

AVEVA PI WORLD 2022

Shaping a Future in Utilities

Your Partner in Digital Transformation

Presented by: William “Bill” McEvoy



Infrastructure, Water, T&D Track Team



Bill McEvoy

Global Industry Principal –
T&D, Smart Grid & DER

william.mcevoy@aveva.com



Ann Moore

Global Industry Principal –
Power & Utilities

ann.moore@aveva.com



Kevin P. Walsh

Industry Principal –
Global T&D & Smart Grids

kevin.walsh@aveva.com



Gary Wong

Global Industry Principal –
Infrastructure & Water

gary.wong@aveva.com



Douglas Nunez

Sr. Marketing Manager –
T&D

douglas.nunez@aveva.com



Bruno Squassoni

Presales Engineer & Industry
Champion for Water

bruno.squassoni@aveva.com



Fiona Straton

Global Industry Marketing –
Infrastructure & Water

fiona.straton@aveva.com

Amazing Stories

- 8:40 – Great Lakes Water Authority
- 9:45 – Eni
- 10:30 – Veolia
- 11:15 – City of Salem
- Lunch
- 14:00 – T&D State of the industry
- 14:45 – TenneT TSO
- 15:30 – Gwinnett County
- 16:00 – Waterfall Cybersecurity

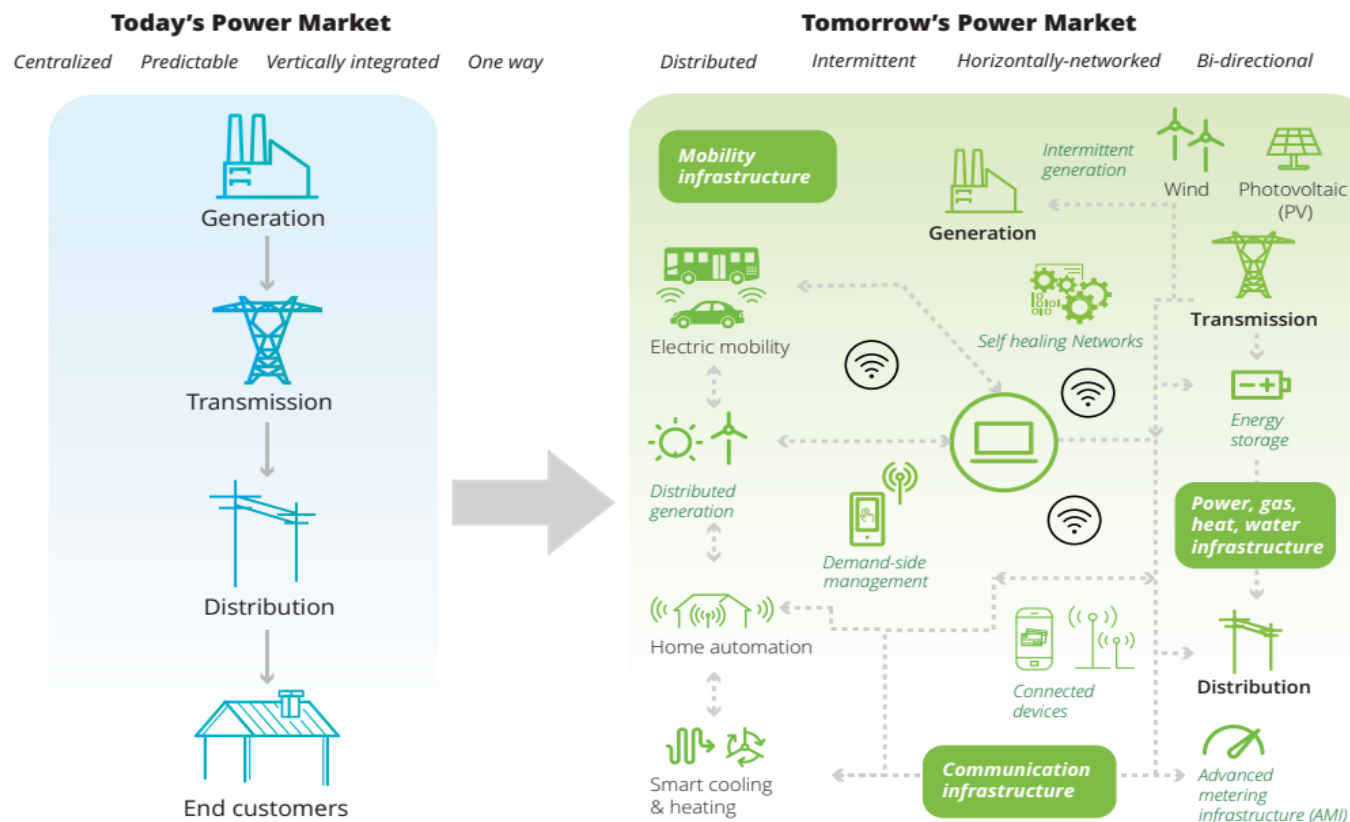
State of the Industry

The utilities industry need to invest in their operations and develop new business models and new technologies

- Pressured by the climate crisis, policymakers and investors, environmental, social and governance (ESG) goals and disclosures will continue to be a top focus for the utilities industry.
- Utilities are making room on their balance sheets for investments in renewables through divestures.
- As climate change continues to manifest, utilities will need to harden infrastructures, attempt to offset costs and maintain the faith of customers.

Changes in the Power & Utility Market

Traditional retail energy utilities in many countries face growing competition from new market entrants



ALONGSIDE COMPETING MORE AGGRESSIVELY FOR FEWER CUSTOMERS AS THEIR TRADITIONAL MARKETS SHRINK, INCUMBENTS FACE AN EVEN-GREATER CHALLENGE OF REPOSITIONING FOR RELEVANCE IN THE TRANSFORMING ENERGY MARKET

NEW DIGITAL AND GREEN ENERGY RETAILERS, TELECOMS AND TECH GIANTS ARE ENCOURAGING MORE RETAIL ENERGY CUSTOMERS TO SWITCH AWAY FROM THEIR TRADITIONAL SUPPLIERS

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TRENDS

Top Utility Trends 2022

1. Sustainability
2. Resiliency
3. Digital transformation
4. Smart grid operations
5. Electrification



Sustainability

Utilities expected to further flesh out decarbonization plans

- **Utilities are trying to thread the decarbonization needle while maintaining reliability and affordability, a difficult task as they boost variable renewables.**
- **Digital skills gaps are widening as the power sector digitizes, mirroring gaps in the broader economy and sparking fierce competition for talent**
- **More utilities will likely announce decarbonization goals and interim targets, increase existing targets, and flesh out their decarbonization strategies with strategic plans for implementation as stakeholder interest grow**

Source: Deloitte 2022 power and utilities industry outlook



Resiliency

Unprecedented weather events driving new resiliency strategies

- **One of the biggest challenges is the cost of resiliency investments, which can be a subject of debate between utilities, state and local governments, and regulators**
- **One critical resiliency strategy is grid hardening, which ranges from replacing and reinforcing transmission and distribution infrastructure to burying wires underground.**
- **Non-wire alternatives are also increasingly common, including distributed energy resources (DER) such as rooftop solar, battery storage, and microgrids**
- **Utility data collection and long-term system modeling, as well as increased collaboration with state and local stakeholders to plan and fund resiliency projects**

Source: Deloitte 2022 power and utilities industry outlook



Digital transformation

5G and cloud could expedite the clean energy transition

- **IoT – 5G can help utilities decentralize energy infrastructure and manage the grid more nimbly as they connect devices and assets through the Internet of Things.**
- **Smart grid modernization, automation, and control – 5G’s low-latency capabilities allow for the adoption of more smart devices and interconnectivity of the grid.**
- **Utilities in the cloud – 5G helps drive cloud adoption, which can improve efficiency through always-on availability and faster access to more data, assets, and systems**
- **Cybersecurity compliance considerations – As utilities integrate a cloud infrastructure across their IT environment, 5G can assist in integrating operational workloads, such as Bulk Electric System Cyber System Information (BCSI).**
- **Digital twins – Digital twins allow utilities to visualize and control resources from an interactive one-to-one map. High-speed 5G data transmission can improve response times and overall system management**

Source: Deloitte 2022 power and utilities industry outlook



Smart grid operations

Utilities increasingly turning to flexible load programs

- **Energy efficiency and demand response programs are beginning to transform into real-time flexible load offerings that could become a cornerstone of utility resource planning, cost reduction, decarbonization, and resiliency strategies.**
- **Flexible load programs will likely continue to grow in the coming year, with increasing deployment of distributed energy resource management systems (DERMS) and advanced distribution management systems (ADMS) to manage resources.**
- **The value of load flexibility will likely rise as renewables penetration increases and the economy continues to electrify energy end uses.**

Source: Deloitte 2022 power and utilities industry outlook



Electrification

Building electrification is already impacting utility planning

- **Additional energy storage will likely be needed as well, both in front of and behind the meter.**
- **Utilities will likely continue to develop new rates and implement flexible load programs to incentivize behavior.**
- **More utilities will likely reconsider maintenance schedules for assets that may be utilized for more of the year and therefore potentially have shorter life cycles**
- **In the long run, many utilities see electrification as a way to increase electricity sales while reducing customer bills since the cost of system upgrades would be spread across a broader base.**

Source: Deloitte 2022 power and utilities industry outlook

An Industry in Transition

Structural Transformation

Prosumer

- New consumer technologies are changing the physics of the electric distribution grid (Solar, wind, electric vehicles, energy storage)

Regulatory Compliance

- State renewable Mandates,
- FERC Order 2222,
- US Infrastructure Bill,
- DNO to DSO in Europe/Global

Global/Societal Trends

- Decarbonization & Electrification,
- Net-Zero Targets for 2050

Digital Transformation

Streaming “big data”

- 1M Meters with 7 tags, read at 15-minute intervals = 1B measurement reads/day
- Joined with disparate OT and IT data sources

Data Management

- Alignment, normalization, asset relationships, etc..

Data Governance

- Versioning, role-based security, traceability, etc.

Real-time Actionable Information

- Enterprise-wide *single source of truth* containing the *best available data* with *configurable business analytics* to support *in-game* operational decisions

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