Virtual Electric Power
Board of Chattanooga, TN (EPB)

Creating a digital twin of 178,368 buildings in the service area for the Electric Power Board of Chattanooga, Tennessee, with comparison to 15-minute electricity data

**Data Sources**
- Imagery (satellite, aerial)
- Street-level imagery
- Cartographic layers – Elevation, GIS
- Tax assessors
- Ranking of descriptors
- EE and Demand impacts (281–4,617 per building type)

**Software Tools**
- Occupancy (every 90m)
- Aerial - best footprints
- Street - height, type, WWR
- LiDAR - geometry
- GIS - database API
- Building type
- Model generator
- Fastest buildings simulator
- Web-based visual analytics

**Result:** Simulated buildings for any area of interest that match 15-minute electrical data more accurately than most manually created models

**Use Cases**
- Peak rate structure
- Demand-side mgmt
- Emissions
- Energy efficiency
- Customer education

**Measures**
- Lighting, HVAC COP, infiltration, insulation
- Smart thermostats
- Water heaters
- PV/solar
- EV charging
- Future weather
- Dual-fuel HVAC
- Microgrids

**Result:** $11–35 million/year in potential savings identified via simulation-informed data and valuation for energy, demand, emissions, and cost impact to EPB and each customer for each building under five use cases covering nine monetization scenarios