



Integrated System Planning

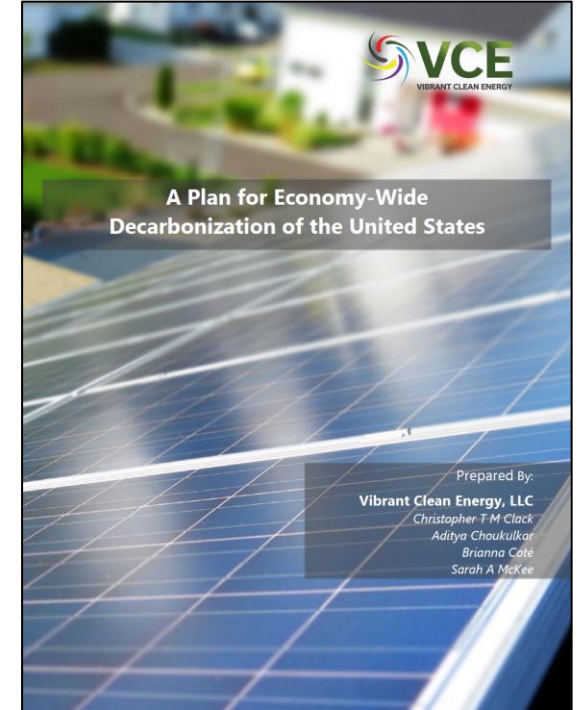
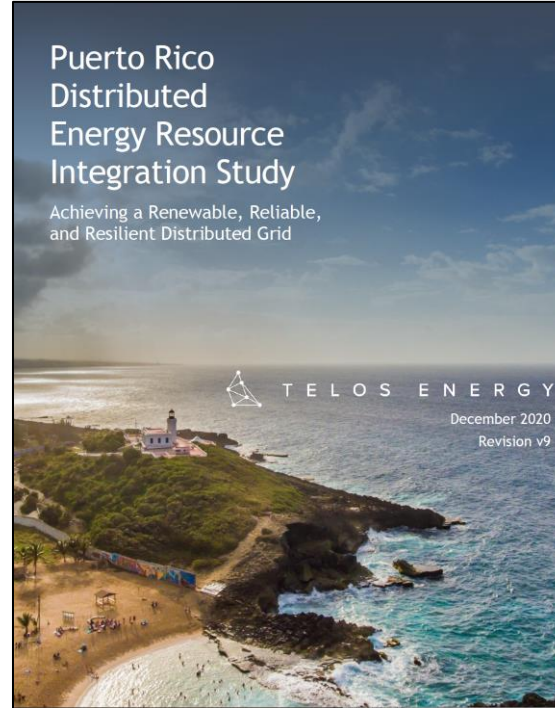
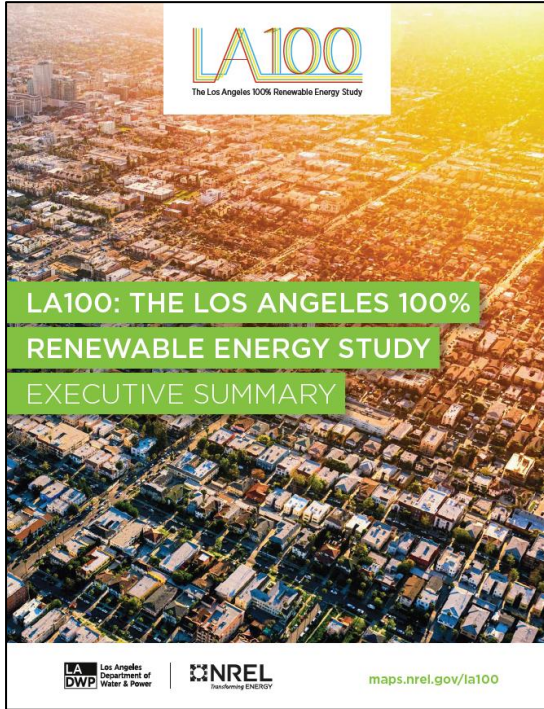
A Distributed Energy Resource (DER) Perspective of Process, Capabilities and Data

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ESIG Spring Technical Workshop
March 27, 2024



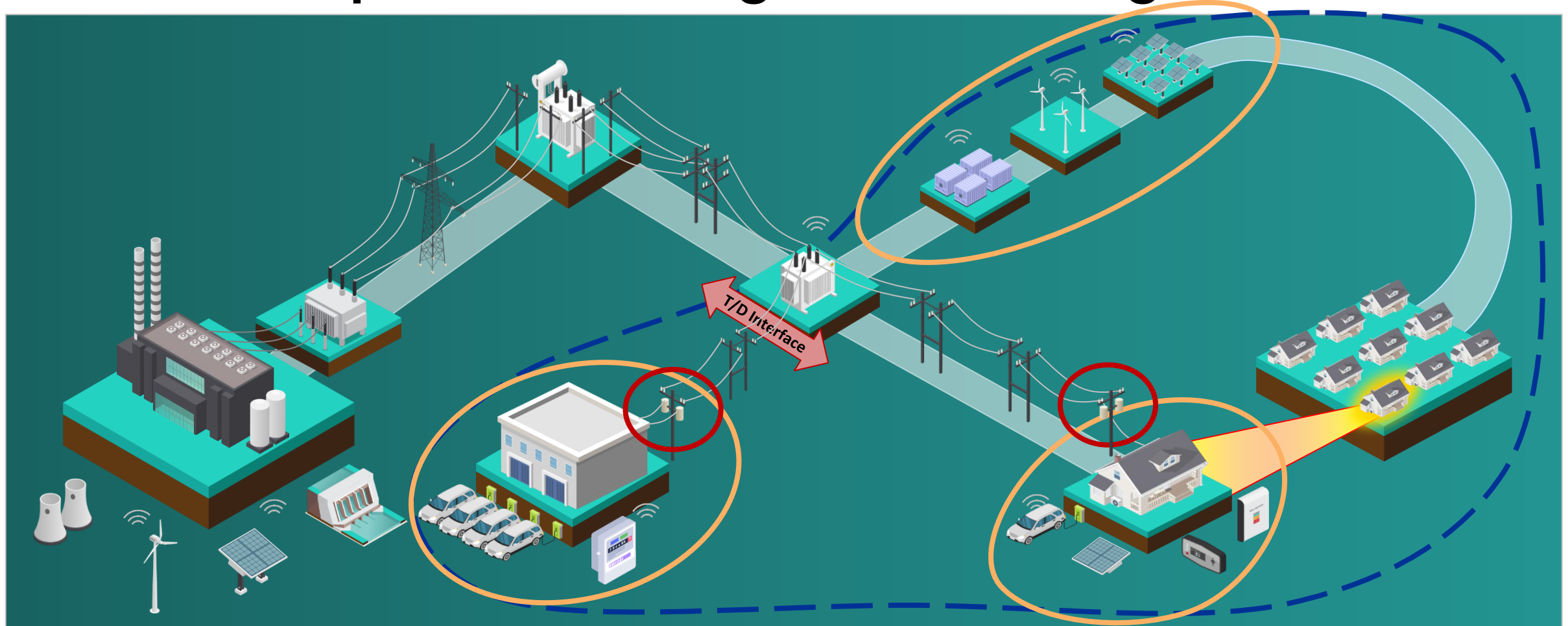
Summary of Distribution Inclusive Studies



Consensus

- There is value in optimizing bulk & distribution resources

The DER Perspective of Integrated Planning



Common to GTD

- Increasing customer engagement
- Increasing complexity
- Increasing peaks and valleys

Unique to Distribution

- Interconnects with the customers
- Quantity of equipment
- Low visibility of the system

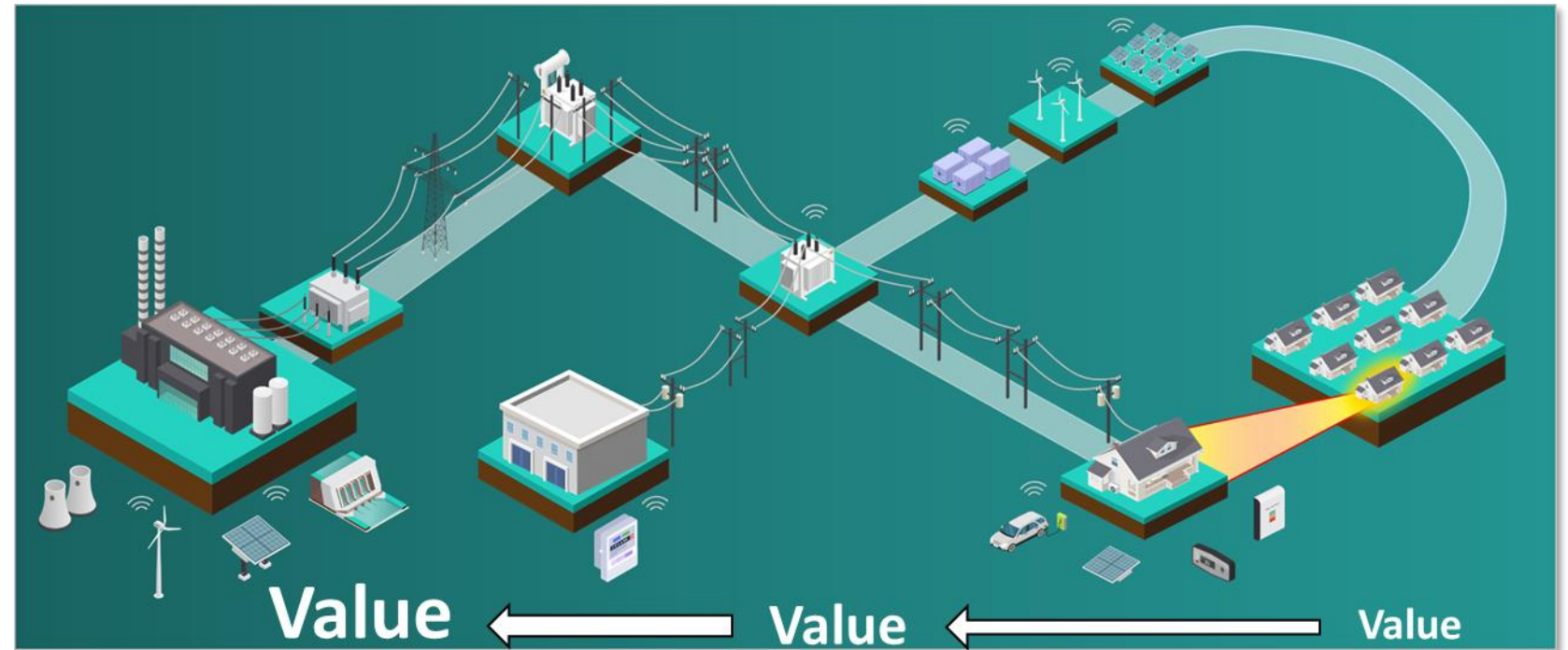
Integrated Planning Outcomes



*Grid integrity includes system reliability, resilience, power quality, safety, security (cyber, physical), and agility.

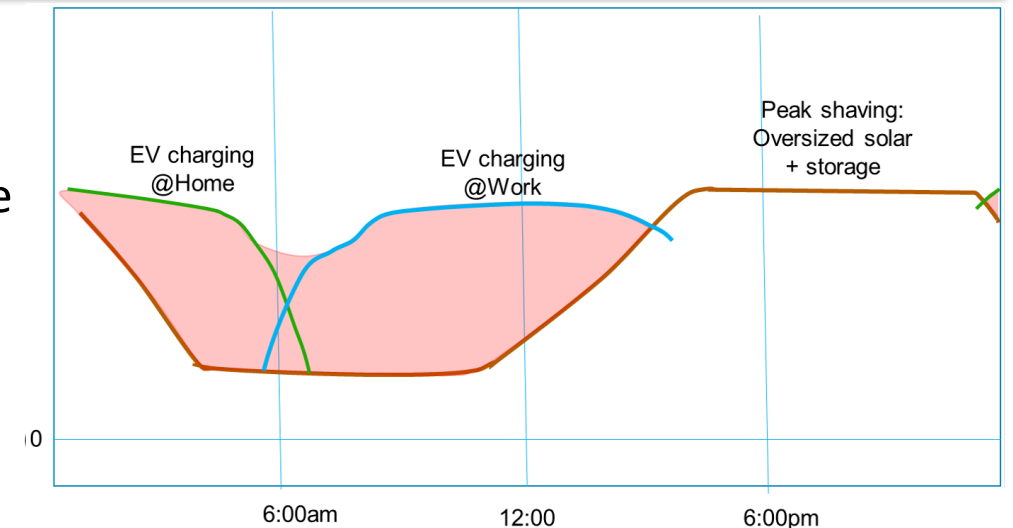
Value of Distribution Located Resources

- Maximize value of G,T,D infrastructure:
 - Peak shaving
 - Managed electrification
 - Value layers
 - Lower rates
 - **Keeping customer engaged**
- Strategic deployment
 - Technology
 - Place
 - Time

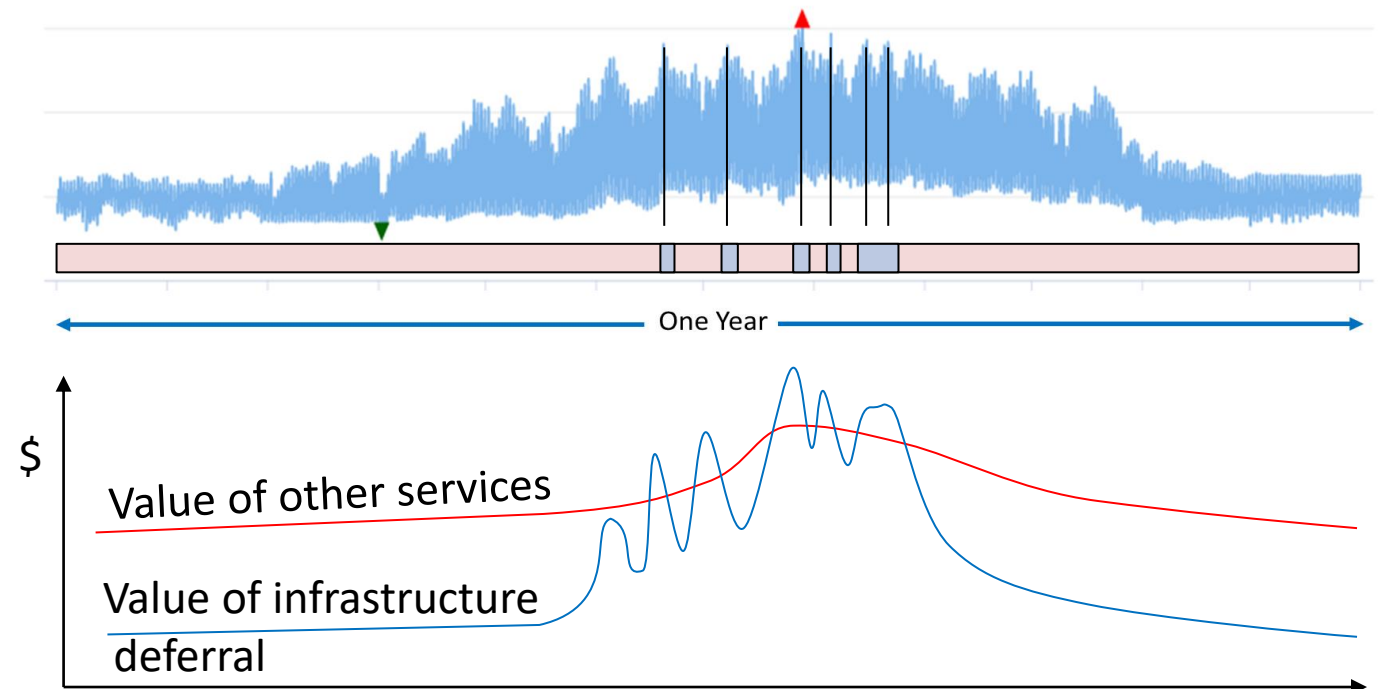
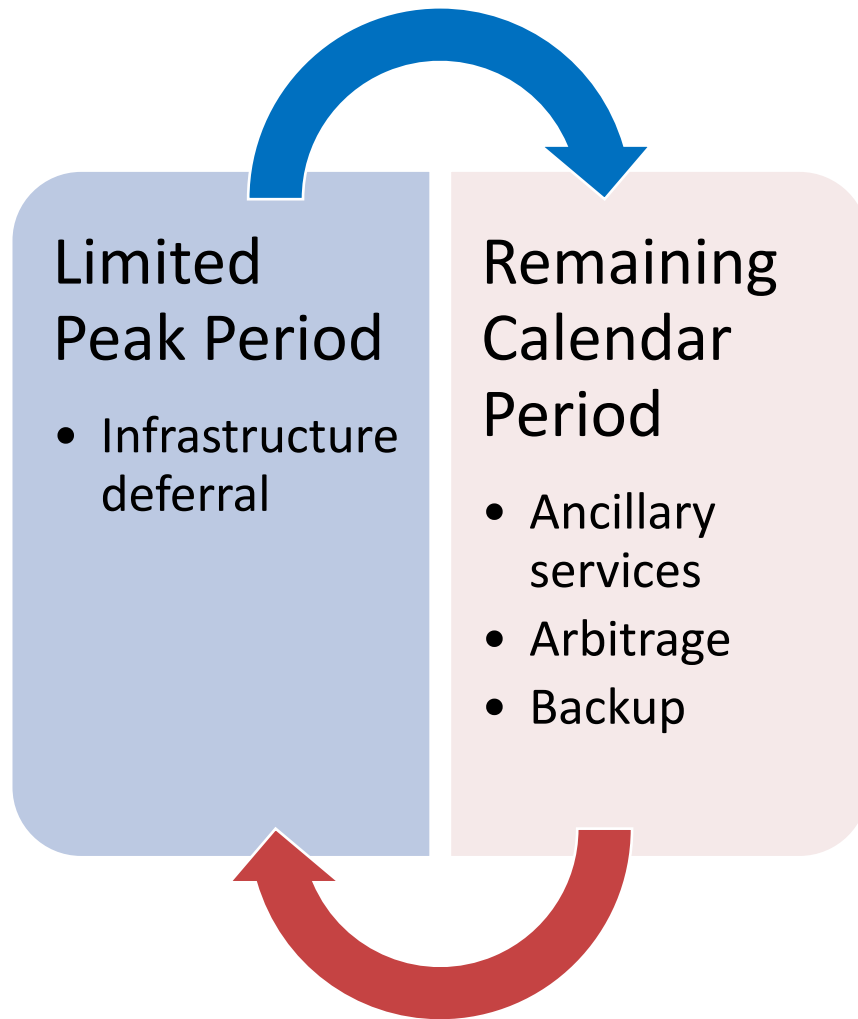


Example:

- Strategic solar and storage
- Managed charging



Temporal value layers of distributed storage

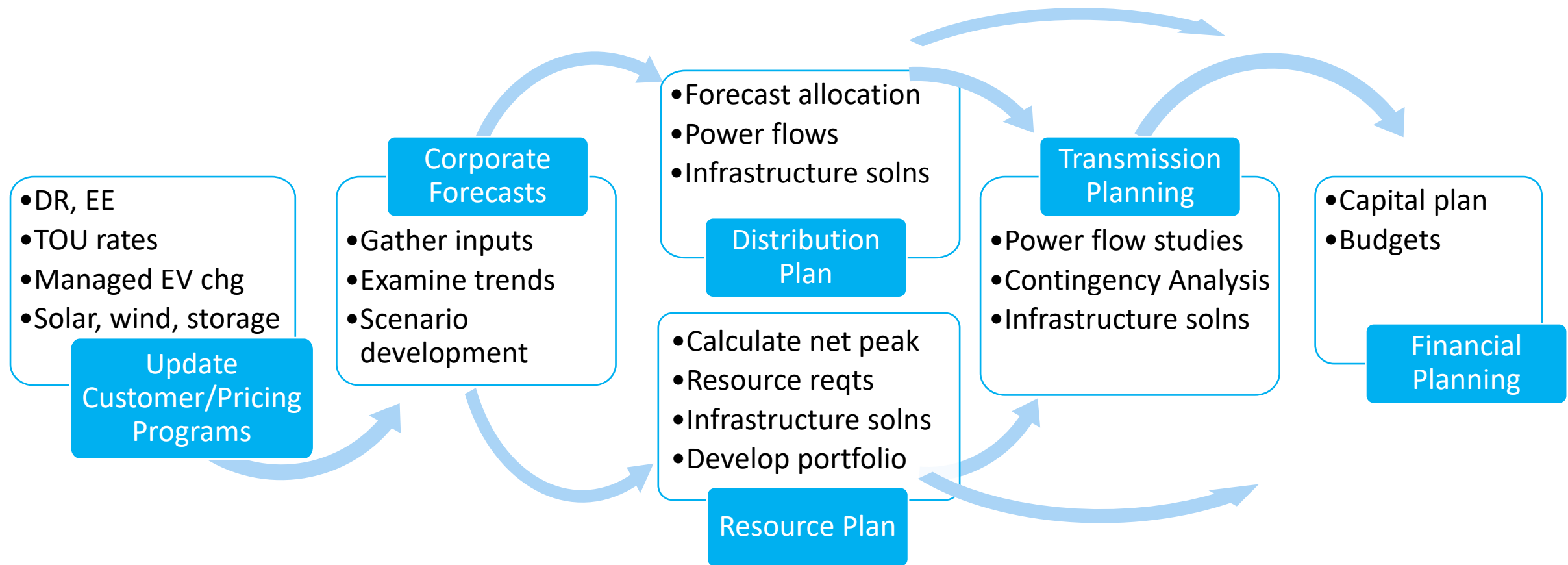


Maximizing the value of solar and storage



Integrated Planning – A Distribution Perspective of Process, Capabilities, and Data

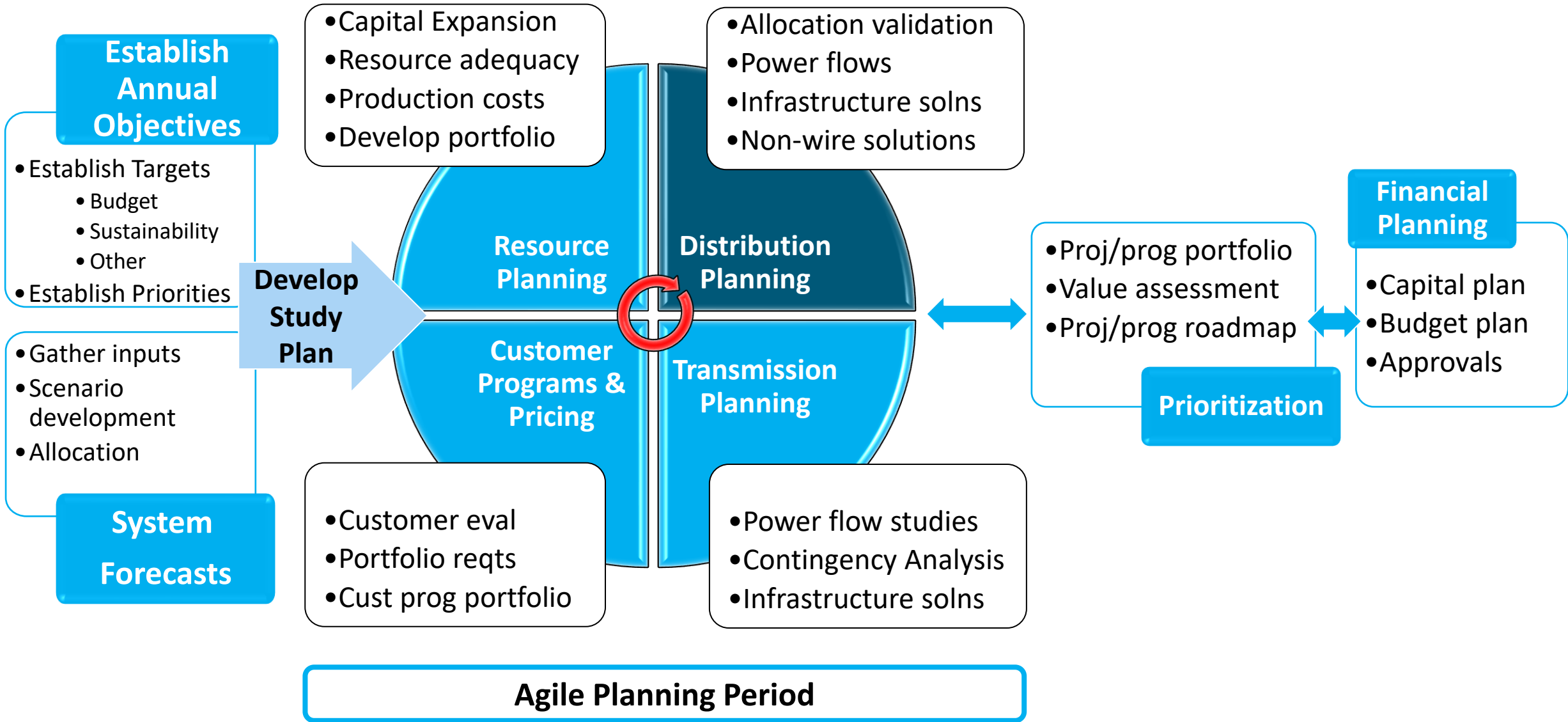
Current Annual Planning Process



2+ Years End to End

Series of Handoffs

Integrated Annual Planning Process



Advanced Distribution Planning Capabilities



Unique Demographics

Identify & map
Geographic
value maps



Locational Forecasts

Bookends
Load & gen
Disaggregated



Multiple Scenarios

Filtered
Compared
Success
probability



Measure Impact

For any hour
Iterations



Optimize...

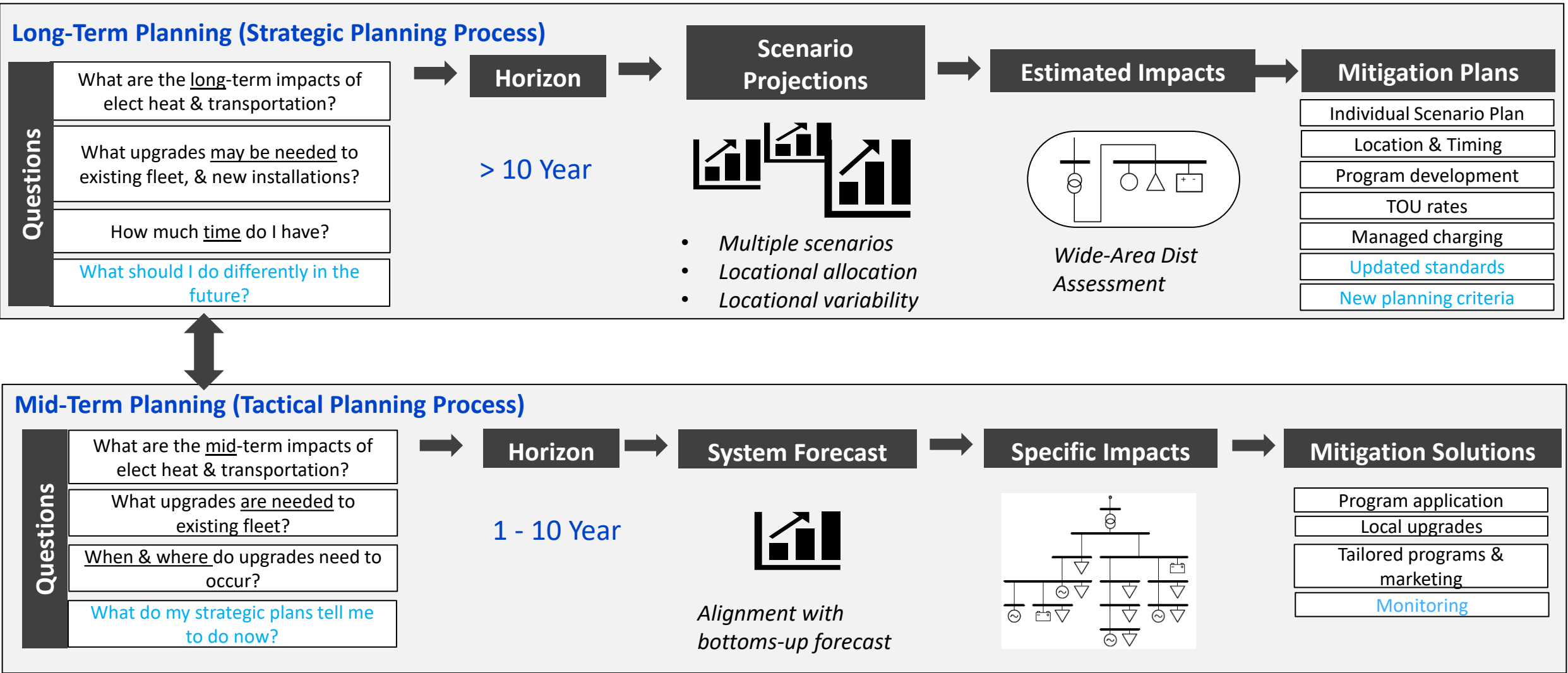
Mitigation
solutions
Innovation



Measure Performance

New metrics
Granular

The Process of Dx Rightsizing for Electrification (Strategy and Implementation)



Key Insights

- Mid (1-10 years) and Long-term (>10 years) planning requires new forecast and analytic capabilities
- Requires a deeper understanding the customer
 - Modeling behavior and influence
- Improved modeling and intersystem analytics
 - Streamline, automate, and integrate
 - Better efficiency and optimization
- Modern Grid is a key enabler (visibility & control)





TOGETHER...SHAPING THE FUTURE OF ENERGY®

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