

Host Utilities



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India SMART UTILITY Week 2025

Session : POWER SYSTEM FLEXIBILITY AND DERMS

Theme Presentation: Evolution of the Grid

Presented By

TERRY MOHN, CHAIR, AUSTRALIAN MICROGRIDS CENTRE OF EXCELLENCE



THERE IS NOTHING
SO STABLE AS CHANGE.

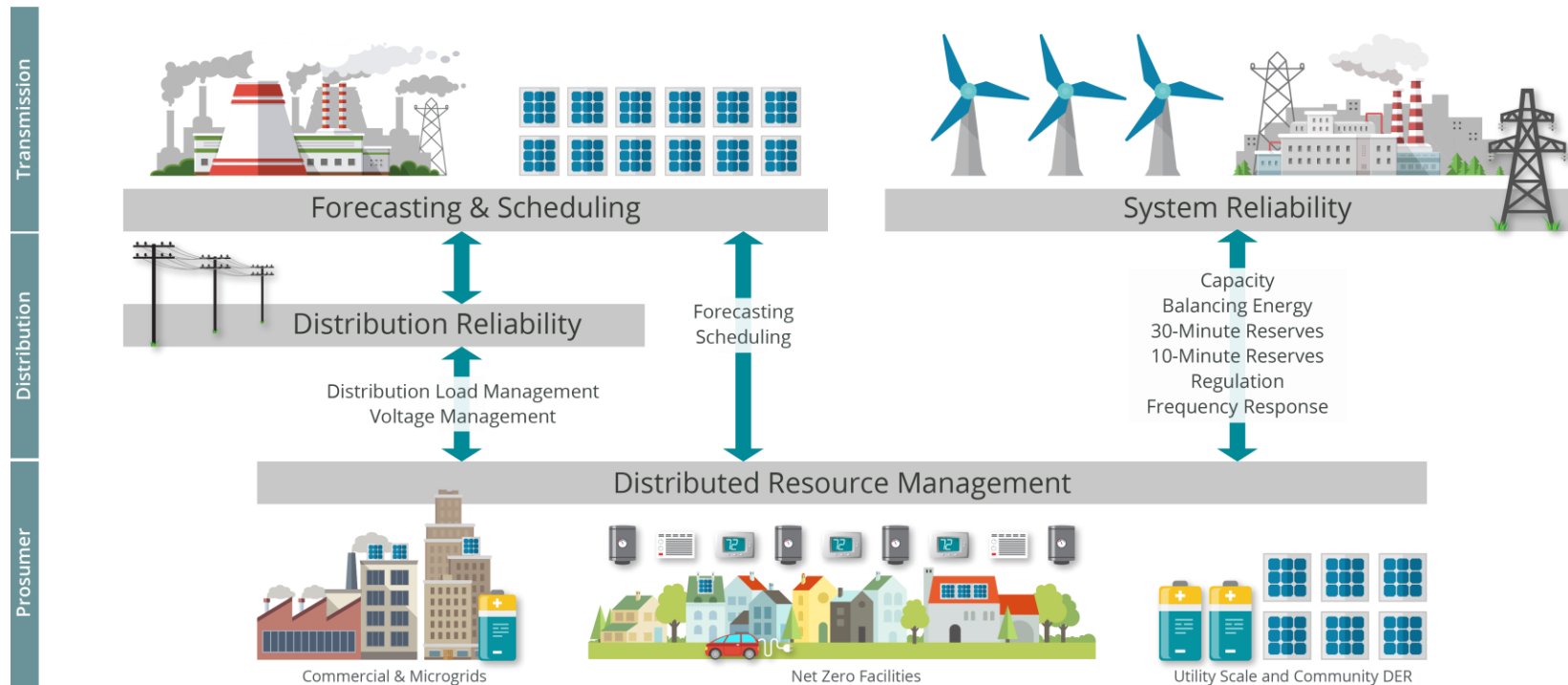
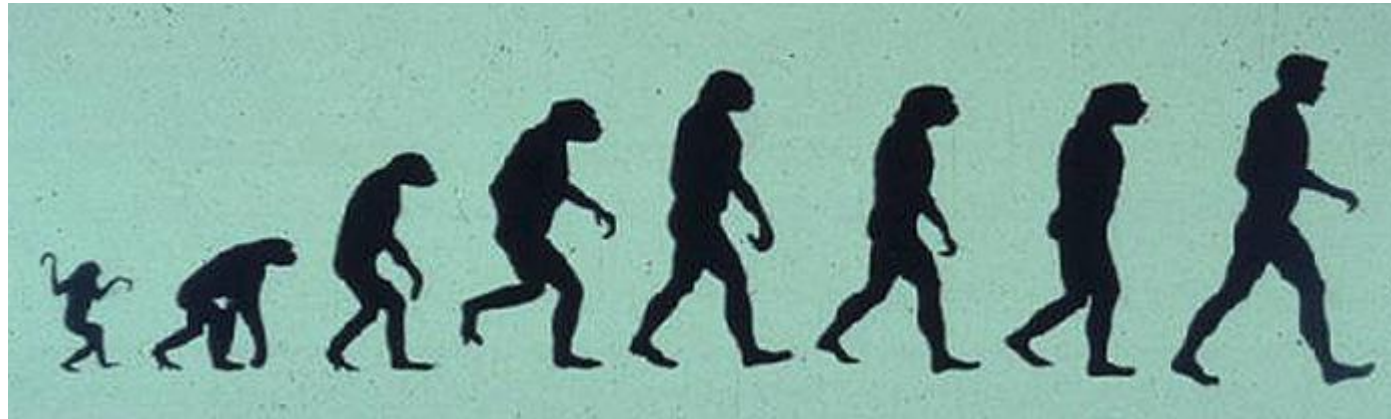
BOB DYLAN

INTRODUCTION: A perspective in evolution



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- Transitioning from Analog Grid to Smart Grid
- Introducing Large-Scale renewable energy resources
- Introducing outsourced demand response, power purchase agreements, non-wires alternatives
- Increasingly complex IT/OT environment
- Customer-owned generation, storage, resources
- Localized resource areas (pockets of instability): neighborhoods, circuits
- Export abatement
- DERMS and beyond



- High-concentration of DER
- Utility DERMS
- Transactive Energy
- Distribution System Operators
- Isolated Microgrids
- Federated Microgrids
- Utility Competes with Microgrid Operators

EXAMPLES OF WHY MICROGRIDS DEVELOP

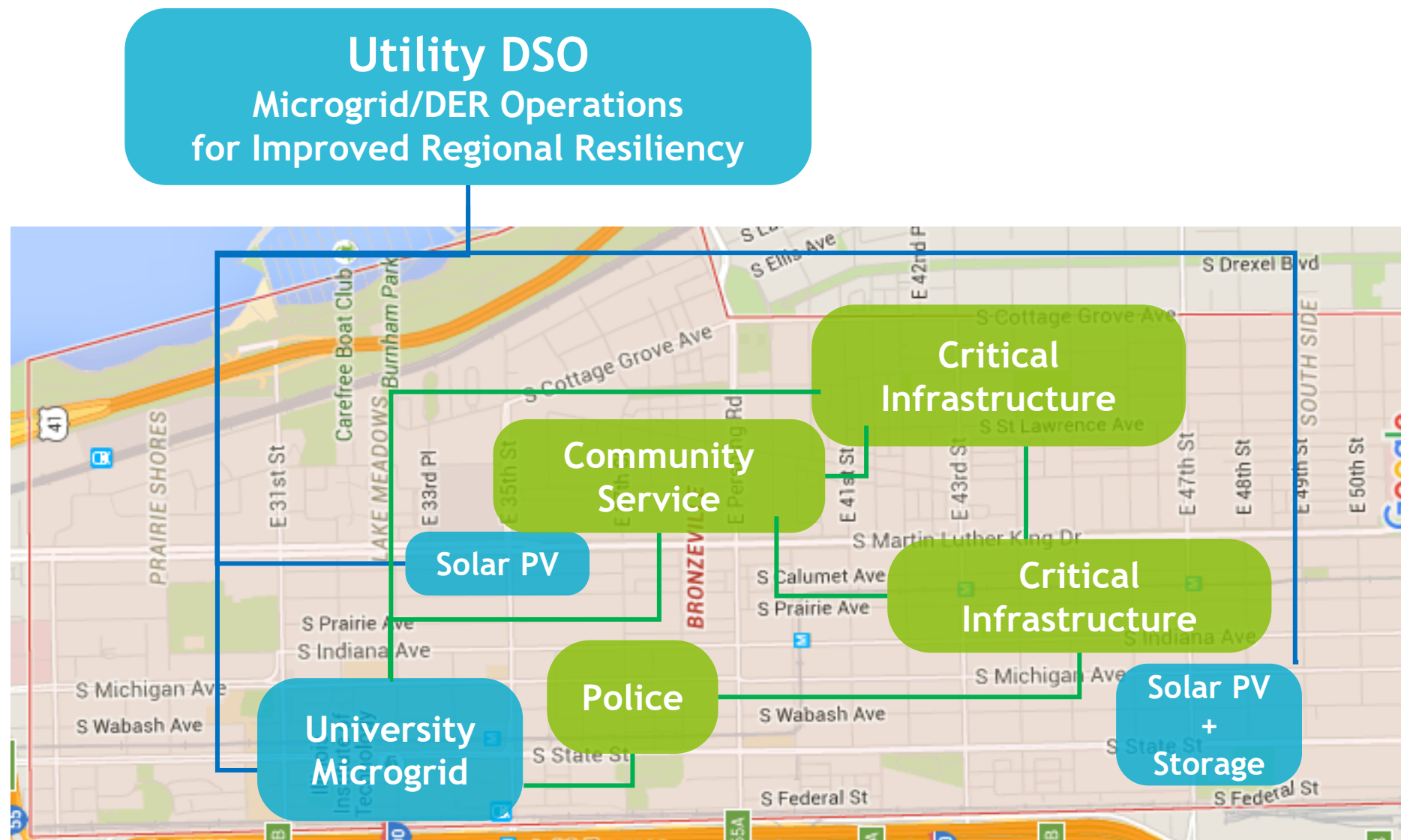
- 1st – critical infrastructure
- Examples: airports, seaports, first responders, military bases, data centers
- Next – localized boundary areas
- Examples: neighborhoods, strip malls, college and office campuses, hotels

Utility Coordinated Microgrid/DER



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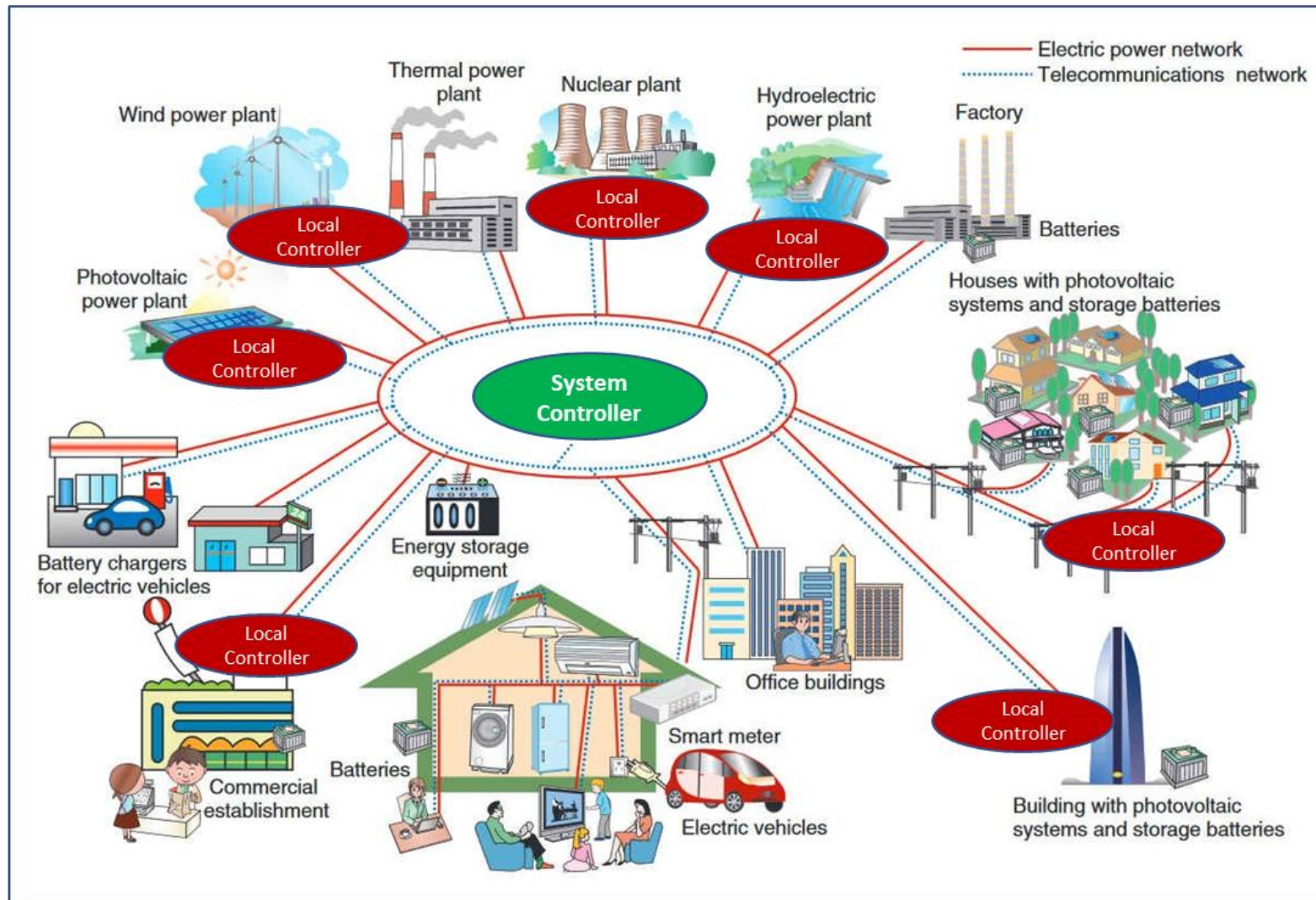


A Scalable Control Architecture for a Modern Power Grid



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Large Collection of DER



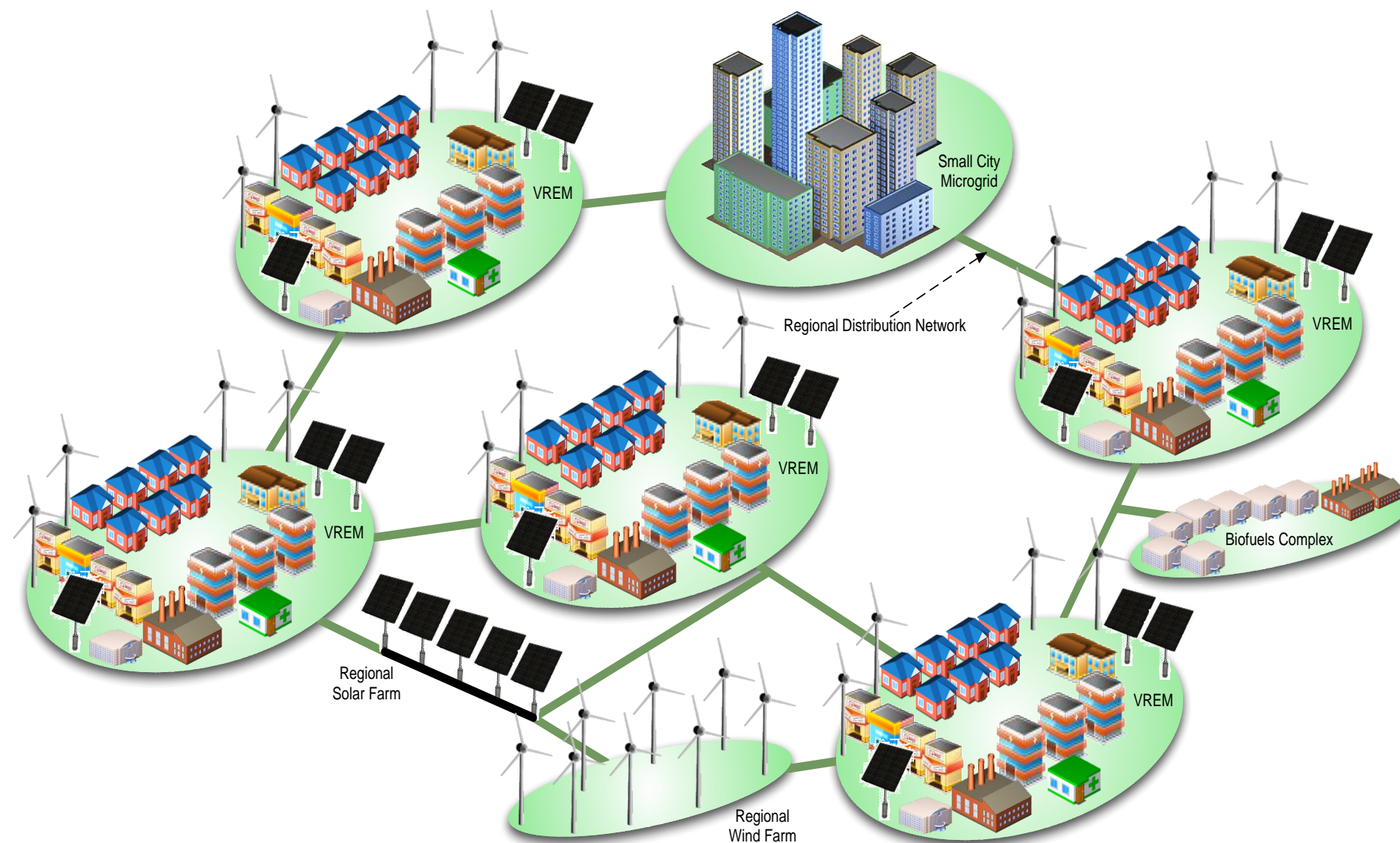
Utility
DERMS

Small Collection of DER



- Microgrid
 - VPP
 - Aggregated Mix of DER
- Large solar/wind
 - Many like DER
- Reshape power/demand profile to transact energy

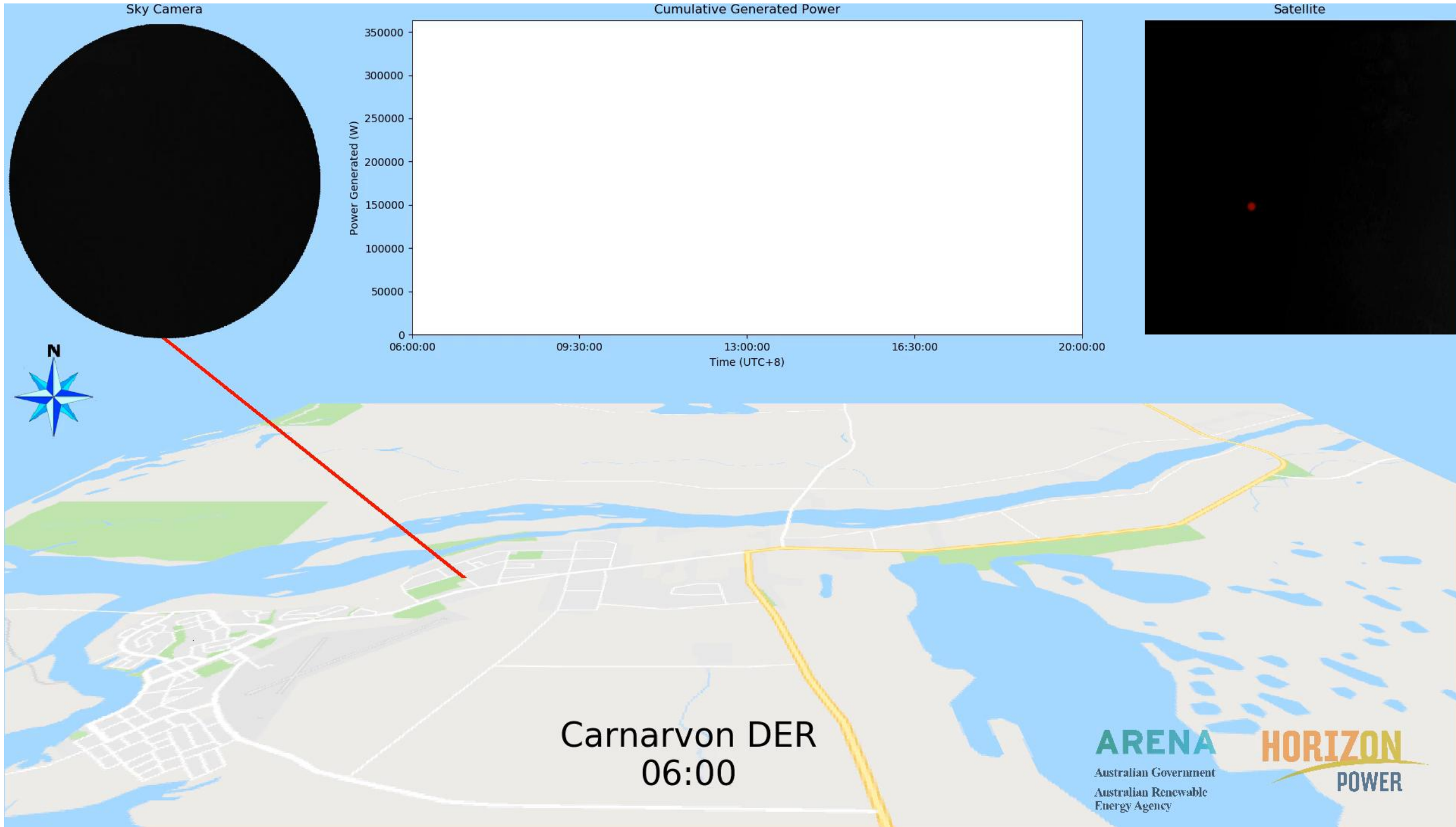
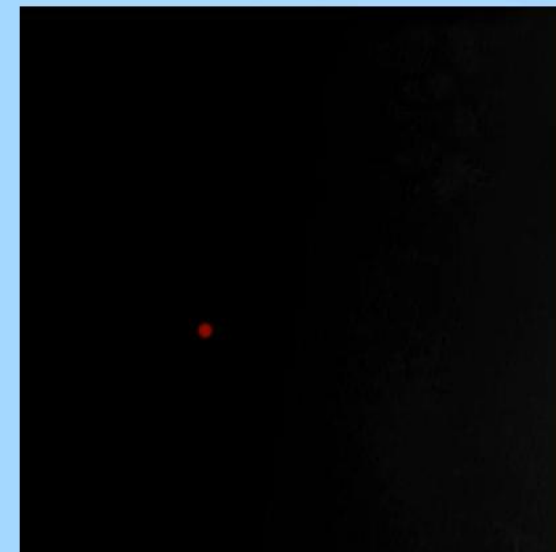
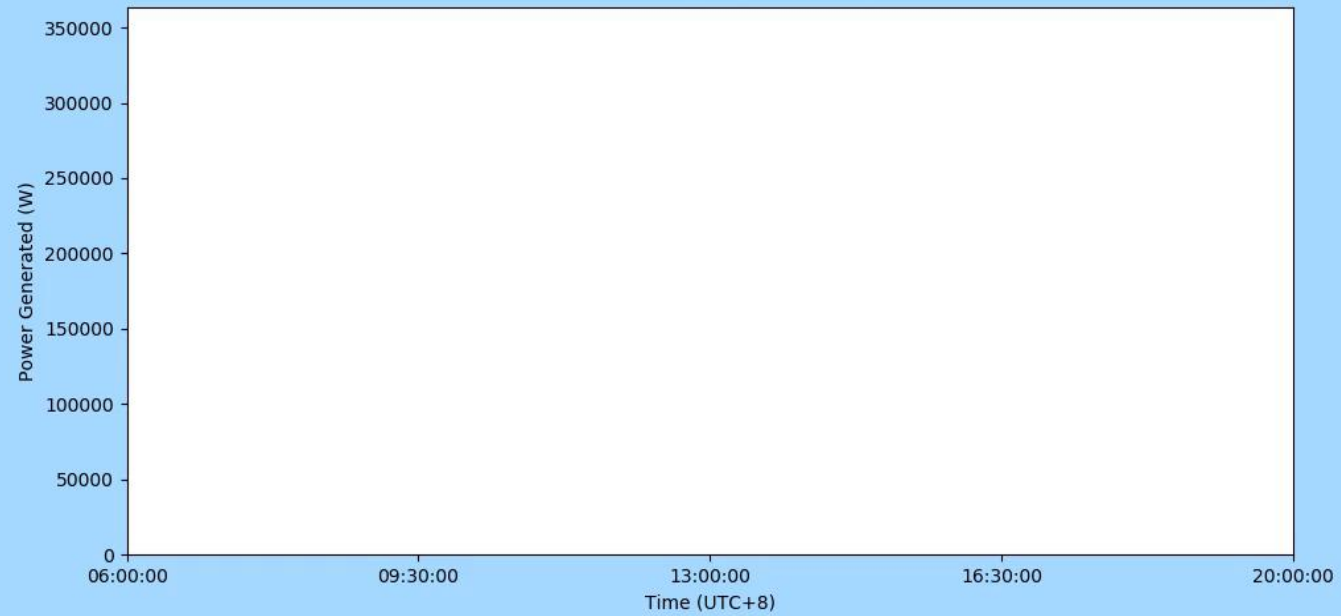
Federated Microgrids



Sky Camera

Cumulative Generated Power

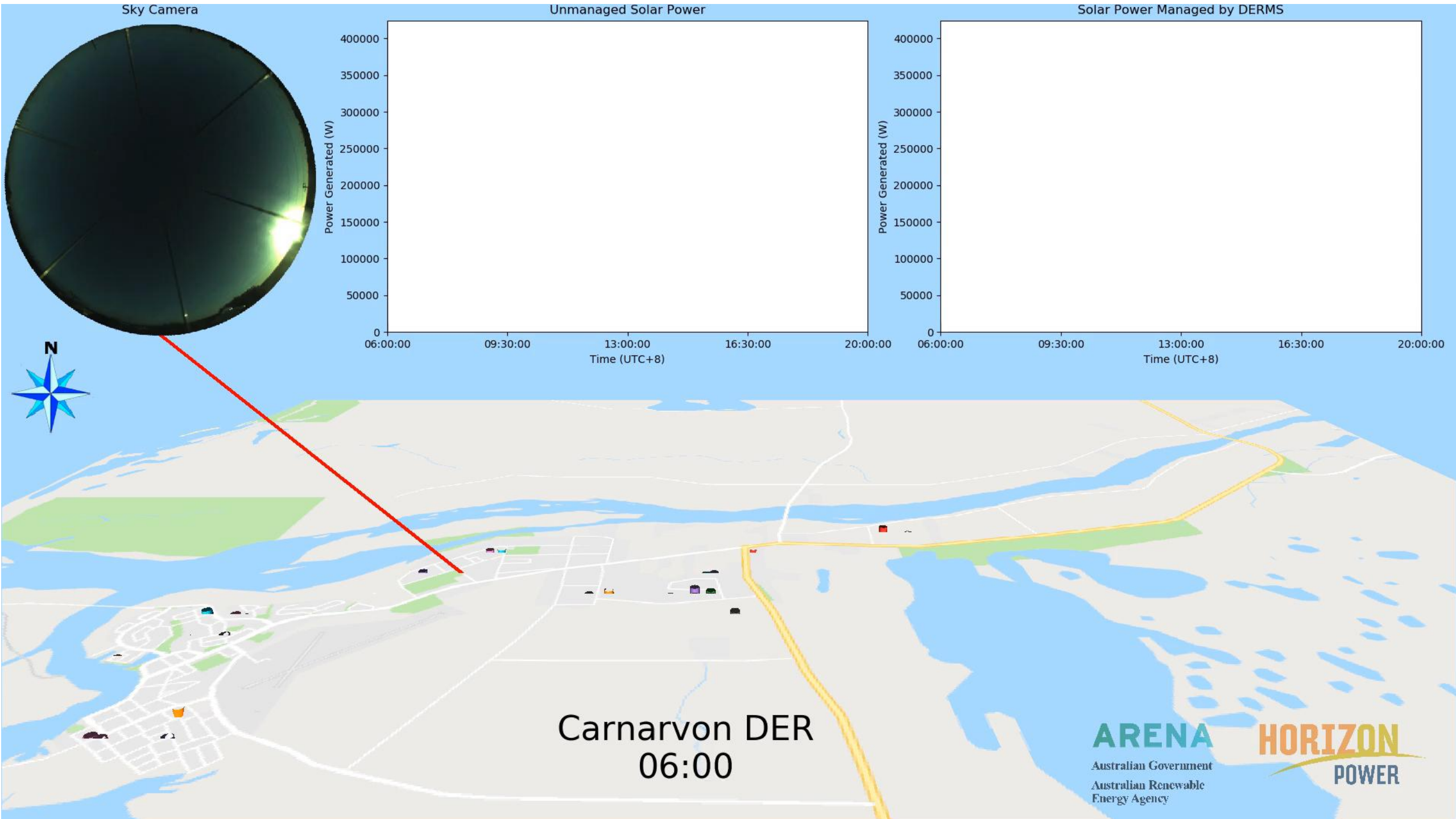
Satellite



Carnarvon DER
06:00

ARENA
Australian Government
Australian Renewable
Energy Agency

HORIZON
POWER





Onslow, WA - Youtube video

- https://www.youtube.com/watch?v=m3glvLZt_Kc



Onslow DER Microgrid



What customers think we're doing



What Government think we're doing



What we think we're doing



What we're actually doing



- World class innovation centre
- Global source of expertise
- Public and private stakeholders
- Industry-driven
- Not-for-profit organization

NEXT MARCH/APRIL:
Major Microgrid Conference in Indo-Pacific

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THANK YOU

For discussions/suggestions/queries email: isuw@isuw.in

www.isuw.in

https://www.youtube.com/watch?v=m3glvLZt_Kc