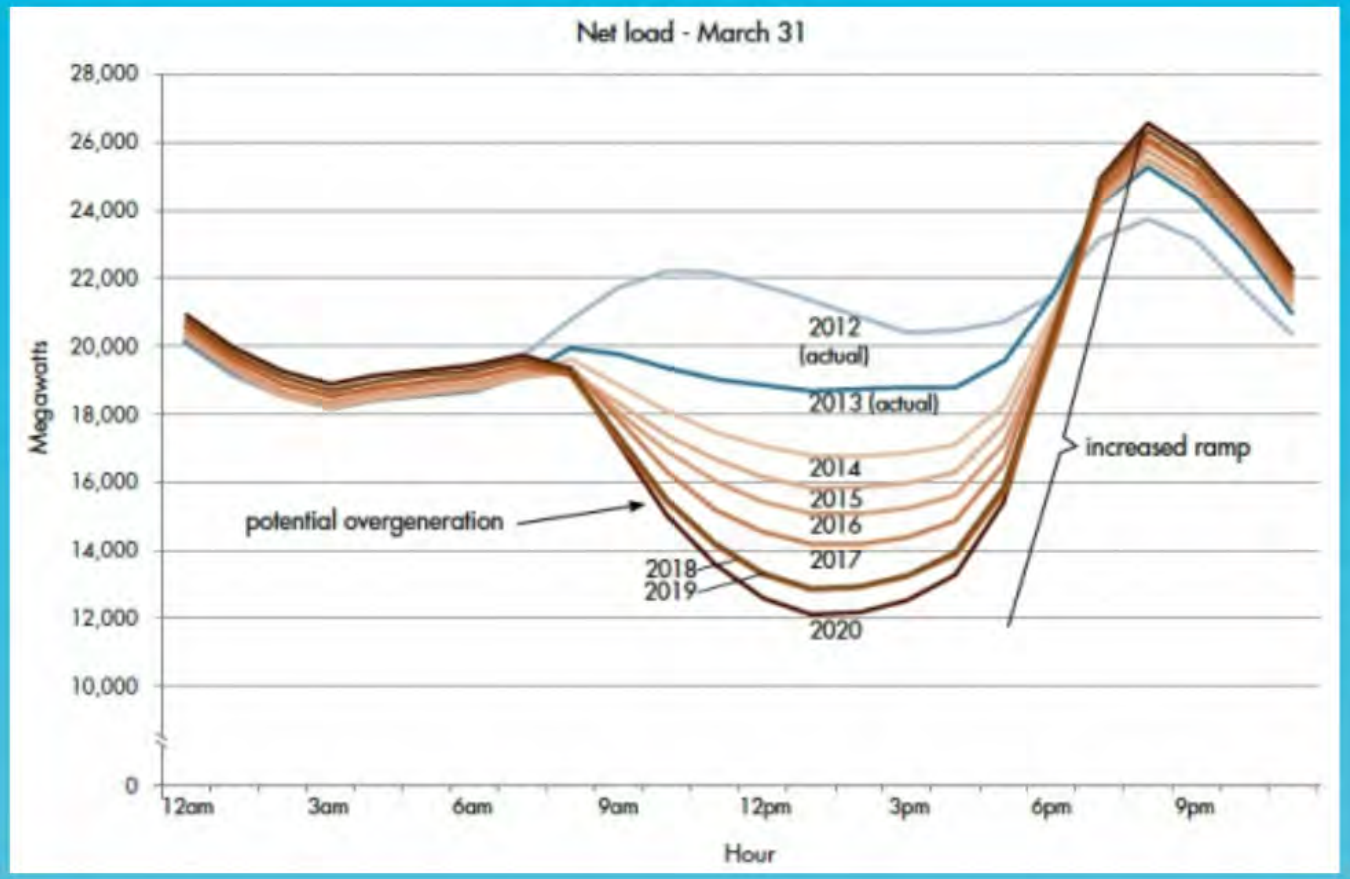


Pareto Method of Inventory Management

Rate Structures and Cost Recovery

Cost of service study results - test year

	Allocated Test Year Revenue	Cost of Service Revenue Allocation	Change to Equal COS Allocation	
			$	%
Residential	$ 4,157,112	$ 4,486,654	$ 329,542	7.93%
Small Commercial	$ 2,228,467	$ 2,137,000	$ (91,467)	-4.10%
Medium Commercial	$ 1,628,853	$ 1,798,860	$ 170,010	10.44%
Industrial	$ 1,617,513	$ 1,803,253	$ 185,740	11.48%
Total	$ 9,631,945	$ 10,225,767	$ 593,826	6.17%



The Duck Curve

World's Biggest Battery Proposed in California

The Duck Curve can be solved

Battery storage is big part of Colo. utility's plan

June 12, 2018 Peter Maloney

Xcel Energy subsidiary Public Service Company of Colorado has filed an energy plan with the Colorado Public Utilities Commission that calls for a shift away from coal-fired generation and toward more reliance on renewable resources.

Under the plan, PS Colorado would derive nearly 55% of its electrical supplies from renewable sources by 2026, driven by the addition of 1,100 MW of new wind power resources and 700 MW of solar generation.

The Clean Energy Plan also calls for the addition of 275 MW of battery storage that would be combined with solar power projects.

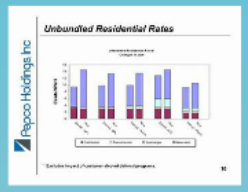
Rate Structures and Cost Recovery – Fixed Charges

- Fixed charges need to reflect the full cost of service
- Increase in distributed generation customers means fewer kWh's to spread costs over
- Fully costed fixed charges (aka the monthly meter charge) reflects all fixed infrastructure costs dedicated to customer service - whether or not customers are taking service from your utility's wires
- This is the "available for use" approach - ensures other customers do not subsidize the costs of serving distributed generation customers
- These costs can approach $50 - $75 per month per residential customer in a typical electric distribution utility
- This can be political

Rate Structures and Cost Recovery
Unbundling Costs and Rates

Costs should be "unbundled" into fixed and variable components, typical categories are:

- **Overall, Peak and Coincident Peak Demand (kW), Energy (kWh), Customer, Meter, Services, Admin and General**
- **If a customer chooses another supplier or has their own supply of generation (solar, microgrid) the utility can still charge the customer for fixed charges if the customer is connected to the utility's system**
- **This ensures other customer classes don't subsidize these customers**



Rate Structures and Cost Recovery
Real Time Pricing

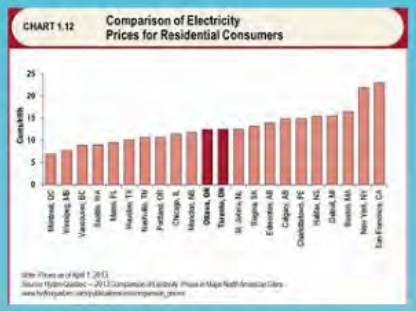
- Smart metering clears the path for real-time usage and pricing, i.e. time of use rates for all customer classes

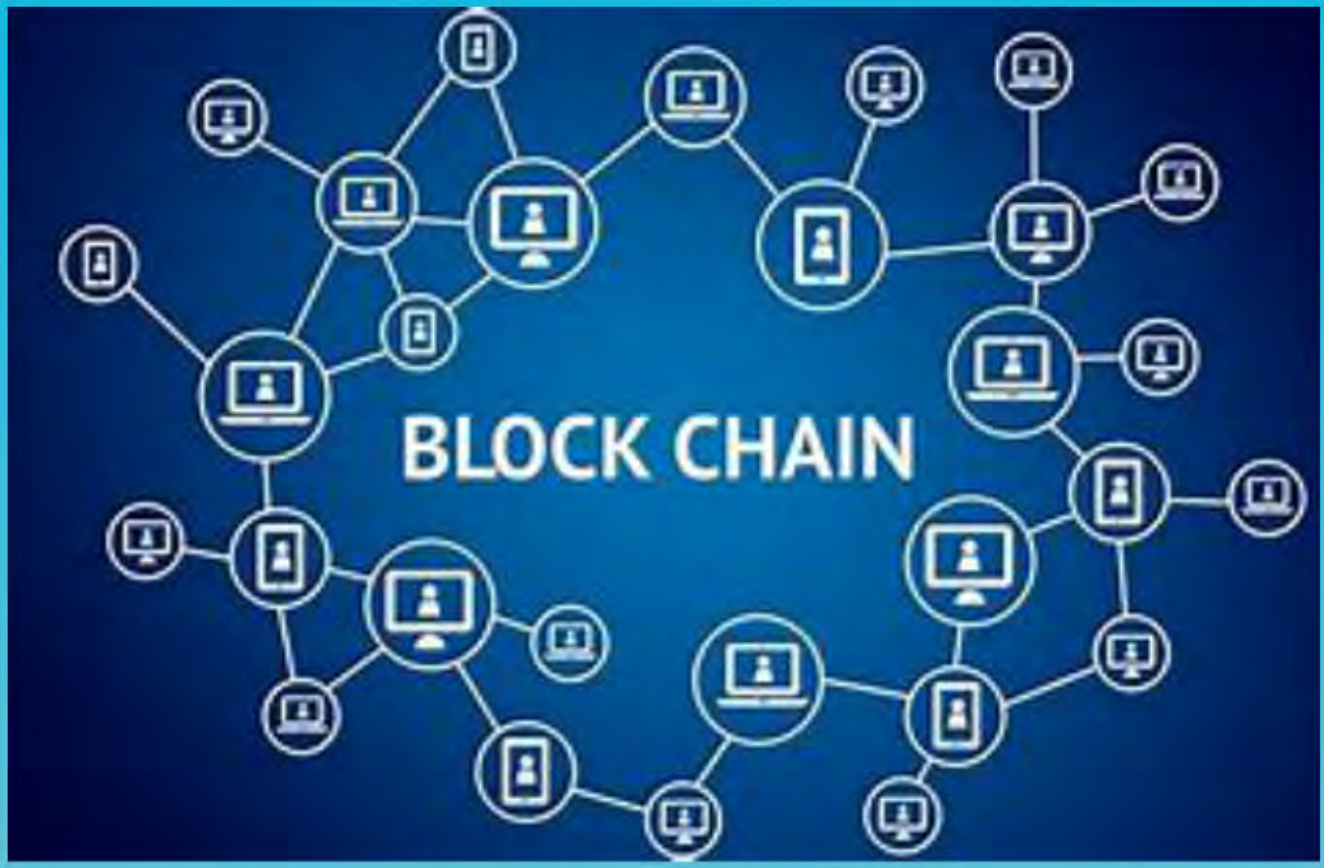
- This allows for customer decisions on usage and can address the inequity that stems from customers that use electricity during off-peak periods subsidize on-peak users

- Future rates can be developed that consist of a three-part bill:
    1. Fixed charge for customer service
    2. Energy charges (based on the time of day)
    3. Capacity charges for infrastructure and peak usage

Rate Structures and Cost Recovery Summary

- Customer rates have had a political component since the first cost of service study over 110 years ago
- Customer rates do not always reflect the cost of service
- It is important to know the customer class characteristics to determine where cross-subsidies lie in a utility's rate structure





Blockchain

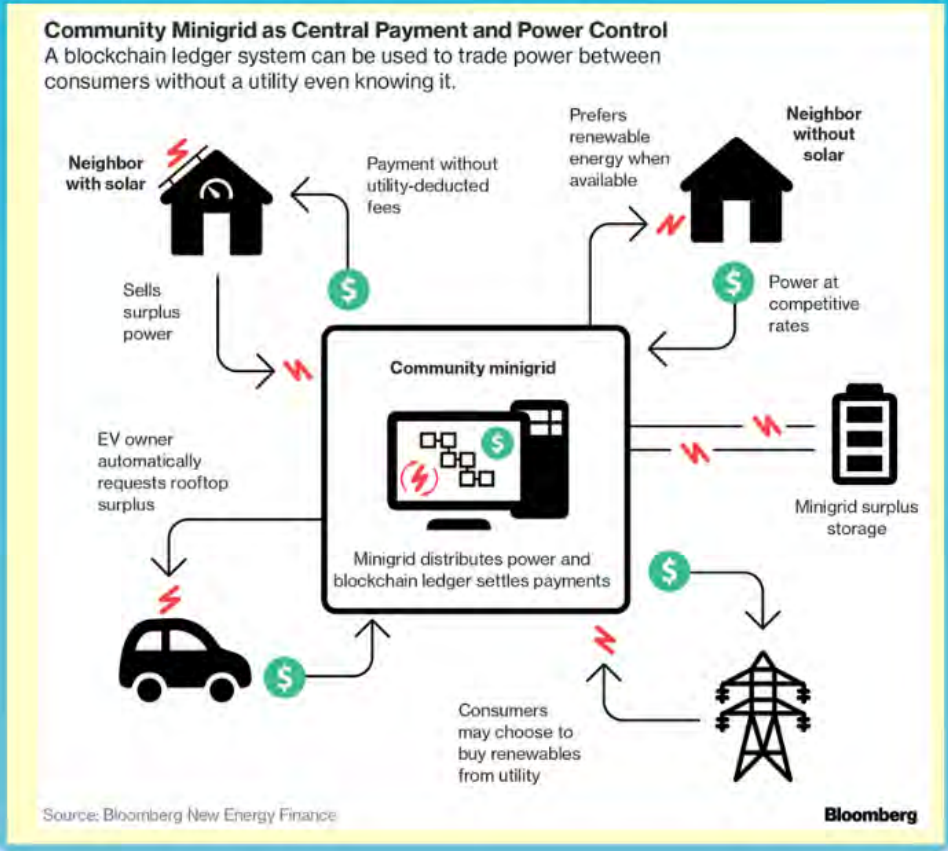
What is Blockchain?

Blockchain is a distributed database that holds records of digital data or events in a way that makes them tamper-resistant. While many users may access, inspect, or add to the data, they can't change or delete it. The original information stays put, leaving a permanent and public information trail, or chain, of transactions (Investopedia).

Blockchain defined

One view.....

How Blockchain Is Threatening to Kill the Traditional Utility

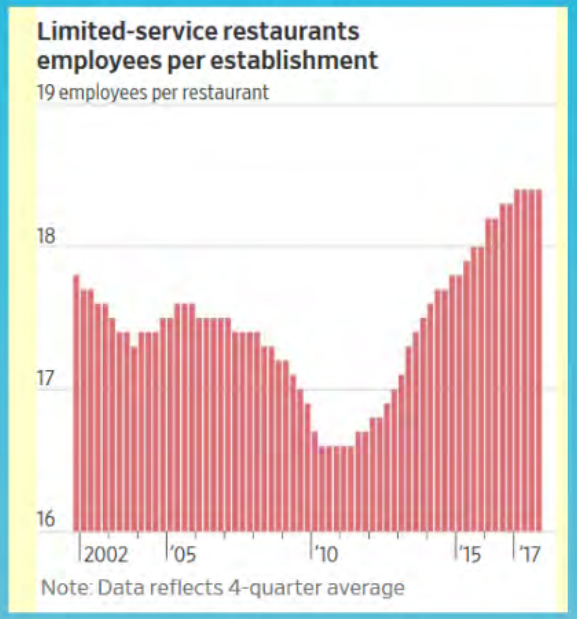


Managing the Grid

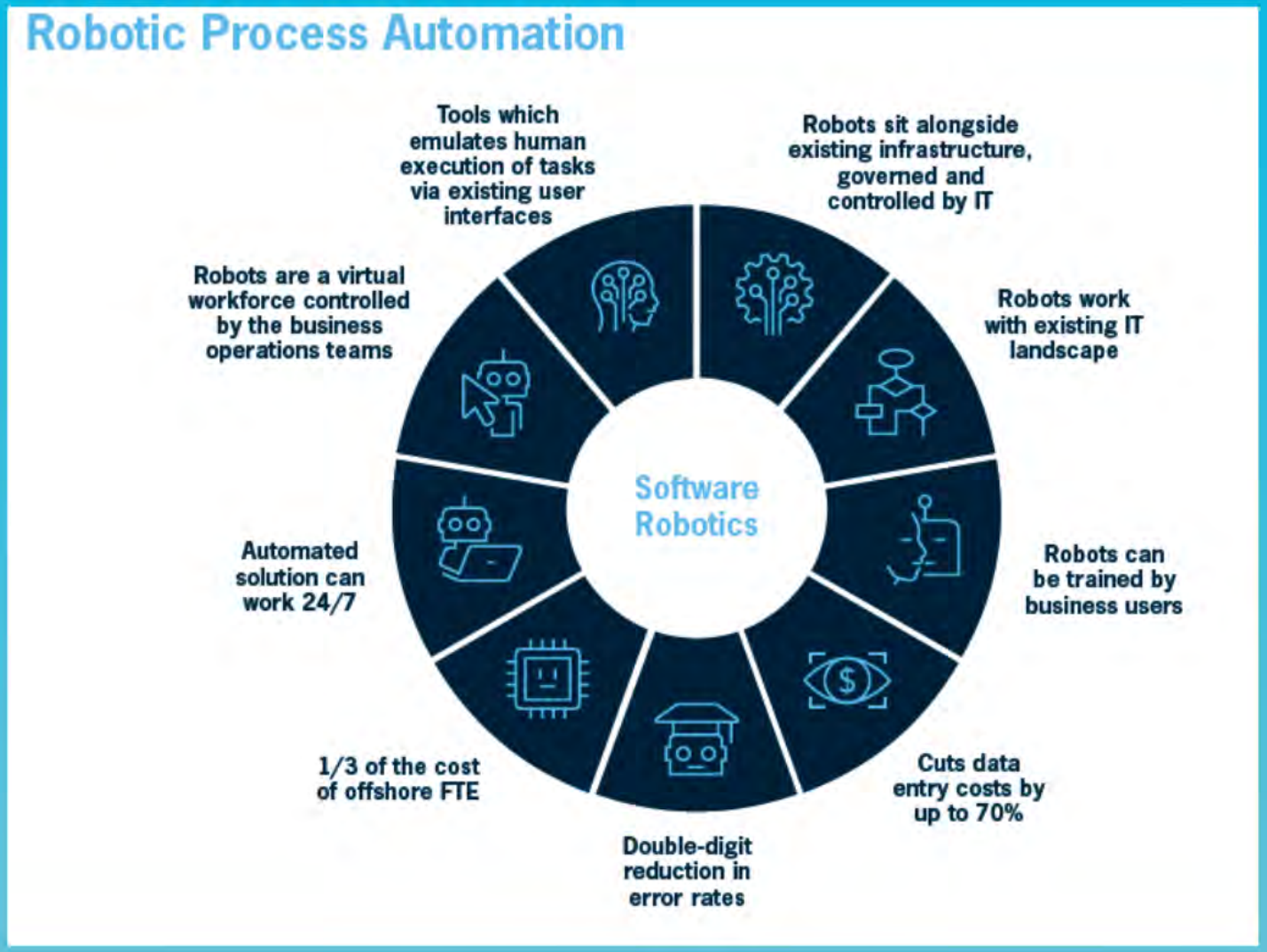
This year, Burlington, Vermont, may become the first municipal utility to use blockchain to get generation assets working together across its grid. The city will use the technology to manage supply and demand in real-time, according to Killian Tobin, chief executive officer of Omega Grid, the blockchain software provider that's helping Burlington set up its system. Think batteries charging when there's excess wind power, and businesses automatically drawing down power demand when electricity prices are high.

Technology and Use of Automation Tools

What is RPA? *Robotic Process Automation*



Here's Flippy!


Robotic Process Automation
Tools which emulates human execution of tasks via existing user interfaces
Robots sit alongside existing infrastructure, governed and controlled by IT
Robots are a virtual workforce controlled by the business operations teams
Robots work with existing IT landscape
Software Robotics
Automated solution can work 24/7
Robots can be trained by business users
1/3 of the cost of offshore FTE
Cuts data entry costs by up to 70%
Double-digit reduction in error rates

RPA process

Document management

Payroll

ERP system workflow integrations

Internal audit

Current RPA usage

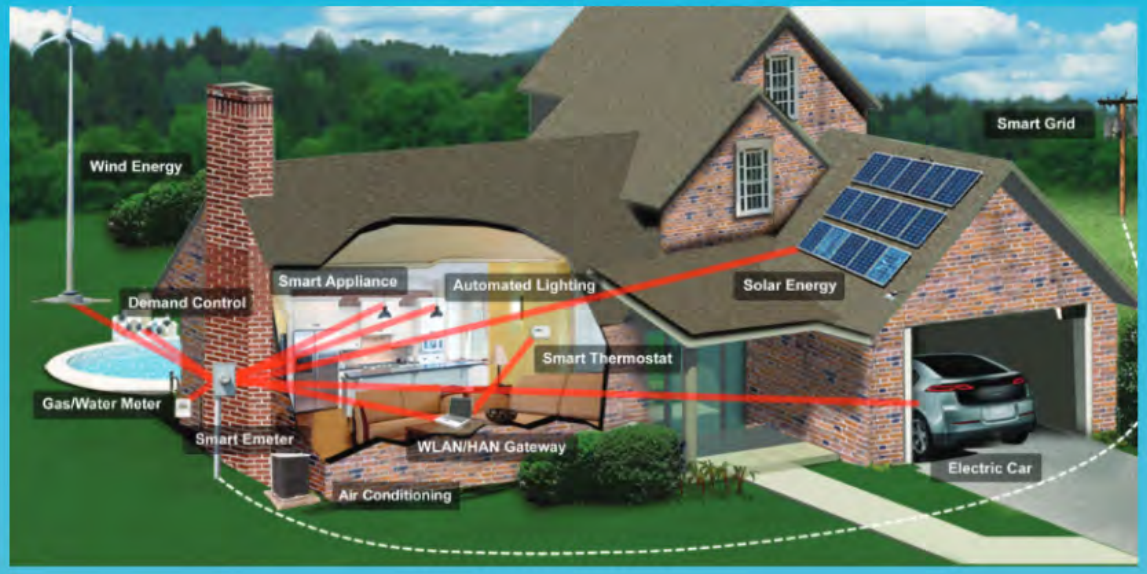

Semi-Structured
Unstructured data
Volume
Useful
Metadata
Petabytes
analysis
content
BIG
DATA
AMP
People driven
Decision making
Data
Zettabyte
Framework
Unstructured
Smart content
database
Concept extraction
Text analytics
Semantic Metadata
VALUE
Structured

Big Data/5G

5G Is Real

At the end of 2017, the wireless industry came up with the first official 5G standard. AT&T plans to launch mobile 5G in the US this year, Verizon says it will launch 5G for homes, and both T-Mobile and Sprint say that they're launching 5G phones early next year.

5G



The Smart Home

Table 1: IoT Units Installed Base by Category (Millions of Units)

Category	2016	2017	2018	2020
Consumer	3,963.0	5,244.3	7,036.3	12,863.0
Business: Cross-Industry	1,102.1	1,501.0	2,132.6	4,381.4
Business: Vertical-Specific	1,316.6	1,635.4	2,027.7	3,171.0
Grand Total	**6,381.8**	**8,380.6**	**11,196.6**	**20,415.4**

Source: Gartner (January 2017)

5G Connectivity and the Internet of Things (IOT)

What does technology have in store?

- 5G wireless internet will allow generation of massive amounts of real-time data and access to that data through artificial intelligence tools
- Combinations of Artificial Intelligence, big data, and blockchain technologies could make it possible to do real-time verification of business transactions
- Technology skills will be needed by positions in the organization where this previously was not a necessity
- Staffing structures may change, but employment most likely will not change

Journal of Accountancy

How can the utility finance function use Big Data?

Real time rates for all customer classes

Real time billing

Billing reconciliations

Meter reporting

Revenue forecasting

Determining distributed generation impacts

Customer can use Big Data/Smart Meters to make usage and pricing choices

Skills Needed by the Finance Professional

Skills needed by the finance professional – Now and in the future

- **Understand how processes work**
- **Communicate with technology professionals to develop decision trees for key processes powered by artificial intelligence**
- **Develop skills to learn how to analyze data for business insights**

Skills needed by the finance professional – Now and in the future

Survey of 500 CEO on the areas CFO's need more skills:

- **Talent management**
- **Technology**
- **Training team**

Business Insider

Skills needed by the finance professional – Now and in the future

- Analytical skills
- Risk management processes and knowledge of risk universe
- Be an enabler of innovation and use of technology
- Workforce manager and succession planner
- Political navigation skills
- Connected to the technology arm of the organization and using those connections to manage Big Data
- Understand non-financial information that drives the financials
- Hiring, mentoring and retention

Business Insider

Utility specific skills?

- Using accounting standards to reflect application of rate recovery
- Ratings agencies relations
- Knowledge of performance metrics and how to use those to impact change and strategy
- Cyber-risks, CIP and compliance with regulatory requirements
- How to generate revenues sufficient to run utility operations from shrinking per customer unit consumption of kWh's
- Analytics of Big Data and developing equitable rates
- Knowledge of and the ability to traverse the political landscape

Key Takeaways – The Utility of the Future

The skills of the finance professional in the utility of the future will not be a sudden occurrence but will evolve over time

Many of those skills are needed in the utility of today

Financial and operational reporting could be more high level and KPI driven

Artificial intelligence and Robotic Process Automation will continue to impact our business and drive the need for professionals with more analytical skills

Big data will drive decisions

Finance will need to know how to make accounting standards work for the utility business and rate recovery

Moving towards the utility of the future

"If you are working on something exciting you really care about you don't have to be pushed. The vision pulls you." Steve Jobs

Summary and questions

Thank you for your kind attention!

Please contact your Baker Tilly team with any questions or comments:

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