



# NARUC

National Association of Regulatory Utility Commissioners

## Regulator's Financial Toolbox: Leveraging Software as a Service, Cloud Computing, and Artificial Intelligence in Electric Utilities

December 18, 2024

[www.naruc.org/cpi](http://www.naruc.org/cpi)

# THE NARUC CENTER FOR PARTNERSHIPS & INNOVATION

## Background & Focus

- NARUC staff dedicated to providing technical assistance to members.
- CPI identifies emerging challenges and connects state commissions with expertise and strategies to inform their decision making.
- CPI builds relationships, develops resources, and delivers trainings.
- All CPI support is federally funded via cooperative agreements (grants) with U.S. Department of Energy and U.S. National Institute of Standards and Technology.



CPI fact sheet with recent publications, upcoming events, member working groups located at: [www.naruc.org/cpi/cpi-home/](http://www.naruc.org/cpi/cpi-home/)

### NARUC Center for Partnerships & Innovation

Identifying emerging challenges and connecting state commissions with expertise and strategies to navigate their complex decision making

The NARUC Center for Partnerships & Innovation (CPI) builds relationships, develops resources, and delivers training to assist state commissions contending with complex, current, and emerging issues. CPI is funded by cooperative agreements with offices throughout the U.S. Department of Energy (DOE) and through the National Institute of Standards and Technology (NIST). **CPI works across five key energy areas:**

Energy Generation	Energy Transmission	Energy Distribution	Energy Customers
<ul style="list-style-type: none"> <li>• Resource Adequacy</li> <li>• Coal and Carbon Management*</li> <li>• Nuclear Energy*</li> <li>• Natural Gas*</li> <li>• Hydrogen</li> <li>• Utility-Scale Renewables</li> </ul>	<ul style="list-style-type: none"> <li>• Bulk Power System Infrastructure*</li> <li>• Transmission-Distribution Coord. Comprehensive Electricity Planning*</li> <li>• Storage</li> </ul>	<ul style="list-style-type: none"> <li>• DER Integration &amp; Compensation*</li> <li>• Integrated Distribution Planning*</li> <li>• Smart Grid / Grid Modernization</li> <li>• Valuation and Ratemaking (PBR)*</li> </ul>	<ul style="list-style-type: none"> <li>• Demand Flexibility*</li> <li>• Virtual Power Plants</li> <li>• Microgrids*</li> <li>• Electric Vehicles*</li> <li>• Stakeholder Engagement</li> <li>• Energy Justice</li> <li>• Affordability</li> </ul>
Contact Kiera Zitelman		Contact Jeffrey Loiter	
Critical Infrastructure Resilience, Emergency Preparedness, and Cybersecurity			
<ul style="list-style-type: none"> <li>• Critical Infrastructure</li> <li>• Cybersecurity for Utility Regulators</li> <li>• Energy Emergency Preparedness</li> </ul>		<ul style="list-style-type: none"> <li>• Integrated System Resilience*</li> <li>• Defense Community Partnerships</li> <li>• Workforce Development*</li> </ul>	
Contact Lynn Costantini			

\*Contact us to join a members-only group on this topic for regular learning and peer exchange opportunities. Sign up for the [CPI Newsletter](#) for twice-monthly updates about new resources and forthcoming events.

**The NARUC CPI team looks forward to engaging with NARUC's members throughout the year—your needs drive our priorities and activities. Reach out at any time!**

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#### Recent Resources

**Publications**

- [Use Cases for Advanced Nuclear Reactors](#) Oct 2024
- [Defense Energy Resilience Engagement Framework](#) Sept 2024
- [Questions for PUCs on Legacy DERs](#) July 2024
- [NCEP Workforce Recruitment Collaboration Brief](#) July 2024
- [Aggregated DER Fundamentals](#) July 2024
- [Regulators' Financial Toolbox: Tracking Clean Energy](#) June 2024
- [Collaborative Enhancements to Unlock Interregional Transmission Planning](#) June 2024
- [Coal to Nuclear Repowering](#) April 2024
- [NCEP Mini Guide on Air Regulators and PUCs/SEOs](#) March 2024
- [Cybersecurity Baselines for Electric Distribution Systems and Distributed Energy Resources \(DER\)](#) Feb 2024
- [Cybersecurity Issue Brief: Volt Typhoon](#) Feb 2024
- [National EV Infrastructure Formula Program Brief](#) Feb 2024

**Web Resources**

- [TechTalk for Regulators Episode 2: Protecting Substations](#)
- [Electric Vehicle Case Study Catalog](#)
- [Energy Storage Resource Library](#)
- [Energy Transmission Resource Library](#)
- [Performance-Based Regulation State Tracking Map](#)

CPI is producing **Essential Resources Guides** for key topic areas. Find a snapshot of existing resources, webinar recordings, and more: [Explore the microgrids, natural gas, coal and carbon management and electric vehicle guides now!](#)

#### Forthcoming Publications:

- CCUS Technology and Policy Status
- State Advanced Nuclear Strategic Frameworks
- Microgrid Applications
- Long-Term Gas Planning
- Proactive Infrastructure Investments for EVs
- Grid Reliability and Coal Fleet Performance
- Resilience and Engagement Mini Guide
- Questions for PUCs on Electric Vehicles
- Mini Guide on Low Income Program Design

**New Support Available:**

- DOE National Labs offer ongoing **technical assistance for PUCs** on many topics, including grid resilience planning, load forecasting, data centers, electric vehicles, integrated grid planning, transmission cost allocation, rate design, and more. [Register now](#) for a webinar on Nov 22 at 3 p.m. ET to learn more!

#### Virtual Learning Opportunities

- **Monthly Innovation Webinars.** Find [past recordings](#) on dozens of exciting topics. [Contact Jessica](#)
- **On-Demand, Video-Based Learning Modules.** Dozens of training videos in English and Spanish on distribution systems and planning, distributed energy resources, smart grid and EV interoperability, cybersecurity, and more. [Contact Jeff](#)
- **NARUC-hosted working groups** routinely hold webinars and peer sharing discussion forums for members. See [CPI Events](#) for the latest info. Upcoming 2024 events include:
  - DER-Integration & Compensation virtual workshop, November 20, 2-4:30pm ET. [Contact Jeff](#)
  - Microgrids State Working Group webinar, December 3, 3-4pm ET. [Contact Kiera](#)
  - EV Working Group: Innovations in Public Charging, December 10, 3-4:30pm ET. [Contact Robert](#)
  - Transmission Working Group: Resilience & 1920, December 11, 3-4:30pm ET. [Contact Deborah](#)

#### Upcoming In Person Events Travel Stipends Available

- **Training for States on Integrated Distribution System Planning 2.0:** Planning for Electrification and DERs. Choose one of three date / location options:
  - **December 11-12, 2024 in Charlotte, North Carolina.** [Register now.](#)
  - **March 11-12, 2025 in Detroit, Michigan.** [Register now.](#)
  - **April 23-24, 2025 in Salt Lake City, Utah.** Registration TBA.

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## In partnership with DOE, NIST, and members NARUC CPI work spans five key topical areas

### Energy Generation

- Resource Adequacy
- Coal and Carbon Management\*
- Nuclear Energy\*
- Natural Gas\*
- Hydrogen
- Utility-Scale Renewables

### Energy Transmission

- Bulk Power System
- Transmission Infrastructure\*
- Transmission-Distribution Coordination
- Comprehensive Electricity Planning
- Storage

### Energy Distribution

- DER Integration & Compensation\*
- Integrated Distribution System Planning\*
- Smart Grid / Grid Mod
- Microgrids\*
- Performance-Based Regulation\*

### Energy Customers

- Demand Flexibility\*
- Virtual Power Plants
- Electric Vehicles\*
- Stakeholder Engagement
- Energy Justice
- Affordability

*Contact Kiera Zitelman and Deborah Reynolds*

*Contact Jeffrey Loiter*

### Critical Infrastructure Preparedness, Response, and Resilience

- Critical Infrastructure
- Cybersecurity for Utility Regulators
- Energy Emergency Preparedness
- Integrated System Resilience\*
- Defense Community Partnerships
- Workforce Development\*

*Contact Lynn Costantini*

*\*Join a members-only group on this topic for regular learning and peer exchange opportunities.*

# TODAY'S PANEL

- Moderator: The Honorable Phil Bartlett, Maine Public Utilities Commission
- Panelists:
  - Emma Rodvien, Manager, U.S. Regulatory Affairs and Market Development, Kraken
  - Mimi Zhang, Director of Product Management, Itron, Inc.
  - Andrew Cook, Group Product Manager, Itron, Inc.





# KRAKEN

PART OF THE **octopus**energy GROUP

## NARUC Financial Toolbox webinar: SaaS in Utility operations

December 18, 2024

**Emma Rodvien**  
Senior Manager of Regulatory and Markets



# What has changed since NARUC's last SaaS Toolbox?

- Evolution within the **SaaS industry**
  - New functionalities + use cases
  - New cybersecurity standards + risk mitigation tools/strategies
  - New commercial models
- Evolution within the **utility industry**
  - Retirements of IT staff with specialized knowledge of legacy systems
  - Movement away from 'on-prem' hardware
  - Increased data collection (customer data, grid data, meter data, etc.)
  - IT budgets now represent a large portion of rate case investment proposals
  - Regulatory requirements for new products and services → moving from pilot to full-scale (e.g. default TOU implementation, managed EV charging, etc.)
- **Lingering capitalization question:** with such significant planned capex investments, has the utility's desire to earn a profit on SaaS changed?



# Single, end-to-end platform for utilities

## CUSTOMER

CIS & Billing  
Meter Data Management  
Customer Relationship Management (CRM)  
Customer Interaction

## FIELD

Job & Workforce Management  
Material Management  
In-field App  
Customer Service & After Care

## FLEX

DER Optimization  
Real-time Alerting  
Portfolio Management  
Reporting & Analytics

## GRID

Distribution Grid Monitoring  
Power Quality Analysis  
Asset Aging  
Fault Detection and Location



## Supported Utilities

  
Electricity

  
Gas

  
Water

  
Wastewater

  
Fiber

# Kraken is proven technology

700+

Developers across the world

54 million

Customer accounts globally

40+

Successful migrations

6.8 million

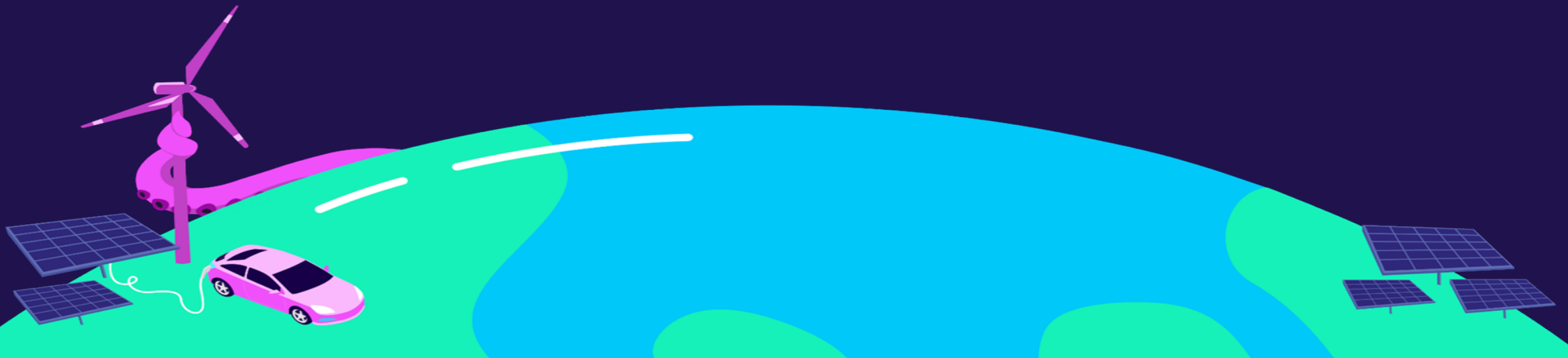
Lines of code in the code base

175 thousand

Automated tests per release

200+

Daily deployments



# SaaS use case: customer IT + billing

- Billing systems have emerged as **bottleneck to the energy transition**:
  - Efficient markets require fine-tuned price signals for supply & demand
  - DSM requires new business processes and new customer information
- Current billing system landscape is dominated by **aging on-prem solutions**, very little SaaS
  - Typical billing system life = 20 years
  - Many systems reached end-of-life; sustained through piecemeal upgrades
  - Re-platforming planning + procurement can take years
- Potential **benefits of SaaS** in the billing + customer IT use case:
  - Change is faster and cheaper
  - Change is iterative and scalable



**derisked pricing + product innovation**



# Vendor perspective: making the regulatory case for SaaS

SaaS vendor must be able to demonstrate that its product:

- Costs less → possible drivers:
  - economies of scale
  - labor efficiencies
  - vendor preferred pricing for 3rd party infrastructure (e.g. web hosting)
- Delivers more or different benefits → possible drivers:
  - Specialized product design + architecture
  - learnings from past deployments/clients
  - flexible configurability
- Lower risk → either commercial or technical
  - Contract price certainty

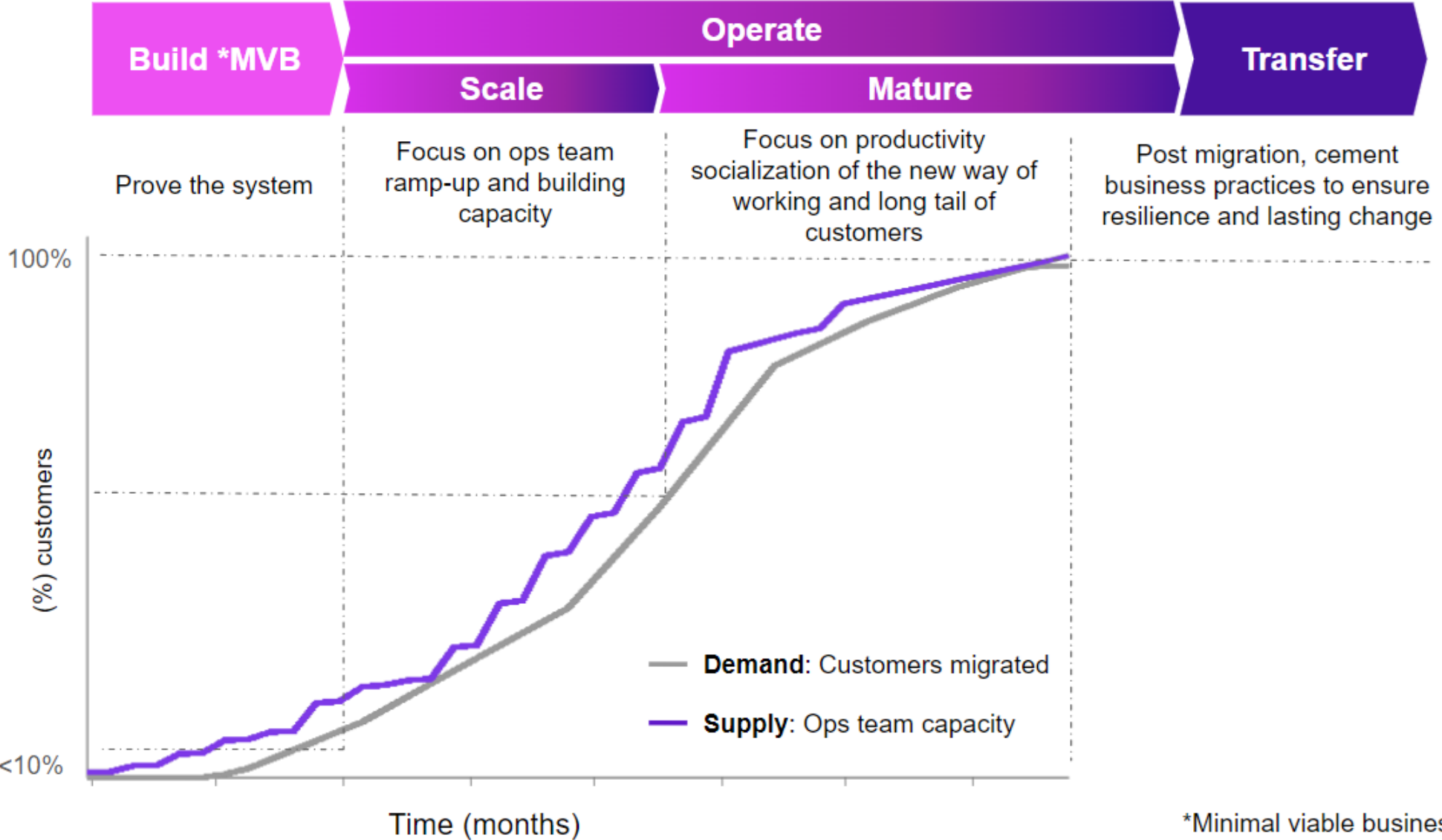


# Kraken example: speed and cost of change

<b>Client request for new feature/functionality</b>	<b>Kraken's implementation* timeline</b>	<b>Cost of new feature/functionality</b>
Implement Feed In Tariff for renewable energy generation facilities (wind, solar, CHP)	<b>1 month</b>	Included in annual service fees (agreed to at contract signing)  No incremental cost
Integrate with new Head End System (HES) for smart meters	<b>2 months</b>	
Implement new Payment Adequacy process (right-size payment levels for customers with payment plans)	<b>1 week</b>	
Implement new "hard prepayment" scheme	<b>2.5 months</b>	



# Kraken example: derisked migration model



In contrast, traditional on-prem billing software deployments are marked by a **'big bang' migration** approach that can be very costly as conditions change mid-implementation

## Example: ConEd's billing replatforming project (2019-2023)

- **161 change orders** mid-flight driven by new business + reg requirements
- For each change, project had to be paused for reconfiguration, re-testing
- Result = 20% cost overrun (\$88 million)

Cost Category	Variance from Planned
External Labor	\$ 102,317,983
Billing Exception Remediation	\$ 23,431,837
Internal Labor	\$ 3,256,423
Contingency	\$ (35,186,513)
Hardware and Software	\$ (4,459,120)
AFUDC and Other	\$ (1,127,066)
<b>Total</b>	<b>\$ 88,233,544</b>



# Vendor perspective: challenges to making the regulatory case for SaaS

- Establishing a **fair cost baseline** → what will the SaaS alternative be measured against?
- Utility's ability to realize total benefits of the SaaS alternative may be **interdependent** with functionalities/technologies (beyond the vendor's control)
- **Methodological limitations** to quantifying certain values



# Recommendations for regulators to ensure utilities are adequately considering SaaS alternatives

- Inventory how utilities are **using SaaS products today**
  - Example: OR PUC review of software accounting treatment (Docket UM-2121) → required Avista to file annual reports on software projects placed into service, capitalized cost components, and whether or not projects were SaaS
- Inventory **which legacy utility IT systems are end-of-life**, as well as historic + forecast spend on incremental upgrades to extend legacy system life
- For IT investment proposals, require utilities perform an **alternatives analysis** that considers all available solutions, regardless of ownership model
- When reviewing and/or exploring program design, require utilities to **share information on IT implementation** (necessary tools/functionalities, staffing resources, system interdependencies, etc.)
  - Example: MN PUC review of TOU rate design proposal (Docket No. 23-524)





# Leveraging SaaS, Cloud, and AI in Electric Utilities

**Mimi Zhang and Andrew Cook**

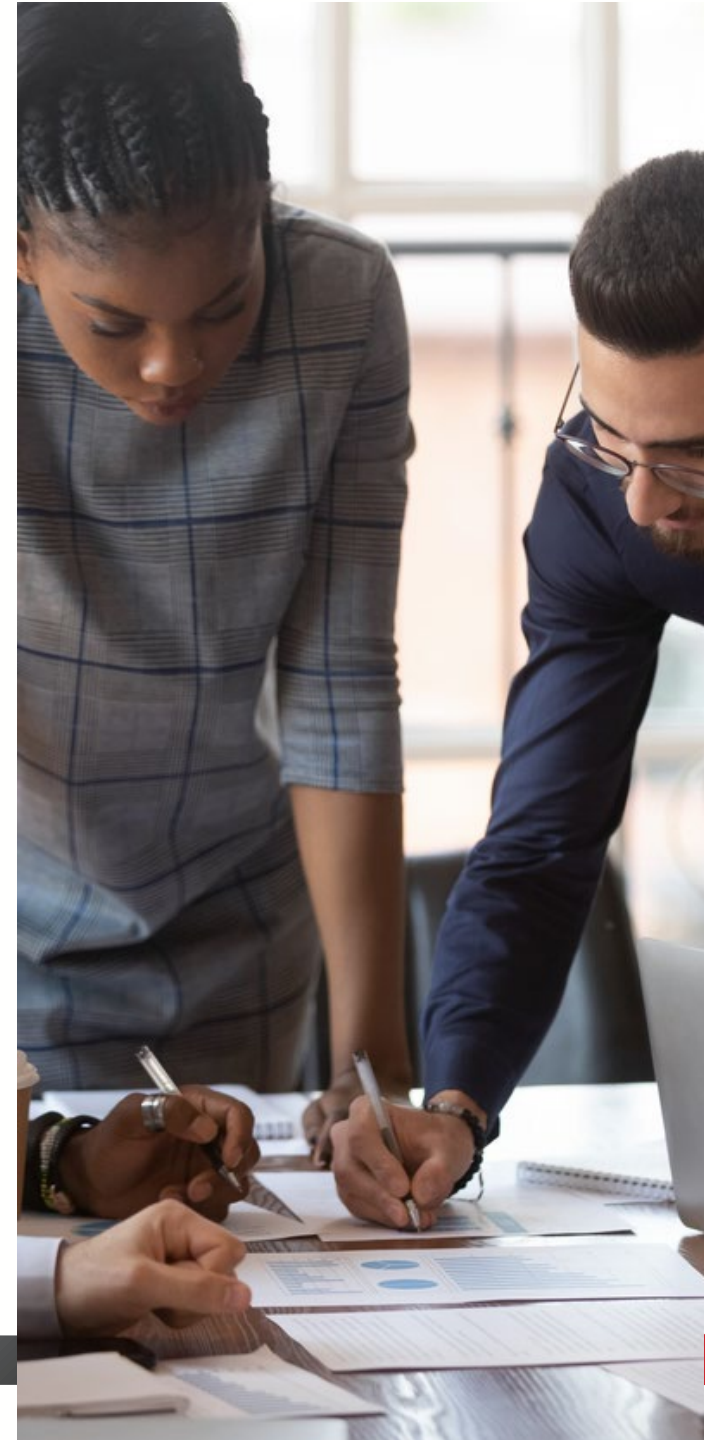
# Speaker Background

## » Mimi Zhang, Director of Product Management at Itron

- Smart Grid/AMI software
- 10 years at Silver Spring Networks/Itron (SF Bay Area)
- Previously worked @ Sustainable Energy Advantage & Navigant Consulting (Boston)
- BS in Earth & Ocean Science from Duke, Masters in City Planning from MIT
- Fun fact: used to have many hobbies but now just clean up after small children

## » Andrew Cook, Product Line Manager at Itron

- SaaS analytics and platform products
- 23 years in the industry
- Bachelor of Science in Electrical Engineering from the University of Washington
- Fun fact: he has two sons, 14 and almost 13 years old; and he and his wife just celebrated their 27<sup>th</sup> wedding anniversary



# Itron at-a-Glance



**+8,000**

CUSTOMERS IN 100 COUNTRIES



**+270M**

COMMUNICATION MODULES DELIVERED



**+100M**

ENDPOINTS UNDER MANAGEMENT at ~1400 UTILITIES



**~4M**

STREETLIGHTS AWARDED, ~3M DEPLOYED



**+5,000**

PEOPLE ACROSS THE GLOBE



**+250**

PARTNERS IN A BROAD ECOSYSTEM OF SOLUTIONS

**\$2.2B**  
2023 REVENUE (USD)

# Delivering Intelligent Infrastructure Solutions

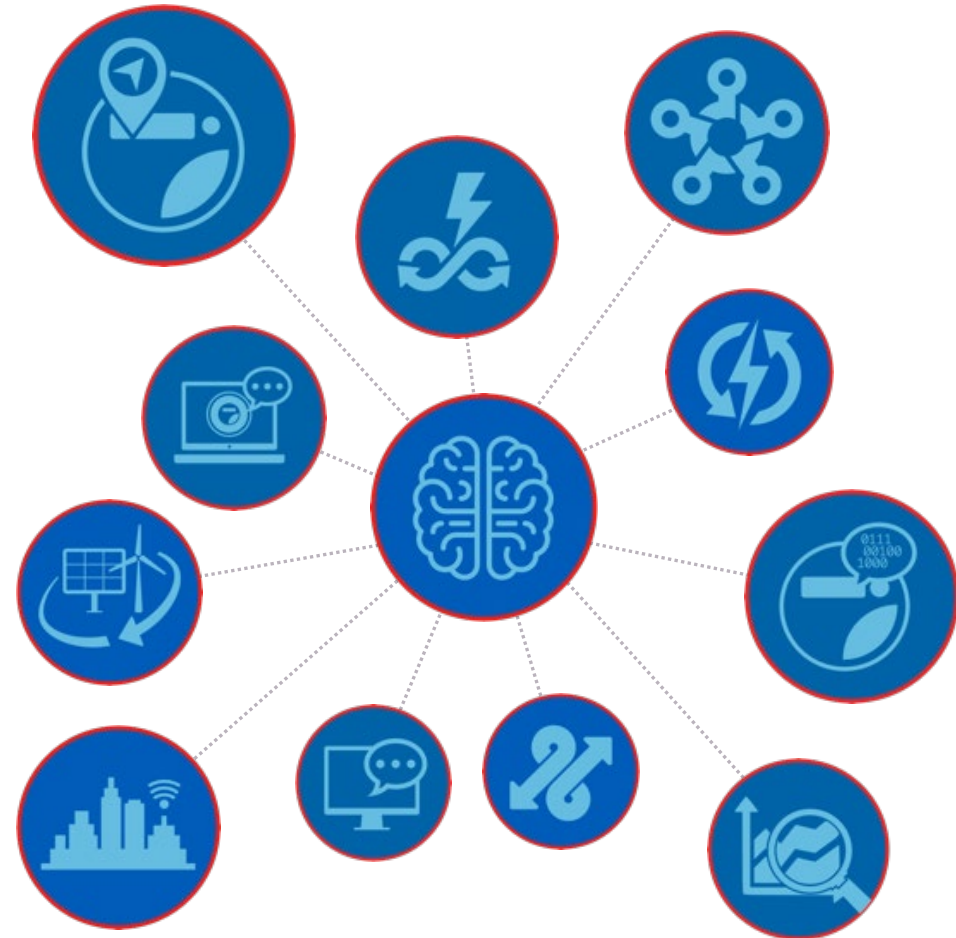
A look at Itron's portfolio and the solutions we provide

## INDUSTRY-LEADING PORTFOLIO

- » Intelligent networks
- » Software + analytics
- » Services
- » Meters
- » Sensors + other devices

## HIGH-LEVEL SOLUTIONS

- » Communications Networks
- » Data Management & Analytics
- » Distributed Energy Resource Management Systems (DERMS)
- » Distribution Automation
- » Grid Edge Intelligence & Management
- » Industrial IoT Applications
- » Metering (Electricity, Gas, Heat & Water)
- » Smart Cities and Lighting
- » Smart Electricity, Gas and Water Management





# The Itron Industrial IoT Solution Portfolio

For utilities and smart cities

## OUTCOMES

						
AMI as a Service	Distributed Energy Management	EV Infrastructure	Water Operations	Gas Operations	Smart Payment	Smart City Management

## INTELLIGENT CONNECTIVITY AND DATA PLATFORM

METER DATA MANAGEMENT		MARKET SETTLEMENTS	
MULTI-COMMODITY AMI HEADEND SYSTEM		SMART CITY DASHBOARD AND LIGHTING MANAGEMENT SYSTEM	
MULTI-TRANSPORT NETWORK TRANSACTION MANAGEMENT	NETWORK MANAGEMENT AND SECURITY	DISTRIBUTED APPLICATION ENABLEMENT	3RD PARTY DEVICE INTEGRATION TOOLS



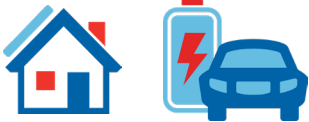
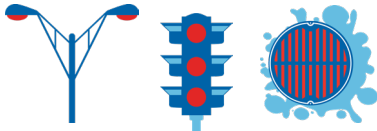
## MULTI-TRANSPORT NETWORKING





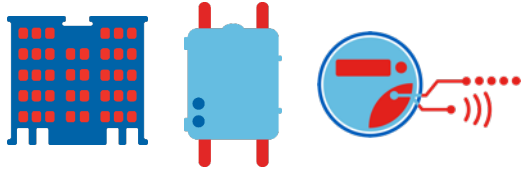

## MULTI-VENDOR ECOSYSTEM

## NETWORKED DEVICES

			
Multi-commodity Smart Metering	Utility Distribution Sensors	Distributed Energy Resources	Smart Lighting and Smart City Sensors

# AMI BUSINESS CASE TRENDS

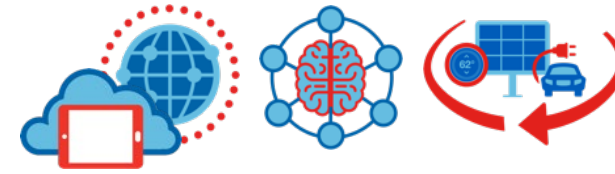
# Smart Grid Evolution: AMI to Grid Edge Management



## AMI

Late 2000s – late 2010s: Meter-to-Cash

- Solid-state metering
- Network-based reading
- Two-way communications to the meter
- Basic outage and restoration notification
- Integration into OMS
- Over-the-air meter firmware upgrades
- Backoffice data analysis
- Data management applications
- Improved customer service



## Grid Edge Management

Today: Edge Computing & Real-time Data Analytics

- Expanded communications options – public and private
- Near real-time data acquisition and analytics
- Increased visibility in the low- and medium-voltage networks
- Load control and active demand response
- DERMS visibility and control
- Power and voltage quality monitoring
- Expanded integration into ADMS and other control systems
- Hybrid Cloud-based and on-premise solutions
- Downloadable applications to the device (meter, sensor, etc.)
- Distributed data processing, analysis and control at the edge
- Vendor- and partner ecosystem-driven innovation
- Expanded consumer engagement opportunities

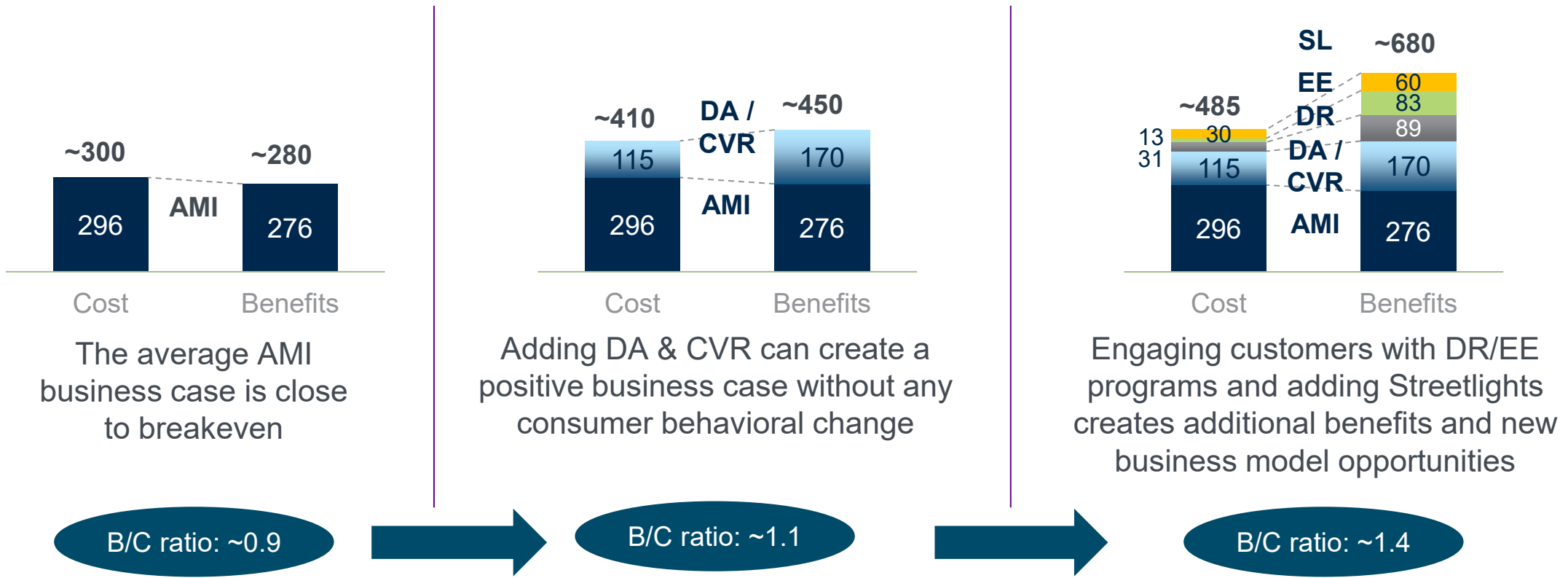
# Smart Grid Business Case Trends

More capabilities increase B/C ratio

## Average NAM Smart Grid Business Case\*

*\$/customer, electric only, PV over 20 years*

Software capabilities offer highest B/C impact



\* Based on publicly available U.S. smart grid business/rate cases and includes Itron internal estimates. AMI – Advanced Metering Infrastructure, DA – Distribution Automation, CVR – Conservation Voltage Reduction, DR – Demand Response, EE – Energy Efficiency (Portal), SL – Streetlights

# Buying Advanced Metering Infrastructure

Cost = Payment to vendors + internal cost

	Vendor fees	Internal cost
Hardware	Devices Maintenance Warranties	Testing (first article etc.) Installation/deployment Staff training
Software	License Maintenance	<ul style="list-style-type: none"> <li>• Hosting (data center + upgrades)</li> <li>• Managing and operating entire system:                             <ul style="list-style-type: none"> <li>• Integrations</li> <li>• Interop testing</li> <li>• Vendor management</li> </ul> </li> </ul>
Services	Integration Installation Training	
<p>In the traditional model, it was clear which items were capital vs. operating expenses: perpetual software license = CAPEX</p> <p>With SaaS: license + hosting + management is bundled into one ongoing fee</p>		

## COSTS INCLUDED IN EACH BCA PERSPECTIVE

AMI Component	Benefit Type	Benefit Category	SCT	UTC	RIM
AMI	Deployment Capital	IT Hardware	X	X	X
	Refresh Capital	IT Software	X	X	X
		Meters	X	X	X
		Network	X	X	X
		PMO	X	X	X
O&M	O&M	X	X	X	
AMI Enabled Rates / Options	O&M	Marketing Acquisition Costs	X	X	X
		Other Variable Costs	X	X	X
		Fixed Overhead Costs	X	X	X
		Participants Overhead Costs		X	X
		Participant Sign Up Incentives		X	X
	Lost Revenue	T&D Revenue Losses / Customer Savings			X

<sup>1</sup> Requirement of the Order Establishing the Benefit Cost Analysis Framework (BCA Order). BCA Order: Case 14-M-0101, Order Establishing the Benefit Cost Analysis Framework (issued January 21, 2016). [Link](#).

<sup>2</sup> ACEEE (2018); Cost-Effectiveness Tests: Overview of State Approaches to Account for Health and Environmental Benefits of Energy Efficiency. [Link](#).

# AMI Investments: cost and benefit

Benefits span across avoided capital, O&M, societal

## BENEFITS INCLUDED IN EACH BCA PERSPECTIVE

AMI Component	Benefit Type	Benefit Category	SCT	UTC	RIM
AMI	Avoided Capital	Avoided Meter Purchases	X	X	X
	Avoided O&M	Billing	X	X	X
		Call center	X	X	X
		Field Work	X	X	X
		Improved Cash Flow	X	X	
		Meter Reading	X	X	X
		Reduced Meter Burden	X	X	X
		Avoided Network O&M	X	X	X
	Avoided Fleet Capital	Field Work	X	X	X
		Meter Reading	X	X	X
	Societal Benefits	Avoided Carbon due to Fewer Truck Rolls	X		
		Avoided Customer Outage Costs	X		
	Transfer-Customer Equity	Meter Accuracy Improvement			X
		Energy Theft Reduction			X
		Delivery Write-Offs			X
AMI Enabled Rates / Options	Avoided Capital	Avoided Transmission Capacity	X	X	X
		Avoided Distribution Capacity	X	X	X
	Customer Energy Supply Savings	Avoided Generation Capacity	X	X	X
		Avoided Wholesale Energy Capacity	X	X	X
		Avoided Wholesale Natural Costs	X	X	X
	Societal Benefits	Avoided Carbon due to Reduced Energy Use	X		
		Avoided Carbon due to Reduced Natural Gas Use	X		

- » **Required** software for basic AMI functionality: meter reading and control, network management
- » **Additional** products are often included/considered: analytics, demand-response, grid intelligence applications
  - can improve B/C ratio
- » **Adjacent software:** MDM, Billing, CIS, ADMS, OMS
  - May need updates, integration changes, interop testing

Note: A software product may benefit different categories or reduce O&M for different organizations

1 Requirement of the Order Establishing the Benefit Cost Analysis Framework (BCA Order). BCA Order: Case 14-M-0101, Order Establishing the Benefit Cost Analysis Framework (issued January 21, 2016). [Link](#).

2 ACEEE (2018); Cost-Effectiveness Tests: Overview of State Approaches to Account for Health and Environmental Benefits of Energy Efficiency. [Link](#).

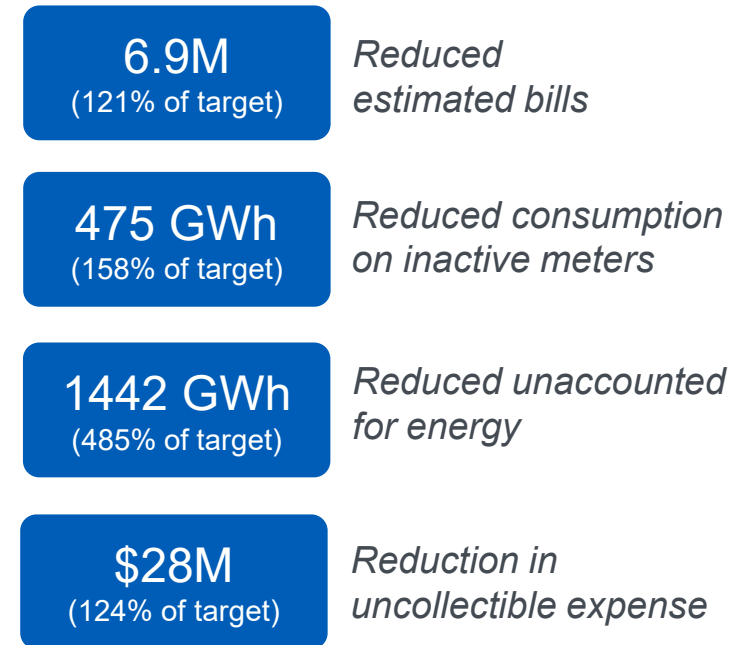
# Utility Example: Overall AMI

## Successful Achievement of AMI Goals

### Description

- » ComEd has successfully achieved several AMI-related performance goals. These include reductions in:
  - Issuance of estimated bills
  - Consumption on inactive meters
  - Unaccounted for energy (i.e., non-technical loss such as theft)
  - Uncollectible expenses
- » Achievement of these metrics create customer benefits in the form of multiple rate decreases. ComEd has filed for 5 rate decreases between 2010 and 2020
- » Itron hosts AMI software for ComEd
- » They have an innovation lab and a track record of combining multi-vendor and home-grown products into solutions, i.e. award-winning outage program (COMPASS)

### Results<sup>1</sup>



<sup>1</sup> Source: [Multi Year Performance Metrics Annual Report for the Year Ending December 31, 2022](#)

# Utility Example: High Impedance Detection

AMI + Apps on the Edge (Distributed Intelligence Platform)



## Description

- » CenterPoint Energy (CNP) serves approximately 2.8 million metered electricity and 4.2 M gas customers in 6 states
- » CNP leveraged 150k OW Riva Network in Indiana to pilot the High Impedance DI App. From contracting to initial field investigations took only 4 weeks(!)
- » In the future CNP plans to use the impedance data to evaluate EV/PV readiness



Example of a bad (but not yet failed) electric grid component found during pilot

## Benefits reported<sup>1</sup>

93%

Success rate

>250

Issues confirmed & replaced

200

Issues flagged as likely => Replaced

180

Other problems or outdated designs, referred to Planning/Engineering

<sup>1</sup> Source: [Centerpoint Itron Inspire 2022](#)

# SAAS AND CLOUD

# Benefit of SaaS/Cloud

## » Scalability and Cost Management

- Vendors can provide more complex and consistent software offerings with SaaS
- On-premise: requires sizing for **peak usage**
- SaaS/Cloud: pay for what you use

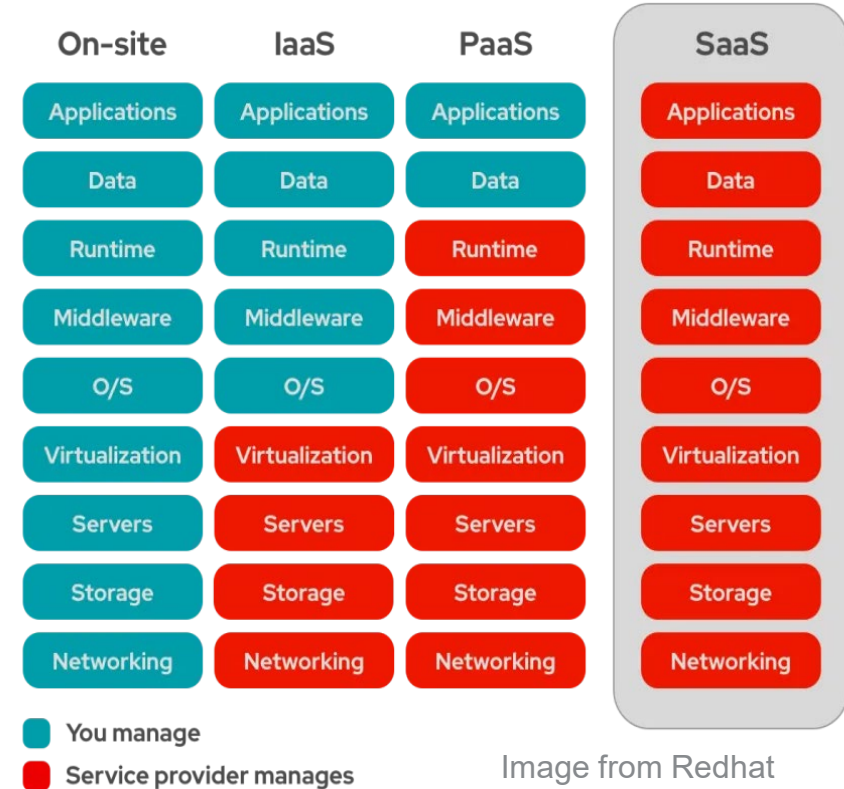
## » Speed and innovation

- Faster development of **new products** and capabilities using cloud platforms
- Ability to deliver smaller changes more frequently, reducing risk from big changes

## » Lower barriers to entry

- No need to purchase and manage datacenter infrastructure
- Especially helpful for smaller entities

## » Utilities can focus core competencies, specialized expertise

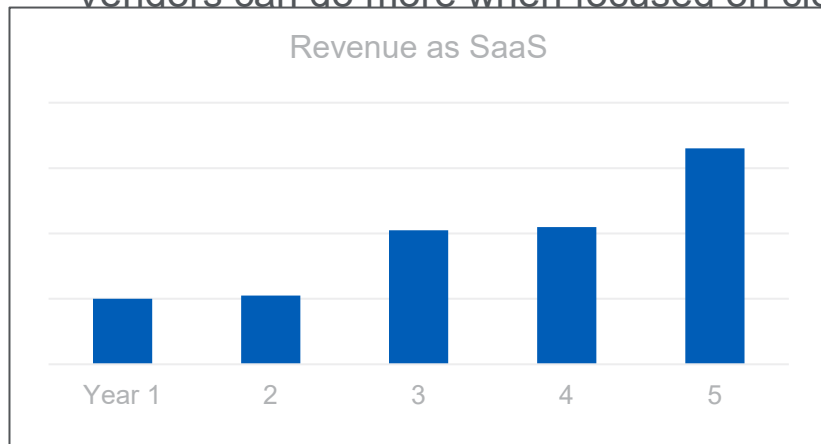


# Ecosystem of Innovation

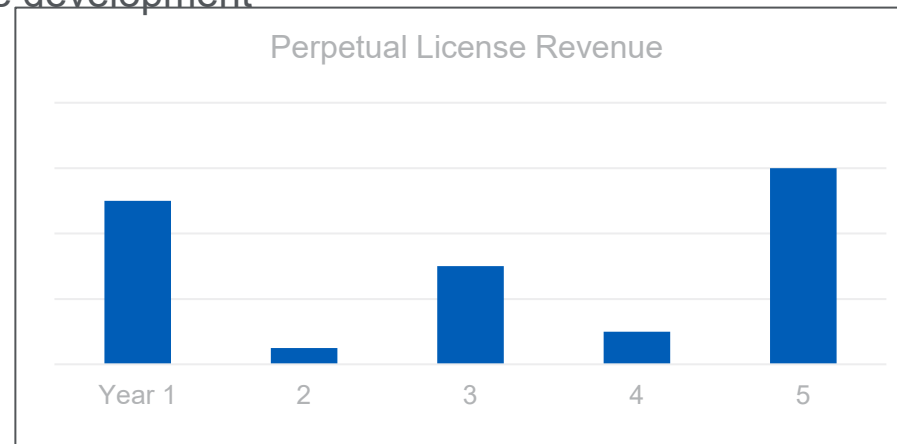
SaaS helps vendors and customers innovate

## » Enabling more SaaS grows innovation

- A vendor's R&D investment priorities are driven by revenue growth
- Selling SaaS vs. licenses helps vendors make clear business case for investment
  - New entrants to the market are especially sensitive to drops in revenue
- Moving to cloud can help innovation even further: cloud-native tools unlock faster development and optimized hosting
  - Vendors can do more when focused on cloud-native development



Revenue is spread across deployment life  
Steady growth as new customers are added



Revenue largely up-front, subsequent years  
drop until new customer(s) purchase

Better products and more choice benefits utilities and ratepayers

# The Itron Industrial IoT Solution Portfolio

For utilities and smart cities

A growing part of our portfolio is software

## OUTCOMES

						
AMI as a Service	Distributed Energy Management	EV Infrastructure	Water Operations	Gas Operations	Smart Payment	Smart City Management

## INTELLIGENT CONNECTIVITY AND DATA PLATFORM

METER DATA MANAGEMENT		MARKET SETTLEMENTS	
MULTI-COMMODITY AMI HEADEND SYSTEM		SMART CITY DASHBOARD AND LIGHTING MANAGEMENT SYSTEM	
MULTI-TRANSPORT NETWORK TRANSACTION MANAGEMENT	NETWORK MANAGEMENT AND SECURITY	DISTRIBUTED APPLICATION ENABLEMENT	3RD PARTY DEVICE INTEGRATION TOOLS

## MULTI-TRANSPORT NETWORKING






## MULTI-VENDOR ECOSYSTEM

## NETWORKED DEVICES

											
Multi-commodity Smart Metering				Utility Distribution Sensors		Distributed Energy Resources		Smart Lighting and Smart City Sensors			

# Looking Forward

What is Itron seeing or being asked to provide?

## Trends

- » Mission Critical Software is moving to SaaS
  - DERMS: DER penetration comes with fluctuating processing requirements
  - AMI data collection: demand for more data more frequently
- » Cloud compute is a growing ask: flexible compute is important for new capabilities, cloud providers increasingly comply with NERC CIP

**Demand for:** distributed compute, more real-time capabilities, partnerships with other vendors

We are being **asked about** plans for AI

- » Adopting AI will require an industry shift towards giving up some control
- » Many AI capabilities require cloud compute



Thank You

# QUESTION 1 SLIDE

# How are utilities buying software?

Historic vs. Current, CAPEX vs. O&M

How are customers paying for software?

Traditional Model	Modern SaaS Model
License + Maintenance	Subscription Fee (license + hosting + operations)
Hosted "On-Premise"	Hosted by Vendor
Utilities do all upgrades and infrastructure management	Utilities focus on using the product + integrating with other systems

Vendors like Itron offer options:

- Sell license and software hosting separately
- Perpetual or Term licenses (capex)
- Prepayment or extended SaaS contracts: longer contracts with fixed fee escalators

What helps our customers move forward with desired software products?

- Clarity around funding, accounting, rate cases
- Support to fund more SaaS purchases + flexibility from vendors when that isn't available
- Cloud offerings that increasingly support utility security standards or geographical restrictions
- Proven deployments from other risk-adverse industries

# How does SaaS fit into the utility's business model?

- IT project costs can be broken down into 2 buckets:
  - **Implementation costs** → development, training, testing, etc.
  - **Ongoing O&M fees** → maintenance, service, etc.
- GAAP establishes different financial treatment for implementation costs (capitalizable) vs. ongoing costs (non-capitalizable)
- Cost profile differs significantly between on-prem software vs. SaaS:
  - **On-prem:** large implementation budget, small ongoing fees
  - **SaaS:** small implementation budget, large ongoing fees
- Fitting SaaS within existing accounting standards: ongoing SaaS fees often cover costs that may count as implementation under the on-prem model (e.g. developing new functionalities) → further alignment needed



# How SaaS fits within the utility business model goes beyond capitalization

- Additional question: is it in the utility's interest to deliver on the full suite of benefits offered by an IT investment (SaaS or otherwise)?
  - Context: unlike physical assets that have inherent tangible value, the **value of software depends on how the client uses it**
- In parallel with answering the capitalization question, regulators can explore alternative incentive designs that hold utilities accountable to delivering the theoretical benefit potential of their IT investments
- Example: RI PUC AMI approval (Docket No. 22-49-EL) →

After the utility argued that AMI will improve customer satisfaction (CSAT), PUC required the utility to update its existing CSAT service quality penalty mechanism to reflect the expected impact of AMI

