Grid to Prosumers: Solutions for the New Energy Landscape

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The industry is facing significant disruption

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Leading to major industry initiatives

Reliability & Resilience

Operational Efficiency

Sustainability

Flexibility

Mitigate power disruptions

Optimize resources & operations

Minimize ecological footprint

Maximize grid adaptability

Utilities are under pressure to operate more efficiently while modernizing the grid & delivering improved service

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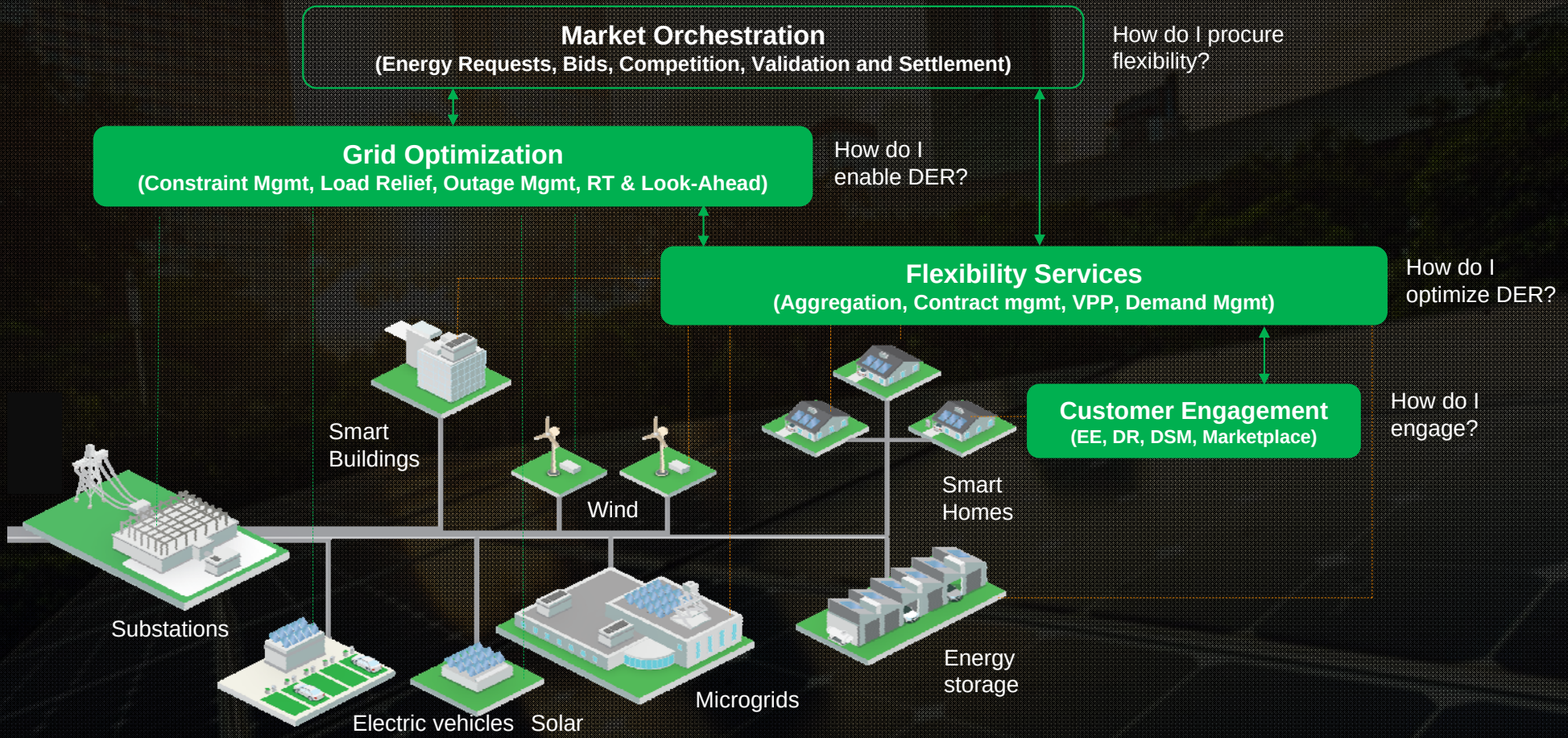
Evolving complexity of the energy value chain



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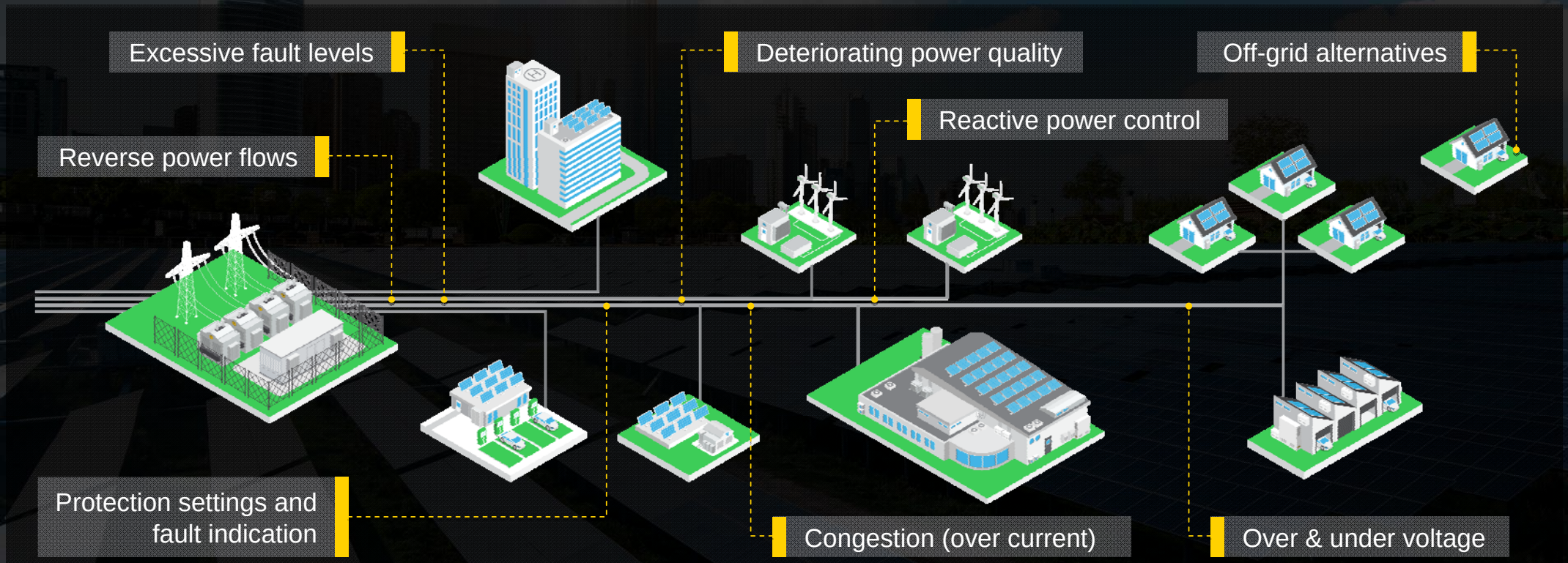
Causing grid operational constraints

DER can exceed network limits and cause risks to system safety, reliability & quality



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Requiring new ways to optimize supply and demand

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Managing the Lifecycle of the Grid

Foundational, stepwise, cybersecure digital transformation & grid data management

Graphic work design

Grid planning
DER analysis
Investment planning

Plan

Design

Build

Geospatial asset management
Mobile work management

Customer engagement & Demand-side management

Engage

Monitor

Data hub
Device management
Meter data management
LV analytics

Operate

Optimize

Maintain

Asset health & maintenance

Advanced distribution & transmission management

Grid flexibility
DER management

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Enterprise solutions for the Grid of the Future

Digitalization, optimization & automation for flexibility, resiliency & risk mitigation

ArcFM

Geospatial design, construction, as-built info management

Grid Asset Advisor

Asset health, maintenance & management

ADMS

Realtime and look-ahead operations and planning

DERMS

Optimization of DER to maximize grid flexibility

Grid Metering

Data hub, Meter data mgmt and analytics

Energy Profiler Online

Customer engagement, energy efficiency &

Realtime & Analytics, OT & IT, Planning & Ops, CapEx & OpEx, On-prem & Cloud

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Investing in innovation and collaboration

Organic R&D
Across the portfolio

Partnering
Microsoft, Esri

Innovation projects
DOE, EPRI, ARENA, Ofgem

Incubating bold ideas
Grid Operations-aaS

Equity ventures
AutoGrid, Uplight, Aplines

Acquisitions
OSIsoft, ETAP

Strategic Investments

AutoGrid
APLINES
uplight
OSIsoft.
etap

Strategic Partnerships

Microsoft
esri

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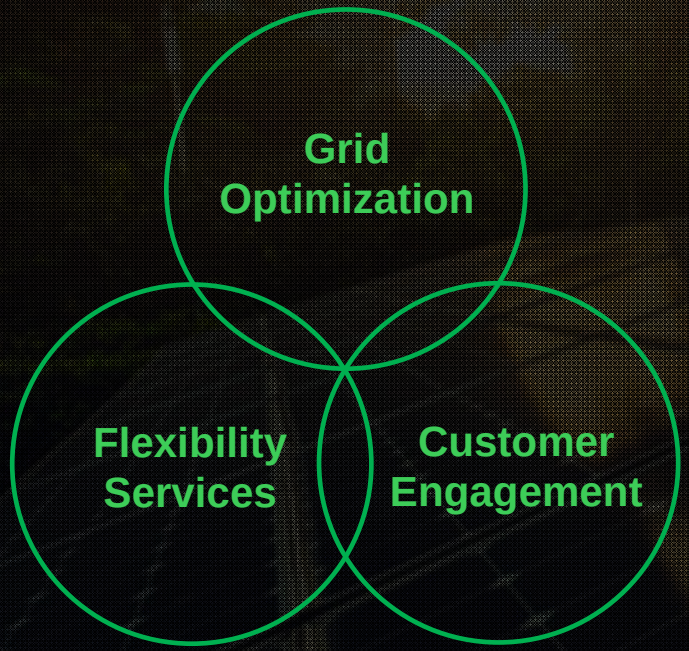
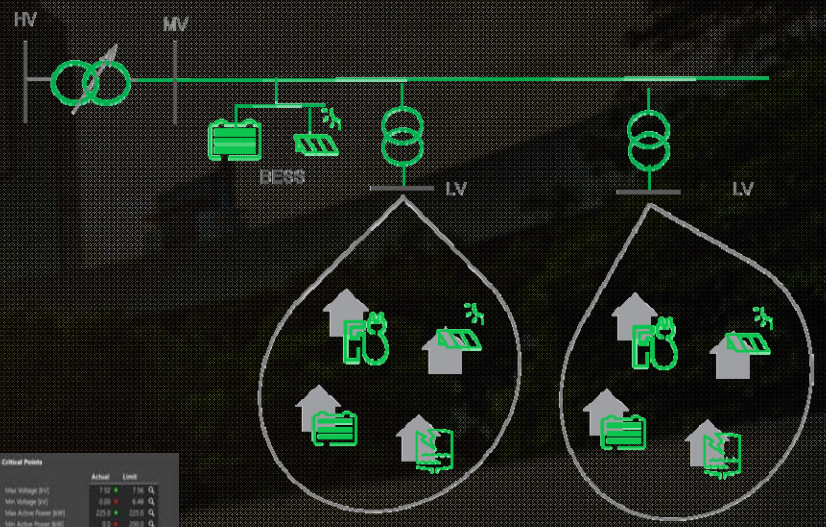
Comprehensive DER management

Increased grid flexibility and maximum DER integration

- ✓ Providing situational awareness
- ✓ Optimizing planning & operations
- ✓ Enabling more DER connections
- ✓ Facilitating new types of grid services





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DER management capabilities providing grid flexibility

Monitoring & Visibility

- Behind-the-meter DER awareness

Hosting Capacity

- Location dependent grid capacity

Connections Assessment

- Simulation analysis of new connections

Planning Scenarios

- Optimization options vs reinforcement

Look-ahead Operations

- Mitigate predicted network constraints

Realtime Operations

- Mitigate constraints as the occur

Demand Management

- Flexibility to manage system demand

Active Network Management

- Utilize flexibility markets to gain access to dispatchable resources

Dynamic Operating Limits

- Upper and lower limited via advanced analytics

Virtual Power Plants

- Peaker plant replacements

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EcoStruxure DERMS providing grid flexibility

DER Monitoring

•Behind-the-meter DER awareness

Demand Management

•DER flexibility to manage system demand

Dynamic Operating Limits

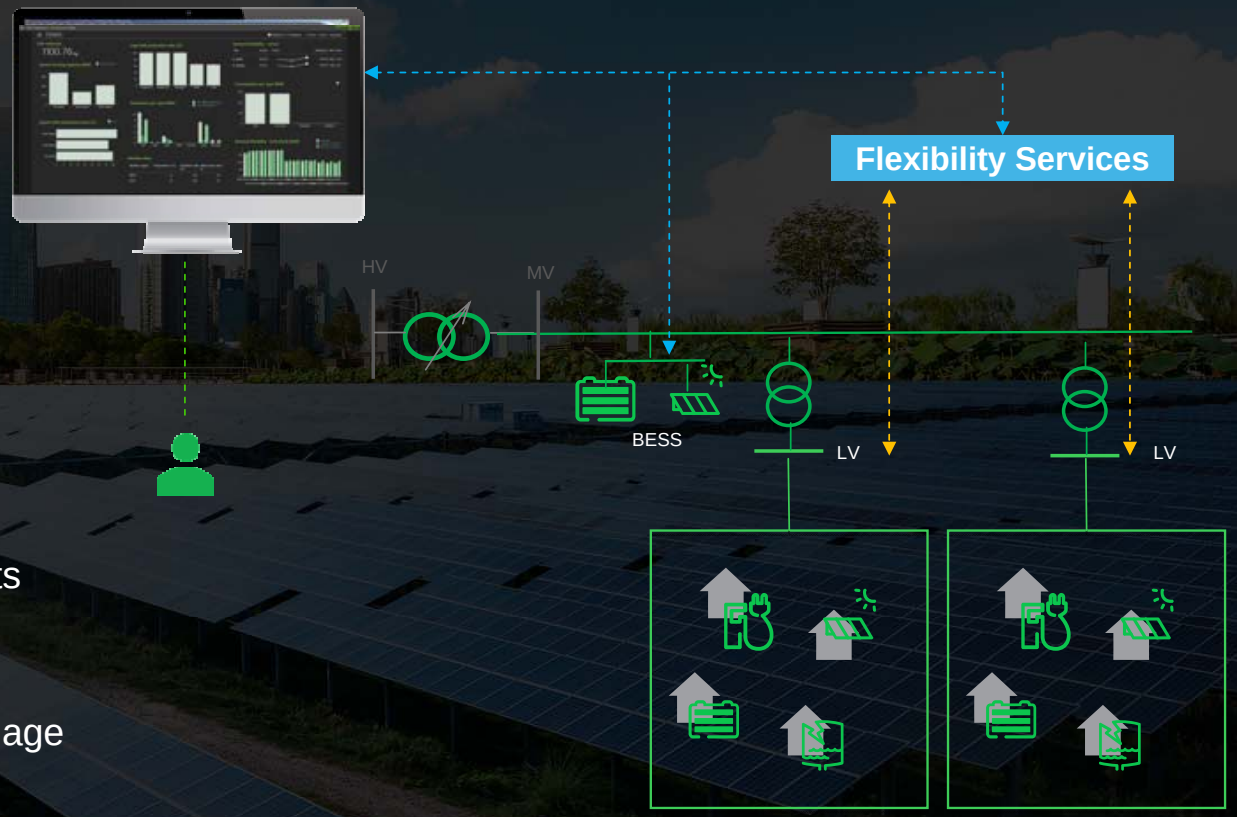
•Calculate DOE when optimizing DER operation

Look-Ahead Operations

•DER flexibility to prevent predicted network constraints

Active Network Management

•Utilize behind-the-meter DER flexible services to manage network constraints in real time



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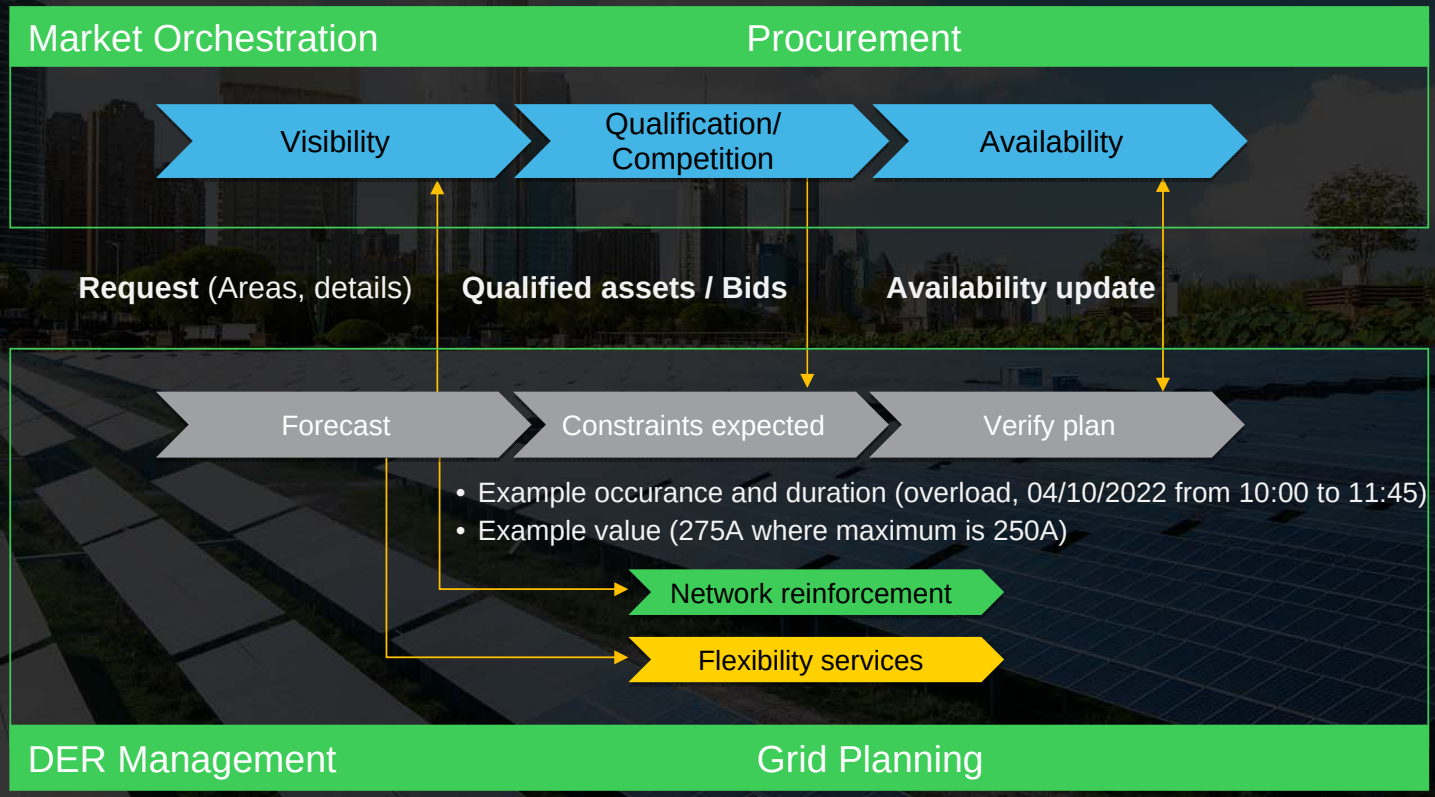
Procurement with flexibility market

Address overload and voltage constraints



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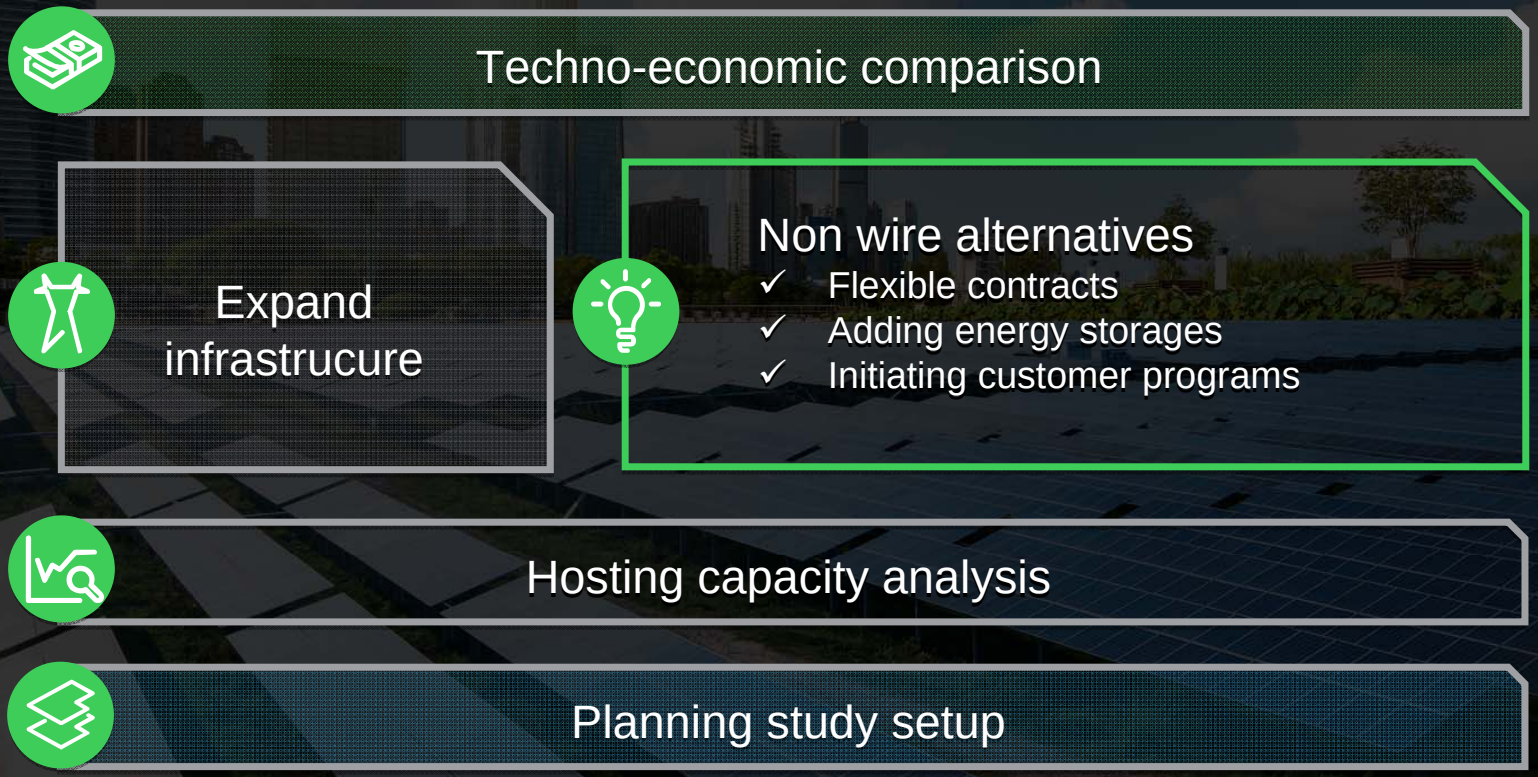
Planning for non-wire alternatives

Use DER flexibility to enlarge grid capacity



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DERMS example projects across geographies

Active Network Management

electricity north west

Market Optimization

EVOENERGY

100 MW Challenge

western power

SE Microgrid Integration

SA Power Networks

Single Phase Cap Bank Control

aps

Microgrid Dispatch

PECO.

Energy Storage

CEMIG

EV Charging

Stadtwerke Düsseldorf

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Cliente: Cemig – Piloto DERMS P&D 649

Definir métodos e ferramentas para promover a integração adequada de Recursos Energéticos Distribuídos (REDs) ao Centro de Operação e Controle da distribuidora, de forma a reduzir os impactos dos REDs, melhorar a qualidade do fornecimento e a confiabilidade do sistema elétrico de distribuição

"Estudo de Caso em Rede de Distribuição Real, contemplando um número limitado de subestações/alimentadores e REDs de propriedade da Cemig e de clientes, bem como o desenvolvimento de um plano para expansão futura do gerenciamento de REDs, abrangendo todo o sistema de distribuição".

Casos de Uso:

•Gerenciando as restrições de capacidade dos equipamentos
•Mitigar problemas de tensão
•Flexibilidade Operacional
•Cargas mascaradas/fantasma
•Otimização Operacional
•Mitigação de Incidentes

DERMS instalado!

- Integrações com sistemas corporativos
- FAT, SAT realizados
- Sistema em Operação
- Início do Período de Avaliação

Expansão dos Sistema em negociação

Apresentado no Cigré 2022 - Paris

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