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Quantifying the value of interconnection between islanded Minigrids for universal electrification

SC C6 - Distribution Systems and Dispersed Generation PS 3 - Intelligent electrification for all Off-grid electrical systems for remote and rural deployment

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Electricity access is not Binary

How do people move up the energy access tiers?

	Tier 0	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
Capacity	No electricity	1-50W	50-500W	500-2000W	>2000W	
Duration	<4hrs	4-8hrs		8-16hrs	16-22hrs	>22hrs
Reliability		Unscheduled outages			No unscheduled outages	
Quality	Low quality			Good quality		
Affordability	Not affordable			Affordable		
Legality	Not legal		Legal			
Health & Safety		Not con	venient		Convenient	



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Domestic Load Profiles



Demand Diversity



















Grid 1





Grid 1 reliability (Hours failure per year)	Grid 2 reliability (Hours failure per year)			
No Interconnection				
211.48	6.37			
Interconnected at 380VC over 100m				
23.88	5.89			

Grid 2







- Demand (Total, profiles over year)
- Generation (Total, profiles over year)
- Battery (state of charge, utilisation)
- Despatchable generation (utilisation, energy served)
- Expected Energy not Served
- System reliability
- Interconnection (Utilisation, energy transferred)



- Work with BBOXX and other companies to develop and apply methodology
- Expand methodology to meshed networks
- Apply optimisation to enhance use as planning tool

Questions?