

Open DC Grid Project

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Agenda

- * Pirl
- * Urban Electricity Access
- * Related Standards / Industry Developments



Life Under the Wire



Power Theft



India



Lebanon



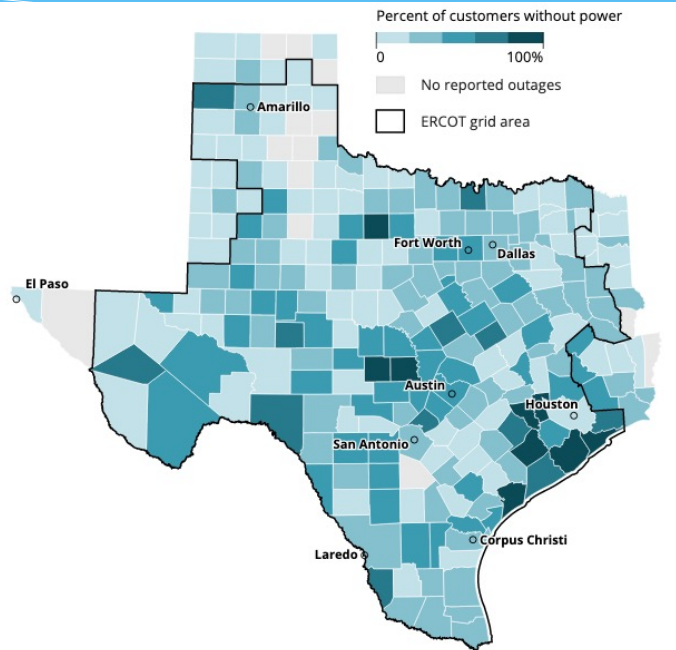
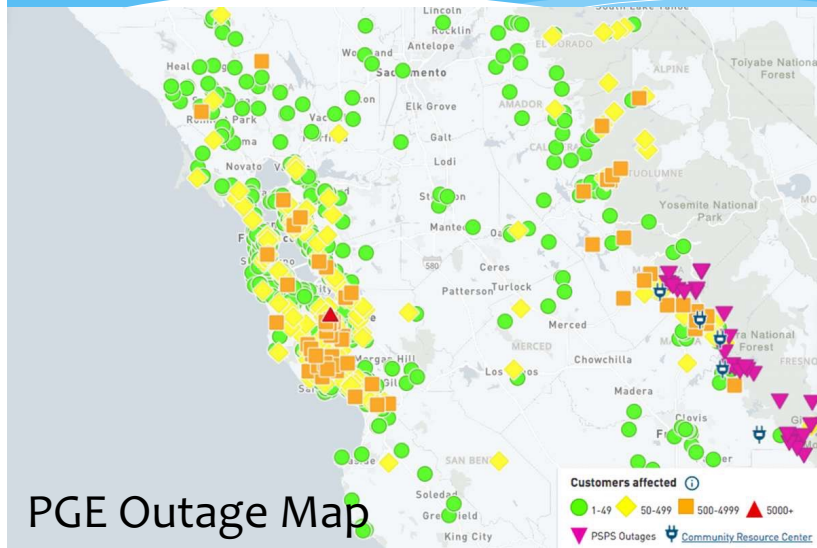
LA



Rio



Climate Stress



Why is Richmond plagued by power outages — 269 in a month?



November 9, 2021

Urban Electricity Challenges

- * Africa: 110 million of 600 million w/o electricity in Urban areas
 - * 95 million in Nigeria, Tanzania, Ghana, Liberia
 - * In Kenya, 70% of off-grid live within 1.2 km of power
- * Barriers to connection – same issues occur globally
 - * Cost: \$400 per connection in Kenya (1/3 per capita income)
 - * Lack of address / transient populations
 - * Difficult locations: flood plains, informal settlements
 - * Power theft reduces availability



Unreliable Power

- * Different patterns of failure
 - * Hours – daily outages due to limit power availability
 - * Days – weather related, deliberate shutdowns or accidental
 - * Weeks / months – CA etc. after “The Big One”
- * Potential mitigation
 - * Local sources: generators / solar / wind / hydro
 - * Storage
 - * Microgrids (combine local sources & storage)
- * Issues
 - * Cost
 - * Compatibility
 - * Fuel: availability, CO₂, air quality



Market / distribution challenges

- * DC
 - * Lack of standards / compatibility
 - * Limited product availability / choices
- * AC
 - * Proprietary storage / microgrid solutions / vendor lock-in
 - * Scalability
- * Potential cost solutions
 - * PAYGO – 35% sales in urban areas
 - * Power purchase agreements – vendor financing
 - * Multi-customer microgrids, not good for transient populations



ODG Opportunities

- * Rural / urban overlaps – work in progress
 - * ELVDC useful in both settings
 - * Small DC microgrids useful in both contexts
 - * Portable power: V2G / EV charging?
 - * Urban not a good fit for geographically distributed – 2030.10
- * New directions: better AC interoperability
 - * Need efficient rectifiers for storage
 - * AC / DC microgrid controller



Related Standards / Industry Developments

- * [P2030.10](#)
 - * REVCOM issues resolved – final vote pending
- * [LFEnergy](#)
 - * Hyphae suspended, no real microgrid activity
- * [OwnTech – Open Digital Power](#) - ???
- * [P2030.10.1](#) - ??
- * [TMS](#) – awaiting standard revisions
- * [GOGLA](#) Interop activities - ?
- * [OpenPAYGO Link](#) - ?
- * [Angaza Nexus Channel](#) / Nexus Channel Core - ?
- * [Open Connectivity Foundation](#) / [IoTivity](#) - ?



Next Meeting / Feedback

- * Next Meeting

- * 14 December 2021 – 1500 UTC

- * [Zoom – Meeting ID 87518284403 password: opendcgrid](#)

- * Sharing Portals

- * Web site: <https://open-dc-grid.org/>

- * GitHub: <https://github.com/open-dc-grid>

