



RESILIENT ENERGY SYSTEM

Resilient Energy System: Zero Lives Lost, Zero Carbon Emissions

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September 27, 2018



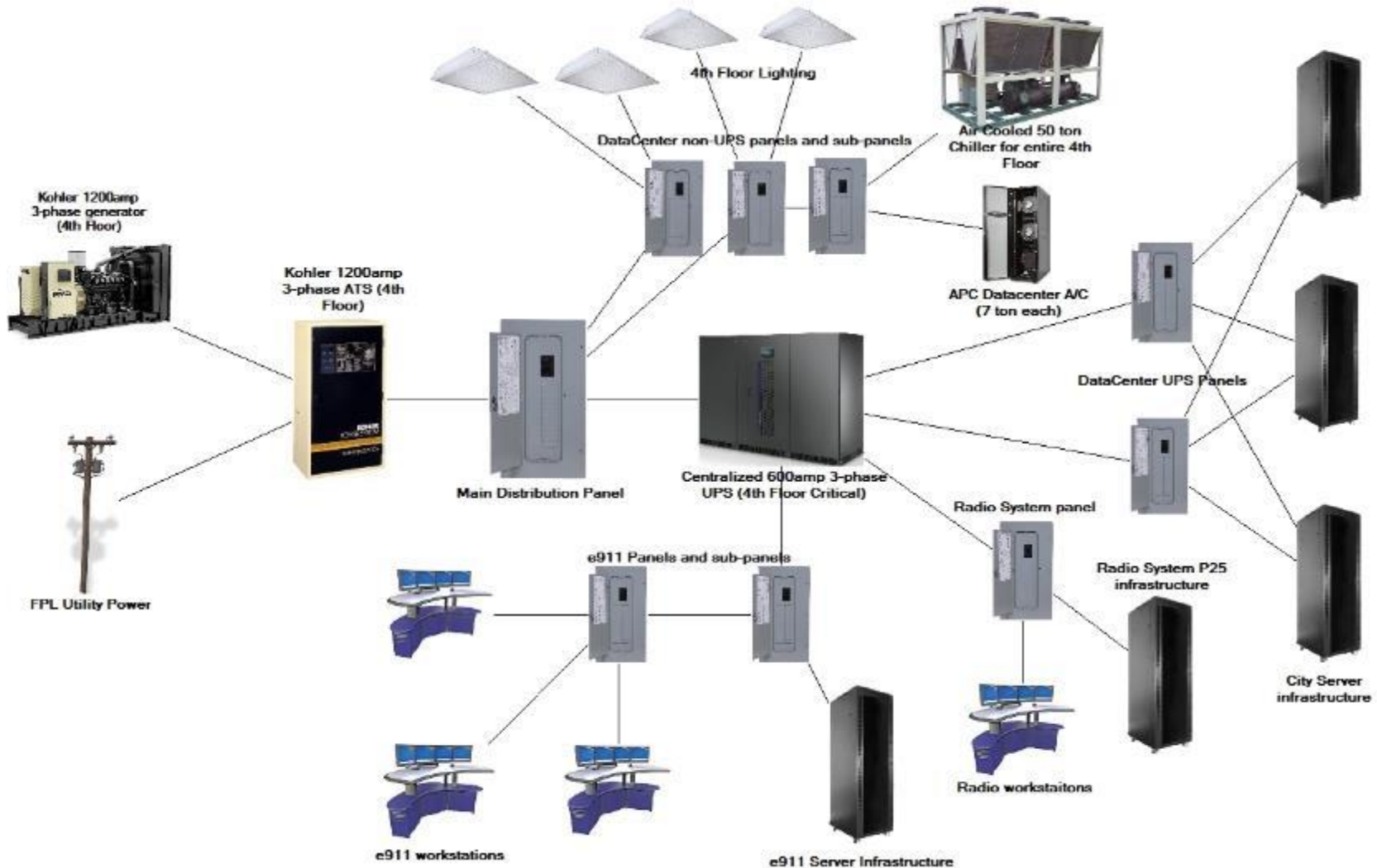
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Project Objectives

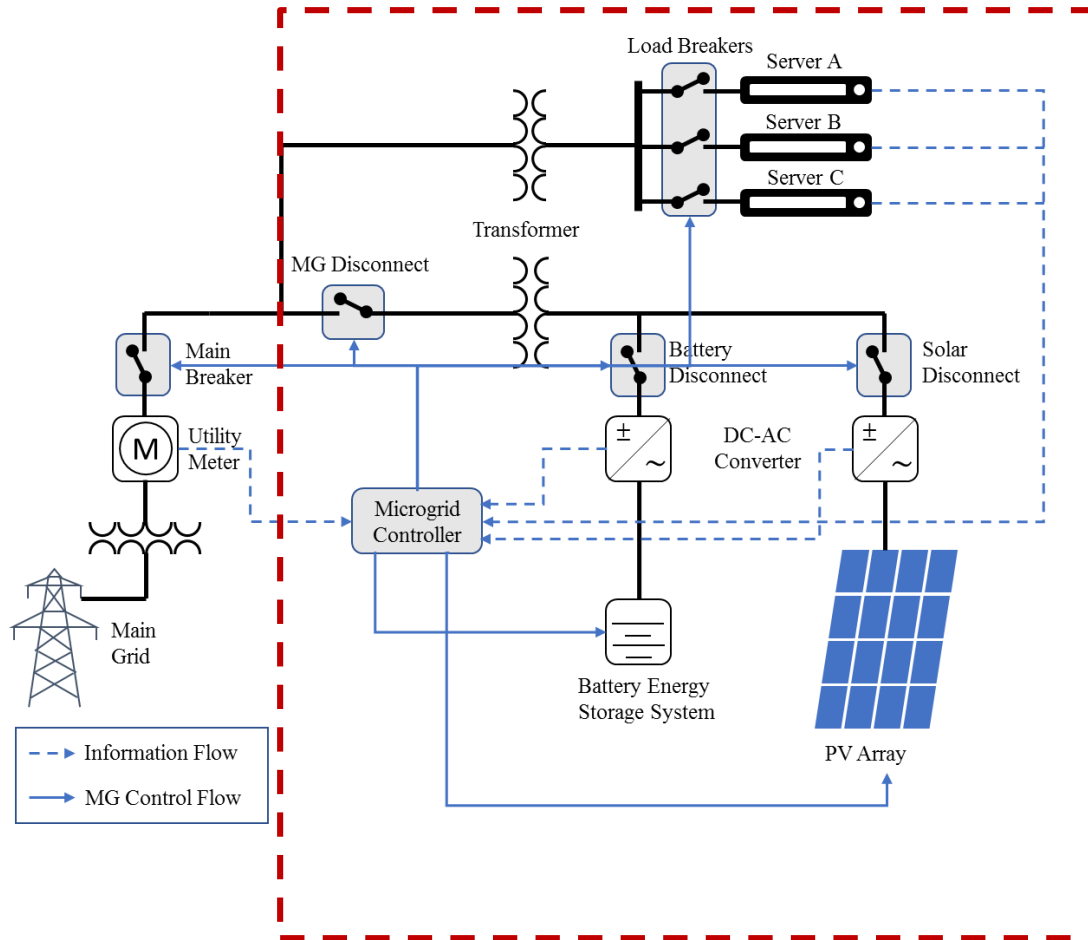
- *Create a system that can generate power during electric grid failures that can help save lives, money, all while producing zero carbon emissions.*
- *R.E.S. has two components:*
 - *Hardware: harnesses power from renewable energy (solar panels) and stores it in the system's batteries.*
 - *Software: distributes power via smart software to critical emergency systems as needed. R.E.S. will have an override function and predetermined human-driven procedures in order to manage critical decision-making processes when normal and backup power sources become unavailable. R.E.S. will function both proactively (prioritizing loads based on anticipated scenarios) and reactively (prioritizing loads based on real-time scenarios).*
- *Dynamic data driven adaptive simulation framework (DDDAS) for efficient and reliable real-time dispatching of electricity under uncertainty*

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CoCG Public Safety Building 4th Floor Power Distribution Overview



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Proposed Design

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Barrier to Implementation

- *Shift in mindset to rely more on renewable energy for emergency power instead of the traditional fossil fuel generators.*
- *Utility companies, traditional generator manufacturers, and the fossil fuel industry may oppose the expansion of this idea*
- *In a perfect world we would like to use R.E.S. to offset peak demand energy loads when the grid is working.*

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Lessons Learned

- *R.E.S. simulation design had to be dynamic, adapt to constant changes in emergency circumstances and still allow our stakeholders to control the system.*
- *Standard Operating Procedure was needed for different emergency power distribution scenarios.*

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Project Impact

- *The need for R.E.S. exists due to emerging natural disasters, aging infrastructure, and the goals to reduce carbon emissions globally.*
- *Numerous governments/organizations throughout the State, Country and the world, have inquired for more information on R.E.S.*
- *Confirmed that R.E.S. can be a global solution to many local problems.*